Journal of
Physical and
Chemical
Reference Data

Volume 17, 1988 Supplement No. 1

Gas-Phase Ion and Neutral Thermochemistry

Sharon G. Lias

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

John E. Bartmess

Department of Chemistry, The University of Tennessee, Knoxville, Tennessee 37996-1600

Joel F. Liebman

Department of Chemistry, University of Maryland, Baltimore County Campus, Baltimore, Maryland 21228

John L. Holmes

Department of Chemistry, University of Ottawa, Ottawa, Ontario K1N 9B4, Canada

Rhoda D. Levin

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

and

W. Gary Mallard

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899







Published by the American Chemical Society and the American Institute of Physics for the National Bureau of Standards

Gas-Phase Ion and Neutral Thermochemistry

Journal of

Physical and Chemical Reference Data

David R. Lide, Jr., Editor

The Journal of Physical and Chemical Reference Data (ISSN 0047-2689) is published quarterly by the American Chemical Society (1155 16th St., N. W., Washington, DC 20036-9976) and the American Institute of Physics (335 E. 45th St., New York, NY 10017-3483) for the National Bureau of Standards. Second-class postage paid at Washington, DC and additional mailing offices. POSTMASTER: Send address changes to Journal of Physical and Chemical Reference Data, Membership and Subscription Services, P. O. Box 3337, Columbus, Ohio 43210.

The objective of the Journal is to provide critically evaluated physical and chemical property data, fully documented as to the original sources and the criteria used for evaluation. Critical reviews of measurement techniques, whose aim is to assess the accuracy of available data in a given technical area, are also included. The Journal is not intended as a publication outlet for original experimental measurements such as those that are normally reported in the primary research literature, nor for review articles of a descriptive or primarily theoretical nature.

Supplements to the Journal are published at irregular intervals and are not included in subscriptions to the Journal. They contain compilations which are too lengthy for a journal format.

The Editor welcomes appropriate manuscripts for consideration by the Editorial Board. Potential contributors who are interested in preparing a compilation are invited to submit an outline of the nature and scope of the proposed compilation, with criteria for evaluation of the data and other pertinent factors, to:

> David R. Lide, Jr., Editor J. Phys. Chem. Ref. Data National Bureau of Standards Gaithersburg, MD 20899

One source of contributions to the Journal is The National Standard Reference Data System (NSRDS), which was established in 1963 as a means of coordinating on a national scale the production and dissemination of critically evaluated reference data in the physical sciences. Under the Standard Reference Data Act (Public Law 90-396) the National Bureau of Standards of the U.S. Department of Commerce has the primary responsibility in the Federal Government for providing reliable scientific and technical reference data. The Office of Standard Reference Data of NBS coordinates a complex of data evaluation centers, located in university, industrial, and other Government laboratories as well as within the National Bureau of Standards, which are engaged in the compilation and critical evaluation of numerical data on physical and chemical properties retrieved from the world scientific literature. The participants in this NBS-sponsored program, together with similar groups under private or other Government support which are pursuing the same ends, comprise the National Standard Reference Data System.

The primary focus of the NSRDS is on well-defined physical and chemical properties of well-characterized materials or systems. An effort is made to assess the accuracy of data reported in the primary research literature and to prepare compilations of critically evaluated data which will serve as reliable and convenient reference sources for the scientific and technical community.

Information for Contributors

Manuscripts submitted for publication must be prepared in accordance with *Instructions for Preparation of Manuscripts for* the Journal of Physical and Chemical Reference Data, available on request from the Editor.

Editorial Board

Term ending 31 December 1988
William A. Goddard III, Ronald A. Phaneuf, Alfons Weber
Term ending 31 December 1989
Mostafa A. El-Sayed, Glen A. Slack, Barry N. Taylor
Term ending 31 December 1990
Sidney C. Abrahams, Carlos M. Bowman, Malcolm W. Chase, Jr.

Management Board

David R. Lide, Jr., Charles R. Bertsch, John T. Scott

Editorial Staff at NBS: Julian M. Ives, Joan Sauerwein Editorial Staff at AIP: Kathleen Strum, Managing Editor; Susan A. Walsh, Chief Copy Editor; Thomas J. Buckley, Copy Editor

New and renewal subscriptions should be sent with payment to the Office of the Controller at the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, DC 20036-9976. Address changes, with at least six weeks advance notice, should be sent to Journal of Physical and Chemical Reference Data, Membership and Subscription Services, American Chemical Society, P.O. Box 3337, Columbus, OH 43210. Changes of address must include both old and new addresses and ZIP codes and, if possible, the address label from the mailing wrapper of a recent issue. Claims for missing numbers will not be allowed: if loss was due to failure of the change-of-address notice to be received in the time specified; if claim is dated (a) North America: more than 90 days beyond issue date, (b) all other foreign: more than one year beyond issue date.

Members of AIP member and affiliate societies requesting member subscription rates should direct subscriptions, renewals, and address changes to American Institute of Physics, Dept. S/F, 335 E. 45th St., NY 10017-3483.

Subscription Prices (1988)			Optional air freight		
(not including supplements)	U.S.A.	Foreign (surface mail)	Europe Mideast N. Africa	Asia and Oceania	
Members (of ACS, AIP, or affiliated society)	\$ 60.00	\$ 70.00	\$ 80.00	\$ 80.00	
Regular rate	\$265.00	\$275.00	\$285.00	\$285.00	

Rates above do not apply to nonmember subscribers in Japan, who must enter subscription orders with Maruzen Company Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. Tel: (03) 272-7211.

Back numbers are available at a cost of \$75 per single copy and \$295 per volume.

Orders for reprints, supplements, and back numbers should be addressed to the American Chemical Society, 1155 Sixteenth Street, N. W., Washington, DC 20036-9976. Prices for reprints and supplements are listed at the end of this issue.

Copying Fees: The code that appears on the first page of articles in this journal gives the fee for each copy of the article made beyond the free copying permitted by AIP. (See statement under "Copyright" elsewhere in this journal.) If no code appears, no fee applies. The fee for pre-1978 articles is \$0.25 per copy. With the exception of copying for advertising and promotional purposes, the express permission of AIP is not required provided the fee is paid through the *Copyright Clearance Center, Inc. (CCC), 21 Congress Street, Salem, MA 01970.* Contact the CCC for information on how to report copying and remit payment.

Microfilm subscriptions of the *Journal of Physical and Chemical Reference Data* are available on 16 mm and 35 mm. This journal also appears in Sec. I of *Current Physics Microform* (CPM) along with 26 other journals published by the American Institute of Physics and its member societies. A *Microfilm Catalog* is available on request.

Copyright 1988 by the U.S. Secretary of Commerce; copyright assigned to the American Institute of Physics (AIP) and the American Chemical Society (ACS). Individual teachers, students, researchers, and libraries acting for them are permitted to make copies of articles in this journal for their own use in research or teaching, including multiple copies for classroom or library reserve use, provided such copies are not sold. Copying for sale is subject to payment of copying fees. (See "Copying Fees" paragraph elsewhere in this journal.) Permission is granted to quote from this journal with the customary acknowledgment of the source. To reprint a figure, table, or other excerpt requires in addition the consent of one of the original authors and notification to AIP. Reproduction for advertising or promotional purposes, or republication in any form, is permitted only under license from AIP, which will normally require that the permission of one of the authors also be obtained. Direct inquiries to Office of Rights and Permissions, American Institute of Physics, 335 East 45th Street, New York, NY 10017-3483. The right of the U.S. Government to unrestricted copying for its own use of copyrighted material originating in its laboratories or under its contracts is specifically recognized.

Journal of
Physical and
Chemical
Reference Data

Volume 17, 1988 Supplement No. 1

Gas-Phase Ion and Neutral Thermochemistry

Sharon G. Lias

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

John E. Bartmess

Department of Chemistry, The University of Tennessee, Knoxville, Tennessee 37996-1600

Joel F. Liebman

Department of Chemistry, University of Maryland, Baltimore County Campus, Baltimore, Maryland 21228

John L. Holmes

Department of Chemistry, University of Ottawa, Ottawa, Ontario K1N 9B4, Canada

Rhoda D. Levin

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

and

W. Gary Mallard

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899







Published by the American Chemical Society and the American Institute of Physics for the National Bureau of Standards

Copyright © 1988 by the U.S. Secretary of Commerce on behalf of the United States. This copyright will be assigned to the American Institute of Physics and the American Chemical Society, to whom all requests regarding reproduction should be addressed.

Library of Congress Catalog Card Number 88-70606

International Standard Book Number 0-88318-562-8

American Institute of Physics, Inc. 335 East 45th Street New York, New York 10017-3483

Printed in the United States of America

Foreword

The Journal of Physical and Chemical Reference Data is published jointly by the American Institute of Physics and the American Chemical Society for the National Bureau of Standards. Its objective is to provide critically evaluated physical and chemical property data, fully documented as to the original sources and the criteria used for evaluation. One of the principal sources of material for the journal is the National Standard Reference Data System (NSRDS), a program coordinated by NBS for the purpose of promoting the compilation and critical evaluation of property data.

The regular issues of the Journal of Physical and Chemical Reference Data are published quarterly and contain compilations and critical data reviews of moderate length. Longer monographs, volumes of collected tables, and other material unsuited to a periodical format are published separately as Supplements to the Journal. This tabulation, "Gas-Phase Ion and Neutral Thermochemistry", by Sharon G. Lias, John E. Bartmess, Joel F. Liebman, John L. Holmes, Rhoda D. Levin, and W. Gary Mallard, is presented as Supplement No. 1 to Volume 17 of the Journal of Physical and Chemical Reference Data.

David R. Lide, Jr., Editor

Journal of Physical and Chemical Reference Data

Gas-Phase Ion and Neutral Thermochemistry

Sharon G. Lias

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

John E. Bartmess

Department of Chemistry, The University of Tennessee, Knoxville, Tennessee 37996-1600

Joel F. Liebman

Department of Chemistry, University of Maryland, Baltimore County Campus, Baltimore, Maryland 21228

John L. Holmes

Department of Chemistry, University of Ottawa, Ottawa, Ontario K1N 9B4, Canada

Rhoda D. Levin

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

and

W. Gary Mallard

Center for Chemical Physics, National Bureau of Standards, Gaithersburg, Maryland 20899

Critically evaluated data on heats of formation of positive and negative ions in the gas phase are compiled and presented in these tables (GIANT tables), along with auxiliary information on ionization energies, proton affinities, electron affinities and acidities, as well as relevant thermochemistry of related neutral species. The literature coverage is through the middle of 1986. The criteria used in carrying out evaluations of data are described, and a short discussion is presented of special concerns for the thermochemistry of charged species.

Key words: acidity; anion; basicity; cation; Franck-Condon principle; electron affinity; heats of formation; ion/molecule equilibrium; ionization energy; negative ion; proton affinity.

Contents

1.	intro		1	5
	1.1.	Histor	y	5
	1.2.	Defini	tions	5
	1.3.	Scope,	, Limitations to Coverage, and Organization	6
	1.4.	Literat	ture References	7
	1.5.		• • • • • • • • • • • • • • • • • • • •	7
	1.6.		hermochemistry at Finite Temperatures	8
		1.6.1.	Thermochemical Conventions for the Electron	8
		1.6.2.	Thermochemistry of Positive Ions at Finite	
			Temperatures	10
		1.6.3.	Thermochemistry of Negative Ions at Finite	
			Temperatures	12
2.	Posit	ive Ion	S	12
	2.1.		valuation of Experimentally-Determined Ionization	
			ies: The Franck-Condon Principle	12
	2.2.	Interp	retation of Appearance Energies	13
	2.3.		imental Techniques	14
		2.3.1.	Optical Spectroscopy	14
		2.3.2.	Beam Studies Involving Laser Photoionization	14
		2.3.3.	Determination of Ionization/Appearance Energies by	- '
			Threshold Techniques	14
		2.3.4.	Photoelectron Spectroscopy	15
		2.3.5.	Ion/Molecule Equilibrium Constant Determinations	15
		2.3.6.	Ion/Molecule Bracketing Experiments	16
		2.3.7.	Onsets of Endothermic Reactions	16
		2.3.8.	Other Techniques	16
	2.4.		ility of Ionization Energy Data and Criteria for	10
			Evaluation	16
		2.4.1.	Comparisons between Results of Different Techniques	16
		2.4.2.	Reliability of Data; Error Limits	17
	2.5.		s in the Data	18
	2.0.	2.5.1.	Estimation Schemes for Heats of Formation of Cations	18
		2.5.2.		10
			Affinities, Substituent Constants	19
3.	Nega	tive Io	ns	25
٠.	3.1.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	25
	3.2.		mental Techniques.	26
	٠.2.		Laser Photoelectron Spectroscopy [LPES]	26
		3.2.2.	Laser Photodetachment [LPD]	26
		3.2.3.	Photodetachment [PD]	26
		3.2.4.	Photodissociation [PDis]	26
		3.2.5.	Ion/Molecule Reaction Equilibrium Constant	20
		3.2.3.	Determinations [IMRE, Kine, TDEq, TDAs]	26
		3.2.6.	Ion/Molecule Reaction Bracketing [IMRB]	27
		3.2.7.	Electron Impact Appearance Potentials [EIAP]	27
		3.2.7.	Neutral Beam Ionization/Appearance Potentials	21
		3.2.0.	[NBIP/NBAP]	28
		3.2.9.	Photoionization [PI]	
			Endothermic Reaction Energy, Including Charge	28
		J.2.10.	Transfer [Endo, EnCT, CIDT]	28
		3 2 11	Surface Ionization (Magnetron) [SI]	28 28
			Electron Swarm [ES]	28 28
		3.2.12.	Lattice Energy [Latt]	28 28
			Kinetic Branching Methods [Bran, CIDC]	28 29
			Electron Transmission Spectroscopy [ETS]	29 29
		J.2.1J.	Election Transmission Spectroscopy [E13]	29

		3.2.16. Electron Capture Detector [ECD]	29
		3.2.17. Mobility of Ions in a Gas [Mobl]	29
		3.2.18. Laser Optogalvanic Photodetachment	
		Spectroscopy [LOG]	29
	3.3.	Thermochemical Cycles	29
	3.4.	Priority of Data	30
4.	The	rmochemistry of Neutral Species	30
	4.1.	Literature Sources	31
		4.1.1. Organic Compounds	31
		4.1.2. Inorganic Compounds	31
		4.1.3. Specialized Classes of Compounds and Radicals	31
		4.1.4. Other Literature Sources	31
	4.2.	Conventions Used and Assumptions Made	32
	4.3.	Use of Condensed Phase Heats of Formation	32
	4.4.	Estimated Heats of Formation	32
		4.4.1. Estimates from Data on Isomeric Species	32
		4.4.2. Summing of Increments	33
5.	Sum	mary of Conventions Used in Tables	34
	5.1.	Positive Ion Table (Table 1)	34
	5.2.	Negative Ion Table (Table 2)	34
	5.3.	References to Tables 1 and 2	36
6.	Ack	nowledgements	36
7.		erences to Introduction	37
Lis	t of	Tables	
Та	bles i	in Introductory Text	
		•	
1.6	.1.1.	Summary of assumptions about electron thermochemistry	
		in data compilations	9
2.5	.1.1.	Estimation scheme of Holmes, Fingas and Lossing: $\Delta_f H(M^+)$ kcal/	
		mol = A - Bn + C/n	19
2.5	.1.2.	Estimation scheme of Bachiri, Mouvier, Carlier, and DuBois:	
		$\log_{10} \left\{ [IP(R_1XR_2) - IP_{\infty}] / (IP_0 - IP_{\infty}) \right\} = 0.106[I(R_1) + I(R_2)]$	20
2 5	.1.3.	Comparison of ionization energies/heats of formation with	
2.5	.1.5.	estimated values predicted from estimation schemes	20
2 5	.2.1.	The relationship between proton affinity, ionization energy,	20
د.ي	.2.1.	and hydrogen affinity for homologous series	23
5.2		Acronyms, abbreviations and symbols used in negative ion	23
J. Z	•	table	35
		table	33
Та	bles	of Data	
1.	Ioni	zation energies and related heats of formation of positive ions	40
2.		dities, electron affinities, and heats of formation of anions	647
		prenoes to Tables 1 and 2	707

1. Introduction

1.1. History

This publication is the direct linear descendant of two earlier compilations of evaluated heats of formation of ions derived from ionization potential and appearance potential data, both carried out under the auspices of the National Bureau of Standards. The first such volume, "Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions" by J. L. Franklin, J. G. Dillard, H. M. Rosenstock, J. T. Herron, K. Draxl, and F. H. Field appeared in 1969, and included all data on threshold energies for formation of positive ions which had appeared in the literature through mid-1966. That book, although woefully out-ofdate now, is still occasionally referred to in the mass spectrometric literature, and is one of the most widely cited publications in the history of mass spectrometry. In 1977, H. M. Rosenstock, K. Draxl, B. W. Steiner, and J. T. Herron published an update, "Energetics of Gaseous Ions," which covered the literature through mid-1971²; the scope of the work was also extended to cover data on anions. In both of these books, the data for the threshold energies for formation of ions (ionization potentials and appearance potentials) were evaluated where possible, and where thermochemical data for relevant neutral species were available, values for heats of formation of the corresponding ions were derived.

In 1982, two of the present authors published an extensive compilation of *unevaluated* ionization potential and appearance potential data ("Ionization Potential and Appearance Potential Measurements, 1971–1981")³ which covered the literature from the 1971 cut-off date of the 1977 book through mid-1981.

Since the mid-1970's, much information about ion thermochemistry has been derived from determinations of the equilibrium constants of ion/molecule reactions, a type of data which was not covered in the earlier compilations. Much of the work on equilibria of positive ions involves proton transfer reactions. These data have been compiled and evaluated by some of the present authors⁴.

1.2. Definitions

The heat of formation of a positive ion in the gas phase is obtained by taking the heat of formation of the corresponding neutral species and adding the energy required to remove an electron, the so-called adiabatic ionization potential or, more correctly, the adiabatic ionization energy, IP_a (sometimes designated IE, or, in the older literature, I):

$$M \xrightarrow{IP_a} M^+ + e$$
 (1)

$$\Delta_{f}H(M^{+}) = \Delta_{f}H^{\circ}(M) + IP_{a} - \Delta_{f}H(e)$$
 (2)

As discussed in Sec. 1.6.2., Eq. (2) is rigorously correct only at absolute zero. According to the convention adopted in this work for dealing with the thermochem-

istry of the electron (the "ion convention", sometimes called the "stationary electron convention", see Sec. 1.6.1.) "298 K heats of formation" of positive ions are often derived by simply adding the 0 K value for the ionization energy to the 298 K heat of formation of the molecule. The assumptions inherent in this treatment are discussed in Secs. 1.6.1. and 1.6.2. The user of these tables is cautioned that there is an alternate convention for dealing with the thermochemistry of the electron, which results in numerically different values for heats of formation for ions than those given here; details are discussed in Sec. 1.6.1.

The vertical ionization energy is the energy change corresponding to formation of the ion in a configuration which is effectively the same as that of the equilibrium geometry of the ground state neutral molecule. See Sec. 2.1. for a more complete discussion.

Accepting the simplifications described and justified in Sec. 1.6., determination of the heat of formation of a molecular ion is, in principle, straightforward, requiring only a value for the heat of formation of the corresponding neutral molecule and a reliable value for the adiabatic ionization energy. Many positive ions of interest, however, do not have stable neutral molecular counterparts. These include many of the ions which originate by fragmentation of a molecular ion, fragment ions:

$$AB^+ \to A^+ + B + e \tag{3}$$

Heats of formation of fragment ions, A^+ , are usually based on mass spectrometric determinations of the energy required to generate the ion from the neutral precursor molecule. This energy is called the "appearance potential" or, more correctly, the "appearance energy", AP:

$$AB \xrightarrow{AP} A^+ + B + e \tag{4}$$

In the case that there is no potential barrier in the reaction coordinate, and little or no kinetic shift (see Sec. 2.2.), the onset energy for formation of A^+ corresponds approximately to the enthalpy change of reaction 4. Under these conditions, the heat of formation of A^+ is usually assumed to be given by:

$$\Delta_f H(A^+) = \Delta_f H^{\circ}(AB) - \Delta_f H^{\circ}(B) + AP$$
 (5)

where, according to the ion convention, the term accounting for the electron has been taken to be zero. For a discussion of a more exact treatment of the energetics of ionic fragmentation processes, see Sec. 1.6.2.

Stable cations formed in the gas phase also include ions formed by protonating a neutral molecule:

$$BH^+ + M \rightarrow MH^+ + B \tag{6}$$

In practice, heats of formation of most protonated molecules are derived from experiments in which the

equilibrium constant of a proton transfer reaction such as 6 is determined (given that a heat of formation of a reference BH⁺ ion is available from appearance potential determinations). Formally, the relationship between the heat of formation of MH⁺ and its neutral counterpart, M, is defined in terms of a quantity called the *proton affinity*, PA. The proton affinity is the negative of the enthalpy change of the hypothetical protonation reaction:

$$M + H^{+} \stackrel{-PA}{\rightarrow} MH^{+}$$
 (7)

$$\Delta_f H(MH^+) = \Delta_f H^{\circ}(M) + \Delta_f H(H^+) - PA \qquad (8)$$

The term proton affinity, as universally used, is a quantity defined at 298 K (and therefore not strictly analogous to the adiabatic ionization energy, which is the 0 K enthalpy change of reaction 1). (The Gibbs energy change associated with reaction 7 is called the *gas basicity*, GB, of molecule M.) At 298 K, the heat of formation of the proton, using the ion ("stationary electron") convention, is 365.7 kcal/mol, 1530.0 kJ/mol.

The electron affinity (EA) of a molecule is, for negative ions or anions, the quantity which is analogous to the ionization energy for positive ions. That is, the electron affinity is equal to the energy difference between the heat of formation of a neutral species and the heat of formation of the negative ion of the same structure. The electron affinity is defined as the negative of the 0 K enthalpy change for the electron attachment reaction:

$$M + e \xrightarrow{-EA_a} M^-$$
 (9)

The gas phase acidity (or merely, acidity) of a molecule AH, $\Delta_{\text{acid}}G(AH)$, is the Gibbs energy change of the reaction:

$$AH \rightarrow A^- + H^+ \tag{10}$$

usually defined at 298 K. The enthalpy change of reaction 10, $\Delta_{acid}H$, is, of course, the proton affinity of the anion. The Gibbs energy change of the reaction:

$$AH + B^- \rightarrow BH + A^- \tag{11}$$

is called the relative acidity of species AH and BH.

1.3. Scope, Limitations to Coverage, and Organization

The intent of the present effort is to give (a) the "best" available experimentally-determined values for ionization potentials, electron affinities, acidities or proton affinities of molecules or molecular fragments, and (b) the heats of formation of the corresponding positive and negative ions. Also included are values for the heats of formation of the relevant neutral species which were

used to obtain the heats of formation of the ions. Appearance energies are not specifically listed here, although heats of formation of ions derived from such data are given where the accuracy is sufficiently great to warrant inclusion.

In evaluating heats of formation of ions for the present work, all data presented in the previous compilations^{1,2,3,4} have been considered, along with data from the more recent literature, 1981–1986. In addition, thermochemical information about ions derived from ion/molecule equilibrium constant determinations has been fully utilized, both in evaluations of ionization potential/appearance potential, proton affinity, acidity, and electron affinity data, and in deriving values for heats of formation of ions for which no other information is available.

Because the values for the heats of formation of ions are, of course, dependent on the larger corpus of thermochemical data on uncharged species, the values for heats of formation of relevant neutral species which were utilized are included as an intrinsic part of the tables.

The user familiar with the previous compilations in this series will note that the format of the present work is considerably different from that of its predecessors. In all three previous volumes, all ionization energy or appearance energy data pertaining to a particular ionic species were displayed, so that the books served as complete summaries and guides to the literature. Because of the increasing volume of such an archive with time, such a display is no longer practical for the positive ion data. Furthermore, because the general quality of mass spectrometric measurements has increased greatly over the last decade, display of some of the now out-of-date early data is no longer even desirable for ionization potentials/appearance potentials.

On the other hand, there has been a tremendous increase in the number of anions for which some thermochemical information is known, and this publication presents the first extensive evaluated compilation of those data. The table of anion thermochemistry (Table 2), therefore, includes both as *complete* a collection as possible of the literature data, and an assignment where possible of the "best" value for the thermochemistry.

Because earlier volumes in this series^{1,2} were devoted to deriving values for heats of formation of ions, this work has been defined in the same way. It should be emphasized that in Table 1 (the positive ion table) molecules for which heats of formation are not known or have not been estimated are not included, even if the corresponding ionization energies or proton affinities are known. On the other hand, Table 2 (the negative ion table) presents a complete archive of data on electron affinities and gas phase acidities, whether or not the thermochemistry of relevant neutral species is available; the evaluation of the scale of gas phase acidities will, however, be the subject of a separate publication⁵. The total archive of ionization energy and appearance energy data will be published separately⁶, as will the updated scales of gas phase basicities/proton affinities⁷.

Another consequence of defining this work in terms of thermochemical data is that the abundant data on excited states of ions from photoelectron spectroscopy are not included here. The combined bibliographies of this work and its predecessors, however, do include the entire corpus of literature of photoelectron spectroscopy, since values for the *lowest* ionization energy derived from photoelectron experiments are included. Also not included are data on multiply charged ions.

Thermochemical information about ion/molecule clusters has been published in a recent compilation⁸, and is not specifically included here, although some information derived from the enthalpy changes associated with the association of the first solvent molecule have been used in evaluating certain heats of formation.

At this writing, publications are beginning to appear in increasing numbers giving quantum mechanical calculations of very high accuracy on the thermochemical properties of ions, especially small ions^{9,10}. The present work includes *only* data derived from experimental determinations. However, conclusions derived from some high level calculations have been taken into account in the evaluation of data for particular species.

The solution phase reduction potentials of a variety of species have been correlated with gas phase electron affinities (EAs), and values for a large number of EAs have been extrapolated from such correlations. More recent determinations of accurate gas phase data have shown that such relationships hold only for limited classes of compounds, so that the solution phase data can be taken only as an approximate guide to predicting electron affinities. Thus, any electron affinity values derived from reduction potentials have been omitted from this compilation. Such values were included in a recent compilation of anion data¹¹.

This compilation also does not attempt to cover negative electron affinities — cases where the electron in the highest occupied molecular orbital is unbound (resonance states), and therefore the lifetime of the anion with respect to autodetachment is on the order of microseconds, at most. Electron transmission spectrometry¹² is used to determine thermochemical data for such species. Brief mention is made for certain small molecules and elements for which the anion is known to be unbound, to differentiate from cases for which there is just no data available.

The data on positive ions and on negative ions are not interdependent, and have been evaluated separately. Data on the positive ions were collected and evaluated at the National Bureau of Standards (ionization energies, equilibrium constant data) and the University of Ottawa (appearance energies), while information concerning the negative ions was handled at the University of Tennessee. The data on cations and anions are presented in two separate tables.

Since heats of formation of ions are derived using data on heats of formation of neutral molecules and radicals, data on the thermochemistry of uncharged species are an integral part of this work. Although only experimentally-determined values for heats of formation of neutral species were utilized in the 1977 evaluation, estimation schemes for arriving at thermochemical information are now widely accepted and used. Estimated heats of formation are included for many species for which no experimental data are available. These estimations, and a literature search for thermochemical data not available in compilations, were performed primarily at the University of Maryland, Baltimore County Campus.

1.4. Literature References

With respect to ionization energies, appearance energies, or proton affinities, the present publication gives specific citations only to publications which were not included in the previous compilations^{1,2,3,4}. The bibliography includes all references which have appeared since the previous publications^{1,2,3,4} even if the data from a particular paper are not given here because of a lack of information about the thermochemistry of relevant neutral molecules. When no literature reference is given for these kinds of data in the positive ion table, it should be assumed that the primary reference can be obtained from the secondary sources, references 1, 2, 3, or 4. When the source of the data on ion thermochemistry is a recent paper which was not included in any of these previous compilations, the reference is specifically cited in a footnote. The literature citations for which a specific column is provided in Table 1 refer only to the source of the data on the thermochemistry of the neutral species.

In Table 2, specific citations are given for the data on both the ion thermochemistry and the relevant neutral thermochemistry.

1.5. Units

Information is displayed in the tables using different units, dictated by the current practices for reporting data of a particular kind. For example, ionization energy and electron affinity values are usually reported in electron volts, and that is the unit used here for these data. Heats of formation of positive ions are given here in both kcal/ mol and kJ/mol. The reason for this duplication is simply that both units are extensively used in the literature, and users of these tables will be about equally divided between those who prefer kilocalories and those who prefer kilojoules. Furthermore, because of the duplication in units, the data can always be displayed as they appeared in the original paper, a practice which helps in elimination of transcribing errors. While the same statements certainly apply to data on negative ions, the amount of information which needs to be displayed in Table 2 is sufficiently great that including the same information twice, in two sets of units, would crowd the page too much; therefore, the negative ion heats of formation and acidities are given only in the SI unit, kJ/mol.

The conversion factors which were used in this work are: 1 electron volt (eV) = 23.06036 kilocalories/mole = 96.4845 kilojoules/mole; 1 kilocalorie/mole = 4.184 kilojoules/mole.

1.6. Ion Thermochemistry at Finite Temperatures

The auxiliary thermochemical information required for citation of ion heats of formation—heats of formation of relevant neutral species—is available mostly for species at 298 K. These thermochemical data are correct for use in deriving ion heats of formation from equilibrium constant determinations, i.e., for treatment of data derived from processes occurring at temperatures other than 0 K. However, strictly speaking, the ionization energy and the electron affinity of a molecule are quantities which correspond to processes occurring at 0 K. As mentioned above in Sec. 1.2., a rigorously correct treatment of heats of formation of ions requires explicit treatment of the differences in thermochemical values at 0 K and at higher temperatures. This section describes the principles involved in such a correct treatment, considers the simplifications which are often made in the literature, and specifies how data have been treated in this work.

1.6.1. Thermochemical Conventions for the Electron

We are concerned with the way in which the enthalpies of formation of the chemical species, M⁺ and M⁻, are *defined*, particularly at temperatures other than 0 K. The enthalpy of formation of any chemical species is always taken as the difference between the enthalpy of the compound and the sum of the enthalpies of the elements of which it is composed. However, in the case of an ion, M⁺ or M⁻, a special problem arises—one must explicitly take into account the enthalpy of the electron in some way.

There are two conventions for dealing with the thermochemistry of the electron, one used predominantly by thermodynamicists 13,14,15 and one adopted by scientists studying ion physics/chemistry^{16,17}. The thermodynamicists' convention, commonly called the "thermal electron convention" or merely the "electron convention", defines the electron as a standard chemical element and treats its thermochemistry accordingly. The mass spectrometrists' convention, known as the "stationary electron convention" or the "ion convention", defines the electron as a sub-atomic particle. Because of differences in the treatment of the thermochemistry under these two definitions, except at absolute zero values cited for the enthalpies of formation of ions in certain thermochemical compilations such as the JANAF tables¹³ or the NBS Tables of Chemical Thermodynamic Properties¹⁴ differ from those cited here, or in most mass spectrometric literature, by 1.481 kcal/mol, 6.197 kJ/mol. Our values are lower for positive ions and higher for negative ions. Problems arise when users unknowingly mix inconsistent values for heats of formation in the same equation.

There is considerable confusion and misunderstanding of the basic assumptions and treatment of the thermochemistry of the electron in the two approaches. Many scientists who regularly use one or the other convention in their work can not clearly explain the differences. Indeed, some hold that the two ways of dealing with the thermochemistry of the electron are not merely two conventions, but two scientifically different concepts, one of which must be incorrect. The discussion which follows is an attempt to present the question of how the electron is treated in a thermochemical equation in as simple and straightforward a manner as possible, in the hope that some of the confusion will be dispelled and the identity of the two treatments as *conventions* will become clear. This discussion is also intended to justify the choice of the usual mass spectrometrists' convention for use in these tables.

The relationships between the various quantities which must be considered are shown in the thermochemical cycles:

$$\begin{array}{cccc}
M_{0 K} & \stackrel{IP}{\longrightarrow} & M^{+}_{0 K} & + & e_{0 K} \\
A \downarrow & B \downarrow & C \downarrow
\end{array} \tag{12a}$$

$$M_{298 K} \xrightarrow{\Delta H_{\rm I}} M^{+}_{298 K} + e_{298 K}$$
 (12b)

and

$$\begin{array}{cccc}
\mathbf{M}_{0 \, \mathbf{K}} & + & \mathbf{e}_{0 \, \mathbf{K}} & \stackrel{-EA}{\longrightarrow} & \mathbf{M}^{-}_{0 \, \mathbf{K}} \\
A \downarrow & C \downarrow & D \downarrow
\end{array} \tag{13a}$$

$$M_{298 K} + e_{298 K} \xrightarrow{\Delta H_{EA}} M_{298 K}^{-}$$
 (13b)

where A, B, C, and D are the integrated heat capacities for the various indicated species, e.g., A is the energy required to raise M from 0 K to 298 K, and ΔH_1 and ΔH_{EA} are the 298 K enthalpies of reaction. This discussion will be concerned with the standard temperature, 298 K, but the arguments can obviously be extended to any other temperature.

At 0 K, the heat of formation of the electron is zero and the heats of formation of the ions are exactly equal to the 0 K heat of formation of the molecule M plus the energy difference between M and the corresponding ion:

$$\Delta_f H(M^+)_{0 K} = \Delta_f H^{\circ}(M)_{0 K} + IP_a$$
 (14)

$$\Delta_{f}H(M^{-})_{0 K} = \Delta_{f}H^{\circ}(M)_{0 K} - EA$$
 (15)

At absolute zero, there is no difference between the two conventions.

When the temperature is raised to 298 K, the heats of formation of M⁺ and M⁻ will be related to the heat of formation of M at 298 K through the enthalpy changes of reactions 12b and 13b:

$$\Delta_{t}H(M^{+})_{298 K} = \Delta_{t}H^{\circ}(M)_{298 K} - \Delta_{t}H(e)_{298 K} + \Delta H_{I}$$
(16)

$$\Delta_{\rm f} H({\rm M}^-)_{298~{\rm K}} = \Delta_{\rm f} H^{\circ}({\rm M})_{298~{\rm K}} + \Delta_{\rm f} H({\rm e})_{298~{\rm K}} + \Delta H_{EA}$$
 (17)

The enthalpy changes of reaction at 298 K are related to the 0 K ionization energy and electron affinity through the relationships:

$$\Delta H_I = IP_a + (C + B - A) \tag{18}$$

$$\Delta H_{EA} = -EA - (C + A - D) \tag{19}$$

If the electron is defined to be a chemical element (the "electron convention"), its heat of formation by definition is zero at all temperatures in its standard state. Thermodynamicists start from this assumption and then make a second one, that an electron gas can be treated as an ideal gas following Boltzmann statistics; this second assumption is used to calculate the integrated heat capacity of the electron, C. In many thermodynamics data compilations, the integrated heat capacity terms for M and the corresponding ion, M^+ or M^- , are taken to be approximately equal for many ions, i.e. A = B = D. (See Sec. 1.6.2. for a discussion of this assumption.) Under this set of assumptions, Eqs. (16) and (17) can be written:

$$\Delta_{\rm f} H({\rm M}^+)_{298~{\rm K}} = \Delta_{\rm f} H^{\circ}({\rm M})_{298~{\rm K}} + [IP_a + C]$$
 (20)

$$\Delta_f H(M^-)_{298 \text{ K}} = \Delta_f H^{\circ}(M)_{298 \text{ K}} - [EA - C]$$
 (21)

(where the term $\Delta_f H(e)_{298 \text{ K}}$ has been taken to be equal to zero and the quantity in brackets is the assumed enthalpy change of reaction at 298 K). What most often causes confusion for non-thermodynamicists is the de facto assignment of the integrated heat capacity of the electron, C, to the ion M^+ or M^- , rather than to the electron in going from 0 K to 298 K. This is required if the heat of formation of the electron is constrained to be zero at all temperatures. It is questionable whether an ion is any more "ideal" than an electron, due to the Coulombic forces between the particles, but this assignment is a necessity if the original assumptions are carried through the argument.

In contrast, the standard treatment of ion heats of formation followed in almost the entire corpus of literature on ion physics/chemistry essentially assumes that:

$$\Delta_f H(M^+)_{298 \text{ K}} = \Delta_f H^{\circ}(M)_{298 \text{ K}} + [IP_a + B - A](22)$$

$$\Delta_{f}H(M^{-})_{298 \text{ K}} = \Delta_{f}H^{\circ}(M)_{298 \text{ K}} + [-EA - A + D] (23)$$

(where the expressions in brackets are assumed to be equal to the enthalpy change of reaction at 298 K, and the quantities A, B, and D are often, but not always, taken to be equal). Since this is equivalent to taking a value of zero for the integrated heat capacity of the electron (the term C in Eqs. (18) and (19)), this way of treating the thermochemistry of the electron has come to be known as the "stationary electron" convention. The use of this term has unfortunately led to the widespread conception that this convention defines the ionization process as producing an electron which has no thermal energy at 298 K. Since this is not the case, it is preferable

to choose another designation for the convention. In this publication we will adopt the term originally suggested by Syverud¹⁸ for the mass spectrometrists' convention, "ion convention".

At 298 K, the integrated heat capacity of an ideal Boltzmann gas is 1.481 kcal/mol, 6.197 kJ/mol. The relationship between 298 K heats of formation of ions in the ion convention (IC) and the thermodynamicists' convention (TC) is:

$$\Delta_{t}H(M^{+})_{298 \text{ K}}(IC) = \Delta_{t}H(M^{+})_{298 \text{ K}}(TC) - 6.197 \text{ kJ/mol}$$
 (24)

$$\Delta_t H(M^-)_{298 \text{ K}}(IC) = \Delta_t H(M^-)_{298 \text{ K}}(TC) + 6.197 \text{ kJ/mol}$$
 (25)

Table 1.6.1.1. summarizes the assumptions made in the two conventions and the data compilations where they are used.

TABLE 1.6.1.1. Summary of assumptions about electron thermochemistry in data compilations.

		Inc	Conventudes H_7 or Speci-	$T-H_0$	
Convention	Compilation	M	M ⁺ or M ⁻	e	Value of C, kJ/mol
Thermal electron Thermal electron Thermal electron (Modified)	JANAF Tables ¹³ Gurvich et al ¹⁵ TN270 ¹⁴	Yes ^a Yes ^a No	Yes ^a Yes ^a No	Yes Yes Yes	6.197 6.197 6.197
Ion convention	This work, Refs. 1-4	Yesª	Yesª	No	0
Ion convention	Some papers	No	No	No	0

^aWhen sufficient information is available. See discussion in Sec. 1.6.2.

The objection has been made that the mass spectrometrists' convention is scientifically incorrect because the electron actually does have thermal energy at 298 K. Note, however, that the values derived in the mass spectrometrists' convention for the heats of formation of the ions are numerically identical to those one would obtain if one assigned the thermal energy of the electron to the electron rather than to the enthalpy of formation of the accompanying ion (as is done in the thermodynamicists' convention). That is, in Eqs. (16) and (17) if one assigns a value of C to $\Delta_t H(e)_{298 \text{ K}}$ and takes the value for the enthalpy change of reaction from Eqs. (18) and (19), one obtains:

$$\Delta_{f}H(M^{+})_{298 K} = \Delta_{f}H^{\circ}(M)_{298 K} - C + IP_{a} + (C + B - A)$$
 (26)

$$\Delta_{t}H(M^{-})_{298 K} = \Delta_{t}H^{\circ}(M)_{298 K} + C - EA - (C + A - D)$$
 (27)

which are identical to expressions 22 and 23. Although this is a nonstandard treatment, it is possible to justify using a special convention for the thermochemical properties of the electron, since this species is not normally considered to be a chemical element; a stronger justification is found by considering that the use of the standard treatment for an element in this case results in heats of formation for a large body of molecular species — ions — which reflect an arbitrary temperature dependence which can not be experimentally measured or verified at the present time.

In fact, the mass spectrometrists' convention for treating the electron was not derived from a conscious treatment of the electron as having a non-zero heat of formation at 298 K. Indeed, earlier discussions of this convention^{16,17,18} have centered mainly on the reluctance to assign a purely arbitrary temperature dependence to ionization or electron attachment events and a recognition that absolute values of the various parameters, $\Delta H_{\rm I}$, ΔH_{E4} B, D, and especially C were not available. The enthalpy changes of reactions 12b and 13b are not directly measured by any currently-available experimental techniques, and can not be said to be known within ±6.197 kJ/mol. As will be discussed below, accurate values for the integrated heat capacities of ions M⁺ and M⁻ are not available except for a few small species, and the assumption that (B - A) and (A - D) are exactly equal to zero is often not warranted (see Sec. 1.6.2.). Most important, however, the value chosen for the integrated heat capacity of the electron, C, is completely arbitrary. To quote from the 1985 edition of the JANAF thermochemical tables 13c:

"As shown by Sommerfeld¹⁹, the electron gas is a degenerate Fermi-Dirac gas and its properties will differ from the classical (Boltzmann) gas. These deviations will increase as the temperature decreases or as the density increases. Due to the low mass of the electron, these departures from classical behavior will persist to higher temperatures and lower densities than for atomic systems. Under conditions of 1 atm pressure, Gordon²⁰ showed that the deviation of the Fermi-Dirac gas from the Boltzmann gas is negligible above 1250 K. Below this temperature the deviation between classical and quantum statistics will be significant.

Despite these known deviations we have chosen to present the classical (Boltzmann) values here since the primary purpose of this table is to serve as a reference state for the calculation of tables of thermodynamic properties for atomic and molecular ions..... Therefore, although this ideal-gas table has the formalism of 1 bar as the standard reference state, it should not be applied to real systems where the electron partial pressure exceeds 10^{-6} bar."

That is, the authors of the JANAF tables¹³ recognize that the standard thermodynamicists' convention for dealing with the electron does involve a completely arbitrary assumption about the value assigned to the enthalpy of the electron (as does the mass spectrometrists'

convention when expressed by Eqs. (22) and (23)—but not in the assumptions built into the equivalent Eqs. (26) and (27)). Syverud¹⁸, in an unpublished discussion of conventions for treating the thermochemical properties of the electron, cites a value of approximately 3.3 kJ/mol, 0.8 kcal/mol for the value of C derived from a quantum chemical calculation (source not quoted). Furthermore, while the rationale for the thermodynamicists' convention is that the values "correspond to a meaningful thermal process"²¹, the use of that convention is excluded for a substantial set of possible thermal conditions.

The mass spectrometrists' approach to the problem recognizes that the specific inclusion of the term for the enthalpy of the electron in deriving ion heats of formation is not physically meaningful if it is based on the assumption that an electron gas can be treated like an ideal gas. In fact, at this time neither the enthalpy changes of reactions 12b and 13b nor the enthalpy of the electron are established; a solution is to adopt a convention (the "ion convention") which sidesteps the problem, that is, in which the enthalpy change of reaction and the enthalpy of the electron need not be known or assumed. If, in the future, information about the integrated heat capacities of the electron and the ions does become available, the values for heats of formation of ions can be fine-tuned; however, in the meantime, there is no real problem with using data in the present form as long as internal consistency is maintained.

It will be noted that in the tables, the symbol $\Delta_t H$ rather than $\Delta_t H^\circ$ is used to denote the standard heats of formation of the ions. This convention has been adopted here to emphasize that the heats of formation are referred to the ion convention rather than the electron convention used by thermodynamicists.

1.6.2. Thermochemistry of Positive Ions at Finite Temperatures

Molecular ions. Using the ion convention (also known as the stationary electron convention, see Sec. 1.6.1.) the heat of formation of molecular ion M^+ at temperature T can be defined in terms of the heat of formation of the corresponding neutral species, M, at temperature T, and a quantity labelled $\Delta H_{\rm I}$, the gas phase enthalpy change of ionization, which represents the energy required to bring about ionization at temperature T:

$$\Delta_{f}H(M^{+})_{T} = \Delta_{f}H^{\circ}(M)_{T} + \Delta H_{I}$$
 (28)

In applying Eq. (28), the value for $\Delta H_{\rm I}$ is usually taken to be exactly equal to the adiabatic ionization potential. Although the use of the ion convention obviates the necessity of assigning an exact value to the increase in the ionization energy at temperature T due to energy imparted to the electron, the assumption that $\Delta H_{\rm I}$ is the same as $IP_{\rm a}$ is still not correct. The adiabatic ionization energy of a molecule is the energy difference between the lowest rotational and vibrational levels of the ground

state of the molecule and the lowest rotational and vibrational levels of the electronic ground state of the ion, i.e., the difference between the heats of formation of the molecule and the corresponding ion at absolute zero. The adiabatic ionization energy—the quantity obtained from analysis of a Rydberg series (Sec. 2.3.1.) or from determinations of an ionization onset energy (Sec. 2.3.3.) — is a measure of the $0 \rightarrow 0$ transition, and does not depend on the temperature at which the determination is made.

However, it is a common practice to derive "298 K heats of formation" of positive ions by simply adding the 0 K value for the ionization energy to the 298 K heat of formation of the molecule. This practice probably gains impetus from the fact that much of the available thermochemical data for chemical compounds (particularly for organic and other large polyatomic compounds) correspond to values for heats of formation at 298 K.

The relationship between the enthalpy change associated with ionization at temperature T, $\Delta H_{\rm I}$, and the adiabatic ionization energy is shown in thermochemical cycle 12, and given explicitly in Eq. 18. When using the ion convention for dealing with thermochemistry of the electron (Sec. 1.6.1.), the integrated heat capacity of the electron (the quantity C in the cycle) can be ignored, and the relationship between the adiabatic ionization energy and the enthalpy change of ionization at temperature T is given by:

$$\Delta H_{\rm I} = IP_{\rm a} + B - A \tag{29}$$

That is, IP_a and ΔH_I are the same only when the integrated heat capacities of the neutral molecule, M, and the ion, M⁺, are identical over this temperature range. An analysis²² of the differences between integrated heat capacities of M and M+ for various molecules demonstrated that (a) there will be no discernable differences between the translational and rotational heat capacities of M and M⁺, (b) that differences arising from a splitting of degenerate energy levels in multiplet ground states of M or M⁺ will never be larger than 0.009 eV at temperatures in the 300-400 K range, and (c) when the frequency of a particular vibration changes upon ionization, there will be a difference between the integrated heat capacities of M and M+. However, even this contribution will usually be sufficiently small that a significant error will not be introduced if it is ignored. For example, the lowest ionization energy of ethylene corresponds to removal of an electron from the C-C pi bond, which leads to a lowering of the frequency of the symmetric C-C stretch from 1623 to 1230 cm⁻¹ and a reduction in the frequency of the twisting around the C-C bond from 1027 to 430 cm⁻¹. Although these differences in vibrational frequencies are significant, the predicted effect on the 298 K enthalpy of ionization is to raise it above the value for the adiabatic ionization potential by only 0.0069 eV, i.e. only the most accurate experimental measurements would detect an increment of this size. Thus for most species, the simplifying assumption that the adiabatic ionization energy and the 298 K enthalpy of ionization, $\Delta H_{\rm I}$, are approximately the same:

$$IP_{\rm a} \sim \Delta H_{\rm I}$$
 (30)

will not introduce significant errors in the 298 K heats of formation of molecular radical cations.

In this compilation, most values of heats of formation of molecular ions correspond to 298 K. Most of these were obtained by simply adding the value for the adiabatic ionization energy to the 298 K heat of formation of the neutral species, that is, the assumption stated in Eq. (30) was usually made. Of course, a rigorously correct treatment would require calculating exact values for integrated heat capacities A and B from complete sets of vibrational frequencies for the molecule and the ion. This complete procedure has been applied to only a few of the species listed in this compilation. Vibrational frequencies for most of the ions are not available, and the correction would simply cancel out if one made the often-used assumption that the vibrational frequencies of the ion and its neutral counterpart are the same. Whenever the original authors carried out such a complete analysis (a routine procedure only for photoelectron-photoion coincidence studies), the results of that analysis are included here, and both 0 K and 298 K values for the ion heat of formation are given. In addition, for those diatomic and triatomic and other small molecules for which values for the 0 K heats of formation as well as the vibrational frequencies of the molecule²³ and the ion²⁴ were readily available, the heats of formation of the ion at absolute zero and at 298 K were derived by the more correct procedure. In the course of this work, we did not, however, carry out a comprehensive literature search for sets of vibrational frequencies, but only made use of readily available compilations^{23,24}.

Fragment ions. Analogous arguments can be applied to the use of appearance energies for the derivation of heats of formation of fragment ions, A^+ , at temperature T in Eq. (5). If there are no complicating factors (see Sec. 2.2.), the appearance energy, AP, corresponds to the enthalpy change for the fragmentation reaction 4, and can be used to derive a value for the heat of formation of the fragment ion, A^+ . Correctly, a 0 K heat of formation of A^+ must be obtained using 0 K heats of formation of AB and B in the calculation, and this heat of formation can then be corrected to some other temperature, T, taking into account the vibrational frequencies of the ion and appropriate thermodynamic functions of the elements.

For the most common experimental techniques (energy selected electron impact, photoionization mass spectroscopy, etc.) for measuring the appearance energy of a fragment ion starting from a molecule or radical at temperature, T, the major problem is to identify the internal energies of the reaction products. This matter has been discussed at length by Traeger and McLaughlin²⁵. At *onset* the products of the unimolecular decomposition will be formed with zero translational energy with respect to the center of mass (provided that the fragmenta-

tion does not involve a reverse energy barrier) and a center of mass translational energy the same as that of the precursor molecule. The products thus are at a translational quasi-temperature, T^* . In principle, if the observational time scale of the experiment and the sensitivity of the ion detector are great enough, then the observed appearance energy approaches that for products having 0 K internal energy (i.e., all internal energy modes have contributed to reaching the transition state). Traeger and McLaughlin²⁵ showed that for the molecule AB:

$$AP_{T}(\exp) = \Delta_{t}H[A^{+} + B + e]_{T} - \Delta_{t}H^{\circ}[AB]_{T} + 5/2RT - \int C_{p}[A^{+} + B + e]dT$$
(31)

In effect, this equation corrects the observed threshold energy for the fragmentation process to an effective 0 K value by adding the thermal rotational and vibrational energy contained in AB to the onset.

Most heats of formation of fragment ions are derived making the simplifying assumption that the last two terms of Eq. (31) will cancel one another. That is, values for heats of formation of fragment ions at 298 K derived from appearance potential data are more often obtained by simply using an observed onset energy and 298 K heats of formation of relevant neutral species in Eq. (5). When such a value for a heat of formation has been reported in the literature, the value is given here as it appeared in the original paper, with only the imposed requirement that the thermochemistry of the relevant neutral species employed must be internally consistent with the values of those species used in this publication. Where the original authors have used a more sophisticated analysis, such as that represented by Eq. (31), or that routinely used in the interpretation of photoelectron-photoion data, both 0 K and 298 K values of the ion are cited. The user should be cautioned that the 298 K value assigned to a heat of formation of a fragment ion may differ by as much as 3 or 4 kcal/mol, 12-18 kJ/mol, depending on which of these treatments has been used. For example, Baer and Brand²⁶, and Lossing²⁷ determined the appearance energies for formation of C₄H₇⁺ ions in C₅H₁₀ isomers. Although the appearance energies reported in the two studies were almost identical, the 298 K values for heats of formation of the C₄H₇⁺ ions derived by Baer and Brand²⁶, using a complete treatment of the temperature dependence of the heat of formation, are higher than the values derived by Lossing²⁷ by 4.3 kcal/mol, 18 kJ/mol.

1.6.3. Thermochemistry of Negative Ions at Finite Temperatures

The electron affinity is a quantity which is analogous to the ionization energy. That is, the electron affinity is a 0 K quantity which corresponds to the transition from the ground state of the neutral species to the ground state of the anion. Thus, the heat of formation of an anion at 298 K can not rigorously be taken as the heat of formation of the corresponding neutral species (298 K) minus the (positive) electron affinity (0 K) without some

estimate of the temperature dependence of the electron affinity. Although the use of the ion convention ("stationary electron" convention) allows one to ignore the integrated heat capacity of the electron, a term for correcting for the integrated heat capacity of the anion from 0 K to 298 K is required. Statistical mechanics permits a calculation of this quantity if the structure and vibrational frequencies of the anion are known. However, at present the necessary data are not readily available for most anions, and therefore this correction is generally ignored in this work.

Under the assumption that the temperature dependence of the electron affinity and that of the ionization energy of the H atom are equal, one can relate the (298 K) gas phase acidity, Eq. (10), to the (0 K) electron affinity:

$$\Delta_{\text{acid}}H(AH) = D(A-H) - EA_{0K}(A) + IP_{0K}(H) \quad (32)$$

There is not extensive data on the validity of this assumption, although it appears to hold ¹³ to ± 2 kJ/mol for Cl⁻ and OH⁻.

2. Positive lons

In the discussion which follows, a brief description of the Franck-Condon principle along with a discussion of the implications for an analysis of data obtained from experimental determinations of ionization energies will be given in Sec. 2.1. In Sec. 2.2., special problems in the interpretation of appearance potential data will be summarized, followed in Sec. 2.3. by short descriptions of the various experimental techniques used in obtaining the data given here, with attention to intrinsic experimental problems which may affect the reliability of data. Section 2.4. will give a discussion of the rationale used in evaluating ionization energy and appearance energy data from the various approaches, and a description of the conventions and symbols used in the tables. Finally, Sec. 2.5. summarizes a few of the regular trends observed in the data, and describes schemes for estimating data on heats of formation of positive ions.

Detailed discussions of the ionization process and of the experimental techniques used in studying ion chemistry, as well as of thermodynamics, are available in many books and reviews. Therefore, no attempt will be made to present a comprehensive discussion or review of these subjects. Rather, attention will be given only to those aspects which have a bearing on the evaluation of data on ionization energies, appearance energies, or ion/ molecule equilibrium constants.

2.1. The Evaluation of Experimentally-Determined Ionization Energies:

The Franck-Condon Principle

Ionization of a molecule by photoionization or by electron impact is governed by the Franck-Condon prin-

ciple, which states that the most probable ionizing transition will be that in which the positions and momenta of the nuclei are unchanged^{28,29}. Thus, when the equilibrium geometries of an ion and its corresponding neutral species are closely similar, the energy dependence of the onset of ionization will be a sharp step function leading to the ion vibrational ground state. However, when the equilibrium geometry of the ion involves a significant change in one or more bond lengths/angles from that of the neutral species, the transition to the lowest vibrational level of the ion is no longer the most intense, and the maximum transition probability (the vertical ionization energy) will favor population of a higher vibrational level of the ion; if the geometry change is great, it is possible that the transition to the lowest vibrational level of the ion will not even be observed. These situations are illustrated for hypothetical diatomic species in Fig. 1.

In evaluating ionization energy data, the shapes of photoelectron bands are useful indicators as to which of the situations pictured in Fig. 1 prevails for the particular molecule. A sharp onset indicates that the equilibrium geometries of ion and neutral are quite similar, and that photoionization or electron impact determinations of the ionization threshold are likely to be free of complications. When an ionization process proceeds according to the second situation pictured in the figure, the *onset* of the photoelectron band is observed approximately at the adiabatic ionization energy; adiabatic ionization energies derived from observation of the onsets of photoelectron bands are usually in excellent agreement with adiabatic ionization energies obtained from analyses of Rydberg series or from the most reliable threshold determinations.

When the equilibrium geometry of the ion is very different from that of the corresponding neutral molecule and the lowest vibrational level is not populated in ionization by photon absorption or electron impact, it has been shown that values for the adiabatic ionization energies can be obtained by determining the equilibrium constant for charge transfer to another molecule of known ionization energy:

$$A^+ + B \rightleftharpoons B^+ + A \tag{33}$$

The enthalpy change for this reaction, which (Sec. 2.3.5.) is obtained from the equilibrium constant determination, is just the difference between the enthalpies of ionization, $\Delta H_{\rm I}$, of species A and B. As shown above (Sec. 1.6.) this difference is likely to be quite close to the difference in the adiabatic ionization energies:

$$\Delta H(33) = [\Delta H_{\rm I}(B) - \Delta H_{\rm I}(A)] \sim [IP_{\rm a}(B) - IP_{\rm a}(A)] (34)$$

In such determinations, the ions are at thermal equilibrium with their surroundings, and one measures the thermochemical properties of the ions in their equilibrium geometries.

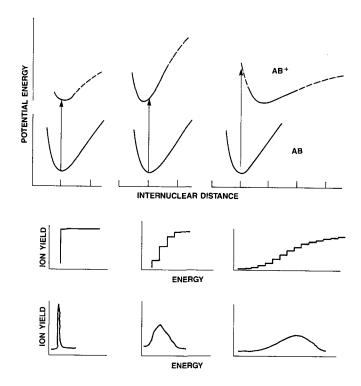


Fig. 1. Potential energy curves for hypothetical diatomic molecule AB, and the corresponding positive ion, AB⁺ for the cases in which the equilibrium internuclear distance is (a) the same, (b) slightly different, or (c) greatly different. Below the potential energy curves are hypothetical probabilities for ionization as a function of energy for cases (a), (b), and (c), and, at bottom, shapes of observed photoelectron bands for the three corresponding cases.

2.2. Interpretation of Appearance Energies

In the discussion above, the appearance energy for formation of a fragment ion (reaction 4) was defined, and Eqs. (5) and (31), for obtaining values for the heat of formation of the fragment ion, were derived, with the proviso that the equations were valid only when there is no potential barrier in the reaction coordinate, and no significant "kinetic shift" associated with the determination

The "kinetic shift" 2,30,31 is the term applied to describe the experimental observation of ionization onsets which are higher than the thermodynamic onset energy due to the fact that the apparatus samples the (fragmenting) ions at a certain time (usually around 10⁻⁵ s) after ionization has occurred, when ions undergoing a slow fragmentation process have not yet had time to dissociate. One approach for getting around this problem is an analysis based on the determination of the so-called rate-energy curve for a given fragmentation, in which the rate constant of the dissociating ion is derived as a function of energy. This kind of information is derived by analysis of the data from an elegant technique which is, moreover, capable of delivering very accurate thermochemical information for fragmentation processes, photoelectronphotoion coincidence spectroscopy (PEPICO)³². Another approach to detecting a barrier in the reaction

coordinate is the determination of the kinetic energy carried off by the fragment ion. Studies of metastable peaks, for example, permit such an evaluation³³.

2.3. Experimental Techniques

The 1977 evaluated compilation included an extensive review of the experimental techniques which provide ionization energy and appearance energy data, along with a detailed description of how the data derived from each type of experiment are interpreted to give ionization energies^{2,31}. Although technological advances have been made in mass spectrometric instrumentation since that review was written, the detailed presentation given there is still recommended reading for anyone interested in an in-depth description of the basic principles of the various approaches. For the present purposes, it will suffice to summarize briefly the different types of experiments from which the data presented here originate, and to give some general indications of the strengths and limitations of the different techniques, and how these influence the evaluator in arriving at a recommended value for an ionization energy.

2.3.1. Optical Spectroscopy

The identification of a Rydberg series in an atomic or molecular spectrum leads to a value for the ionization energy; in cases where the analysis of the spectrum is straightforward, the spectroscopic ionization energy values are highly accurate. The determination of atomic ionization energies through optical spectroscopy is a highly developed field which has been extensively reviewed. A large fraction of atomic ionization energies listed here are from expert evaluations of atomic spectra³⁴. In the evaluation of ionization energies of atoms and diatomic molecules, spectroscopic ionization energies have been chosen where they are available. For polyatomic species, a value derived from an analysis of the optical spectrum has been given great weight, unless several determinations from other highly reliable techniques are in conflict with the spectroscopic value. As pointed out by Rosenstock^{2,31}, the evaluation of molecular Rydberg series is not always straightforward, and reported spectroscopic ionization energies of polyatomic species may disagree with values derived from ionization onset determinations or the onsets of photoelectron bands due to complications in the analysis of vibrational and rotational structure.

2.3.2. Beam Studies Involving Laser Photoionization

In the years since the cut-off date of the literature search for the previous volume of this series², several highly accurate ionization energy values have been reported based on multi-photon ionization of vibrationally-cooled species in a molecular beam³⁵. In these studies, a vibrationally and rotationally cooled beam of molecules

is raised to a specific excited state by irradiation with a tunable laser; while this excitation energy is held constant, a second independently tunable laser is used to ionize the beam of excited molecules, with the photon energy being tuned through the ionization onset. The excitation laser is then tuned to a different transition, and the ionization scan is repeated. In this way, the entire Franck-Condon accessible region of the intermediate electronic state is mapped out, insuring that the molecular geometry corresponding to the adiabatic ionization energy is accessed. Since every intermediate vibronic state leads to an independent value of the ionization threshold, the experiment contains an internal consistency check.

2.3.3. Determination of Ionization/Appearance Energies by Threshold Techniques

In the several techniques which fall under this heading, the onset of ionization or of the appearance of a particular fragment ion is detected as a function of the energy of the ionizing agent, either photons or an electron beam. The most obvious problem which must be considered with regard to this technique is the accurate characterization of the energy of the ionizing medium, photons or electrons. When ionization is brought about by photon absorption, this is usually not a problem; monochromators capable of delivering photons with a high energy resolution are available. The most sophisticated photoionization experiments involve detection of energy-selected electrons; in the so-called "threshold photoelectron spectroscopy" technique, only those photoelectrons which correspond to essentially zero energy of ejection are detected.

In the past, many experimental determinations of ionization onsets were carried out in instruments in which ionization was effected by bombarding the sample of interest with an electron beam in which the electrons had a known energy. This technique, called "electron ionization" or in the older literature, "electron impact", resulted in many determinations which were unreliable because of the energy spread of the electrons in a conventional beam. Several approaches have been utilized to overcome this problem; the most successful has been the use of a so-called "electron monochromator", in which the energy of the electron beam is narrowly defined by passing the beam through electron energy selectors of various designs^{31,36,37,38,39}. Results obtained using electron beams with well-defined energies are in excellent agreement with analogous results derived from determinations of photoionization thresholds. At this writing, reliable data on ion thermochemistry are being obtained from experiments of this sort. Although studies are still being published which report ionization energy and appearance energy data from less accurate electron ionization techniques, the intent of the authors of those studies is rarely to examine the thermochemistry of the ionization process.

In the powerful threshold technique known as photoelectron-photoion coincidence (PEPICO)³², the thermochemistry and detailed mechanism of an ionic fragmentation process can be mapped out very accurately. Ejected electrons which originated with "zero" kinetic energy are matched with their corresponding positive ions. At energies where parent ions, M⁺, are undergoing dissociation to form one or more fragment ions, one obtains the relative probabilities for the formation of the daughter ions from parent ions of known energy (i.e. the breakdown curve). The ions can be detected at differing times after the ionization event for the determination of the time dependence of the dissociation process. The complete interpretation of such data requires a modeling of the dissociation using statistical theories of unimolecular decomposition (i.e. quasi-equilibrium/RRKM theory)40,41. As pointed out by Dannacher in a recent review³², in spite of its great strengths, this technique has not been widely utilized, possibly because of the intricate instrumentation required, the complexity of the data analysis, and the fact that each determination requires the investment of a great amount of time on the part of the experimentalist.

To summarize, intrinsic problems associated with threshold determinations of ionization energies are: a) the difficulty of detecting the onset when there is a large change of molecular geometry in the ionization process, as discussed in Sec. 2.1.; and, b) the observation of ionization at energies below the adiabatic ionization energy when there is a significant population of vibrationally excited molecules in the system ("hot bands").

2.3.4. Photoelectron Spectroscopy

It is also possible to determine the energy change associated with ionization process 1 by effecting ionization with a photon of well-defined energy and measuring the energy of the ejected electrons:

$$M + h\nu \rightarrow M^+ + e \tag{35}$$

where

$$KE(e) = h\nu - I - E*(vib,rot)$$
 (36)

(where E^* (vib,rot) is the internal energy of M^+ and I is the binding energy of the electron).

The most widely-used technique of this type is conventional photoelectron spectroscopy⁴² in which the photon sources are usually the helium resonance lines of 58.4331 nm (21.218 eV) or 30.3781 nm (40.813 eV); some work is done with neon resonance lines (73.589 nm and 74.370 nm, 16.848 and 16.671 eV) or other intense monochromatic sources. In such an experiment, the ejected electrons will have differing energies depending on the distribution of energy levels in the M^+ ions formed; a map of the abundances of the electron as a function of energy is called the photoelectron spectrum. As described in Sec. 2.1., the shapes of the photoelectron bands will reflect not only the energy differences in the different states of M^+ but the $M \to M^+$ transition proba-

bilities as governed by the Franck-Condon principle. In cases where the equilibrium geometry of the ion and the corresponding neutral are the same or are similar, it is found that the observed onset of the first photoelectron band is usually a reliable indicator of the adiabatic ionization potential (see Fig. 1).

2.3.5. Ion/Molecule Equilibrium Constant Determinations

This evaluation takes into account (although previous works in the series did not) all information on ion thermochemistry generated by ion/molecule equilibrium constant determinations.

An ion/molecule equilibrium:

$$A^+ + B \rightleftharpoons C^+ + D \tag{37}$$

is established in a high pressure mass spectrometer⁴³, flow tube⁴⁴, or ion cyclotron resonance spectrometer⁴⁵, and the equilibrium constant is determined by observing the relative abundances of the two ions, A⁺ and C⁺, after a large number of collisions:

$$K_{eq} = \frac{[C^+][D]}{[A^+][B]}$$
 (38)

The neutral reactants, B and D, are present in great abundance compared to the ionic reactants, and therefore, the ratio [D]/[B] does not change as equilibrium is established. A single measurement leads to a value for the Gibbs energy change of reaction 37 at the temperature of the measurement, while a series of measurements at different temperatures permits an experimental evaluation of the entropy and enthalpy changes associated with the reaction:

$$-RT \ln K_{\rm eq} = \Delta G = \Delta H - T\Delta S \tag{39}$$

In practice, many studies have been published in which measurements were made at a single temperature, the (usually small) entropy change for the reaction was estimated from statistical mechanical considerations (usually just from consideration of changes in symmetry numbers), and the corresponding enthalpy change was derived from these two pieces of information.

Published ion/molecule equilibrium studies involving cations provide data on charge transfer (reaction 33), proton transfer (reaction 6), and hydride or halide transfer equilibria:

$$R_1^+ + R_2 X \rightleftharpoons R_2^+ + R_1 X$$
 (40)

(where X is H, F, Cl, Br, or I). Studies of hydride transfer and halide transfer equilibria have led to quantitative information about the relative heats of formation of alkyl carbocations. These data were used to supplement information from appearance potential determinations in evaluating heats of formation of alkyl carbocations.

Most ion/molecule equilibrium studies involving positive ions have been devoted to the derivation of an extensive (more than 100 kcal/mol in length) scale of relative proton affinities (see Eqs. (7) and (8)). The results were mainly derived from interlocking ladders of enthalpy changes for reaction 6. These data have recently been evaluated to establish internal consistency⁴. Most of the values for heats of formation of protonated molecules given in this evaluation are taken from that publication. When this is the case, no specific literature reference is given, it being understood that the source is the evaluated compilation⁴.

As noted above (reaction 33), in determinations of charge transfer equilibrium constants, the difference in the ionization energies of two reacting molecules is obtained. A thermochemical ladder of relative ionization energies determined in this way²² closely reproduces the equivalent scale of spectroscopic ionization energies, thus demonstrating the reliability of the approach for deriving information on relative ionization energies. The most useful application of this approach for ionization energy data has proved to be the determination of ionization energies for species which undergo a large change of geometry upon ionization (case 3 in Fig. 1), and which therefore exhibit very slow onsets of ionization as a function of energy. For example, the only reliable data on the adiabatic ionization energies of n-alkanes⁴⁶ and of alkyl hydrazines^{47,48} come from thermochemical ladders established through equilibrium constant determinations.

The main uncertainty associated with this technique, aside from the necessity of relating the thermochemical ladder to a reliable comparison standard, is the temperature of the reacting system. However, the reproduction of relative spectroscopic ionization energies through equilibrium measurements²² demonstrates that this is not a serious problem.

2.3.6. Ion/Molecule Bracketing Experiments

There are some ion/molecule systems for which an equilibrium can not be established in an ion source, either because one of the relevant neutral species is unstable (e.g. a radical or unstable molecule) or because of competing reactions in the system. In such cases, it is sometimes possible to obtain an experimental estimate of the enthalpy change of a particular reaction (charge transfer, proton transfer, hydride transfer, etc.) by use of a technique known as "bracketing" in which the ion of interest is reacted with a series of molecules chosen for variations in the relevant thermochemical parameter (proton affinity, ionization energy, etc.). The occurrence, and sometimes the rate constant, of reaction is monitored as a function of the parameter of interest; the approximate onset energy is usually assumed to lie on the energy scale at a point where the rate of reaction becomes very slow. Few data in this work are derived from such measurements, but in cases where heats of

formation are derived from this kind of experiment, a specific comment describes the experiment.

2.3.7. Onsets of Endothermic Reactions

Several pieces of data given here have been derived from an analysis of the enthalpy changes of endothermic ion/molecule reactions. Although some such information has been obtained from straightforward kinetic treatments (Arrhenius plots) of the temperature dependences of the rate constants of endothermic ion/molecule reactions^{49,50} recent quantitative studies^{51,52,53} cover a much broader energy range by generating a beam of energy- and mass-selected ions which is focussed into a collision chamber containing the reactant gas; product ions are detected as a function of the energy of the ions in the beam.

2.3.8. Other Techniques

Essentially all of the ionization potentials and heats of formation of positive ions included in this evaluation have been derived from results obtained using the experimental approaches listed above. Several additional tech-(Auger electron spectroscopy, ionization, Born-Haber cycle calculations, and analyses of so-called charge transfer spectra) were described in the Introduction to the 1977 compilation^{2,31} but are not widely used for the quantitative determination of data of interest to this compilation. Such data, when available, have been taken into account in the evaluation, except for ionization energies derived from charge transfer spectra. The latter technique is mainly used for obtaining values for ionization potentials of compounds of low vapor pressure. Since the cut-off date for inclusion of literature in the 1977 volume, numerous quantitative determinations of ionization energies for such species, mainly by photoelectron spectroscopy or by ion/ molecule equilibrium constant determinations, have appeared in the literature. These have made the charge transfer spectra data obsolete for many species. Since it is generally seen that the gas phase ionization potentials derived from charge transfer spectra may be very inaccurate, all these data have been ignored in the present volume.

2.4. Reliability of Ionization Energy Data and Criteria for Evaluation

2.4.1. Comparisons between Results of Different Techniques

The data on ionization energies summarized here are derived from the different types of measurements described above, and are consequently of widely varying quality, not only because the accuracies of the measurement techniques differ, but also because of differences in the focusses of the research in which the measurements were made. For example, many of the ionization energies reported for inorganic species were never intended by the original authors to be quantitative ionization

energy measurements, but are simply qualitative indicators of whether or not a given ion observed in the vapor over a heated Knudsen cell has been formed by electron impact ionization of the corresponding neutral species (in which case it exhibits an onset at a relatively low energy) or through fragmentation of a molecular ion (which would correspond to a higher onset energy). In these experiments, error limits of 0.5 to 1 eV are commonly cited by the original authors. Similarly, most photoelectron spectroscopic studies are carried out for the purpose of examining molecular orbital energy levels; thermochemistry is not a concern, and often, although the accuracy of the measurements is very high, only vertical ionization energies, which are not necessarily related to thermochemical onsets, are reported.

Because many of the values for ionization energies given here are derived from evaluations of several different determinations carried out using different techniques, there is no specific indication in Table 1 of an experimental method associated with a particular value. In carrying out the evaluation, an attempt was made to integrate the entire corpus of information about any given ion, giving weight to various determinations depending on the nature of the ionization onset, the measurement techniques used, the attention to detail by the original authors, and so forth. Usually (but not always) a spectroscopically-determined ionization energy was considered more reliable than a contradictory value obtained by observation of an ionization threshold. A value obtained from an observed ionization onset using photoionization or an electron monochromator was considered more reliable than an onset obtained using less accurate techniques. In all of these cases, an observed onset of a photoelectron band was given great weight in carrying out the analysis, with values from any of the above three techniques being downgraded if they did not match the photoelectron onset (unless, of course, the differences could be rationalized in terms of the principles outlined above).

As mentioned above, many photoelectron spectroscopy studies do not cite values for adiabatic ionization potentials. In these cases, where the authors have provided a figure showing the photoelectron spectrum, it is usually possible to estimate from the figure the value for the adiabatic onset; where adiabatic ionization energies have been obtained in this way, a specific comment to that effect is made.

Data derived from ion/molecule equilibrium constant determinations have been utilized as an aid in evaluating information obtained from other sources. For example, where scales of relative ionization energies were available from equilibrium constant determinations, internal consistency with these scales was required in the assigned ionization energy or heat of formation values. Where this was not possible, a specific comment spells out the discrepancy. As described in Sec. 2.3.5., ionization energy values derived from equilibrium constant determinations provide the only values for ionization energies of species which undergo large changes of ge-

ometry upon ionization such as normal alkanes with six or more C-atoms⁴⁶, or hydrazines^{47,48}. When an ionization energy has been obtained solely from this approach, the source of the data is indicated in a comment, and the identity of the reference compound is given.

Heats of formation of protonated molecules derived from the evaluated proton affinity scale⁴ are taken from that publication. More recent data are included, with the internal consistency requirement rigorously maintained. The value for the corresponding proton affinity of the molecule is given in a comment. Note that to locate a value for a proton affinity, one must look under the empirical formula of the corresponding protonated molecule, i.e. the proton affinity of methane is located by looking under CH₅. When data from recent publications are given, the literature source is specifically cited.

2.4.2. Reliability of Data; Error Limits

Ionization Energies. The experimentally-determined ionization energies collected here display widely varying uncertainties, ranging from ± 0.0001 eV or smaller for some spectroscopic or multiphoton-laser determinations to ± 1 eV for measurements carried out on the vapor above a heated Knudsen cell. The error limits associated with a particular ionization energy are specifically listed when the original work(s) gave an estimate of this quantity. In other cases, the error limits are indicated by the number of significant figures displayed; in these cases, it can be assumed that the error limits are five times the last significant figure displayed.

Some of the ionization energy values are shown enclosed in parentheses. Data enclosed in parentheses are considered not to be firmly established for one of three reasons:

- (1) The measurement itself must be considered unreliable (as in, for example, threshold determinations in which the energy spread of the electrons was not well defined).
- (2) The relevant ionization energy has been determined more than once but with poor agreement between the different results, and there is no auxiliary information available which allows a choice between the divergent values. In such cases, the evaluation gives either (a) the value determined by the most reliable technique, or (b) an average of two or more values determined by the same technique, with error limits indicating the scatter in the data. In a very few cases where the scatter in the reported values is very great or where the value obtained by the "most reliable" technique appears to be specious, no evaluated ionization energy is cited, but a note is included which lists the various determined values.
- (3) Parentheses are also used to indicate data which are unevaluated. That is, when a particular molecule has been studied only once, and additional information which would permit one to judge the reliability of the data is unavailable, the ionization energy is given exactly as it appears in the original reference but is enclosed in

parentheses. Many of these untested determinations are undoubtedly reliable; the cited error limits and the number of significant figures shown in the table will give an indication of the probable reliability of the technique by which such a value was obtained.

As described above, some ionization energy values were obtained by reading onsets of photoelectron bands in figures reproduced in papers, where the original authors did not assign a numerical value to the band onset. In every such case, a specific comment is made indicating that the value has been derived from a figure. The accuracy with which such onsets can be read should be assumed to be not better than 0.1–0.2 eV, except where the authors have given an enlarged view of the band onset, in which case, an additional significant figure is cited. When a figure was not given, the lowest vertical ionization potential from the original paper is cited as the upper limit to the adiabatic ionization energy.

Heats of Formation. The cited heats of formation of ions necessarily reflect both the uncertainties in the ionization (or appearance) energy values and the uncertainties in the heats of formation of the relevant neutral species. Values of ionic heats of formation which are not firmly established - either because of a poorly established ionization/appearance energy or because of large uncertainties in the heat of formation of the neutral species - are shown enclosed in parentheses.

Although the values which were used for heats of formation of neutral species will be discussed separately in Sec. 4, it should be emphasized here that many of these data are based on estimates. Some of the estimation schemes for particular classes of compounds are sophisticated and well-documented, and can be considered to lead to values for heats of formation which are as reliable as most experimental data. Other estimations have been carried out by various authors with varying degrees of attention to complexities, or in some cases, with little or no documentation about how the estimate was accomplished. A large fraction of the estimates used were made specifically for this publication, and even among this fraction, there is a broad spectrum of quality depending on the size of the network of related information which was available. Rather than try to sort out and make judgments about the quality of each estimate of the heat of formation of a neutral molecule, the policy has been followed of enclosing in parentheses each ion heat of formation based on an estimated value for the heat of formation of relevant neutral molecules or radicals; this practice is not meant to disparage the quality of the estimated data, but simply to alert the reader to the fact that it is being used. As a first approximation, the user can assume that the reliability of an estimate varies inversely with the complexity of the molecule.

2.5. Trends in the Data

2.5.1. Estimation Schemes for Heats of Formation of Cations

Within the past few years, a sufficient amount of reliable information on ionization energies and heats of formation of many classes of positive ions has become available so that regular trends as a function of molecular size and structure can be discerned. These can be used to develop empirical schemes for estimating ionization energies and/or heats of formation of cations. Since ionization energies for a homologous series do not have a linear dependence on molecular size, values for heats of formation of ions can not be reproduced satisfactorily by simple additivity systems like those in widespread use for the prediction of thermochemical data for neutral molecules. The predictive schemes put forward to date utilize equations which are empirical.

One series of several papers^{54,55,56,57} presents a scheme which is designed to predict values for the heat of formation of positive ions at 298 K from equations of the form:

$$\Delta_f H(M^+) = A - Bn + C/n \tag{41}$$

where A, B, and C are constants derived from the data for any particular series, and n is the total number of atoms in the molecule. The parameters derived in the paper of Holmes, Fingas, and Lossing⁵⁴ for predicting heats of formation of the parent ions of several common classes of compounds are listed in Table 2.5.1.1.

This method works because to an excellent approximation, the ionization energies of a homologous series vary linearly as n^{-1} , as expressed in the term C/n in Eq. (41). The other two terms, A and Bn, reflect the additive nature of heats of formation of neutral molecules. Also, for molecules in which there is multiple substitution by characteristic groups on charge-bearing atoms or at the position of charge delocalized pi-electron systems, good straight-line relationships exist between ionic heats of formation and the logarithm of the number of atoms (i.e. ion size). Such correlations permit reasonably accurate estimates of ion enthalpies of formation 54,55,56,57 .

Bachiri, Mouvier, Carlier, and DuBois⁵⁸ have advanced a scheme for the estimation of ionization energies of alkenes, alkynes, aldehydes, ketones, alcohols, ethers, mercaptans, and thioethers. Their empirical equation takes the form:

$$\log_{10} \frac{IP(R_1XR_2) - IP_{\infty}}{IP_0 - IP_{\infty}} = 0.106[I(R_1) + I(R_2)]$$
 (42)

where X is a functional group (i.e. -CH=CH- or $>C=CH_2$ for alkenes, -O- for alcohols and ethers, >C=O for aldehydes and ketones, etc.), R_1 and R_2 are the attached alkyl groups, IP_0 is the ionization potential of the reference compound for which $R_1 = R_2 = H$. IP_{∞} in Eq. (42) is a constant for each compound type. (A modification of this scheme which does away with the need for the parameter IP_{∞} has also been put forward recently. Table 2.5.1.2. lists the constants for the alkyl substituent groups and the different compound types (modified slightly from the values given in the original publication to predict adiabatic rather than vertical ionization energies).

TABLE 2.5.1.1. Estimation scheme^c of Holmes, Fingas, and Lossing⁵⁴: $\Delta_f H(M^+) \text{kcal/mol} = A - Bn + C/n$

	kcal/mol ^a				
Compound Type	A	В	\boldsymbol{C}	Correction Terms	
Alkanes	224	2.2	298	For each branch: -3	
1-Alkenes	231.6	1.61	110	For each branch on C-2: -13	
				For each remote branch: -2.5	
x-Alkenes	219.6	1.61	110	For each branch on $=$ C: -13	
				For each branch elsewhere: -2.5	
				One cis correction: $+1$	
				Two cis corrections at one double bond: $+3$	
				If one group is t-butyl: +4	
				If both groups are t-butyl: +10	
l-Alkynes	278	1.57	110	For each branch: -4	
2-Alkynes	260	1.58	110	For each branch: -4	
3-Alkynes	257	1.57	110	For each branch: -4	
l-Alkynes	257	1.57	110	For each branch: -4	
5-Alkynes	256	1.57	110	For each branch: -4	
Alkanols	175	1.59	216	For each branch adjacent to $-OH: -6$	
				For each branch elsewhere: -2	
Aliphatic ethers	157	1.41	368	For each branch adjacent to $-O-:$ -6	
				For each branch elsewhere: -3	
				^b Asymmetry correction per carbon: +1	
Aliphatic	188	1.65	135	For each branch adjacent to $C=0: -5$	
				For each branch elsewhere: -3	
Aliphatic ketones	166	1.78	252	For each branch adjacent to $C=OD: -3.5$	
				^b Asymmetry correction per carbon: +1.5	
Alkanoic acids	142	1.90	112	For each branch adjacent to $C=0$: -3.5	
				For each branch elsewhere: -1.5	
Chloroalkanes	236	1.98	57	For each branch adjacent to halogen: -5	
				For each branch elsewhere: -3	
Bromoalkanes	219	1.40	115	For each branch adjacent to halogen: -5	
				For each branch elsewhere: -3	
lodoalkanes	222	1.69	44	For each branch adjacent to halogen: -5	

^aConstants are given here in the units used in the original paper⁵⁴.

^cn is the total number of atoms in the molecule.

A comparison of ionization energy values⁵⁸ or heats of formation of cations⁵⁴ predicted from expressions 41 or 42 with the corresponding evaluated experimental values is given in Table 2.5.1.3. For both predictive schemes, the agreement between estimated values and experiment is generally quite good — good enough to inspire confidence in the use of the equations for filling in blanks in the data series.

As pointed out in one of the papers advancing these empirical estimation schemes⁵⁴ the equations are "not only useful for predicting new $\Delta_t H$ values, but also for revealing misfits which could indicate incorrect values for $\Delta_t H$ ° (Neutral) or the ionization energy, or, more interestingly, an ion structure having special stabilizing or destabilizing properties." In fact, the trends described by these equations were routinely examined in evaluating the data for just these reasons.

2.5.2. Correlations of Ionization Energies with Proton Affinities or Substituent Constants

The proton affinity of molecule M, defined by Eq. 7, is equal to the M-H⁺ bond energy of the MH⁺ ion. The

M⁺-H bond energy is called the hydrogen affinity (HA) of M⁺:

$$M^+ + H \xrightarrow{-HA} MH^+$$
 (43)

Consider the thermodynamic cycle, constructed from reactions 7 and 43:

$$M + H^{+} \xrightarrow{-PA} MH^{+}$$

$$\downarrow IP(M) \downarrow -IP(H) \downarrow \qquad (44)$$

$$M^{+} + H \xrightarrow{-HA} MH^{+}$$

From cycle 44 we write:

$$PA(M) = HA(M^{+}) + IP(H) - IP(M)$$

= $HA(M^{+}) + 13.6 \text{ eV} - IP(M)$ (45)

If the hydrogen affinity were a constant for a given compound type, the proton affinity values would vary linearly with the ionization potentials for a homologous

bAsymmetry correction for ethers and ketones having different numbers of C-atoms on either side of the functional group is based on the smallest numbers of C-atoms which must be transferred to give the most symmetrical species, e.g. for methyl pentyl ketone, +3 kcal/mol.

TABLE 2.5.1.2. Estimation scheme of Bachiri, Mouvier, Carlier, and DuBois⁵⁸: $IP(\mathbf{R}, \mathbf{XR}_A) = IP$

$\log_{10} \frac{IP(R_1XR_2) - IP_{\infty}}{IR}$		0.106[I(R ₁)		I(R.)]
$IP_0 - IP_{\infty}$	_	0.100[1(10])	т	1(1(2))

	X	<i>IP₀</i> (eV)	$IP_{\infty}(eV)$
-C≡C-	(Alkynes)	11.400	6.577
-HC=CH-	(Alkenes)	10.507	6.849
$>C=CH_2$	(Alkenes, gem)	10.737	6.814
-(C=O)-H	(Aldehydes except CH ₂ O)	12.063	3.575
>C=O	(Ketones)	13.334	3.936
-OH	(Alcohols)	12.607	(3.7)
-O-	(Ethers)	12.612	5.483
-S-	(H ₂ S, Thiols, Thioethers)	10.473	5.725
	R	I	
	Н	0 (Convention)	
	Methyl	1 (Convention)	
	Ethyl	1.166	
	n-Propyl	1.271	
	i-Propyl	1.291	
	n-Butyl	1.330	
	s-Butyl	1.400	
	i-Butyl	1.358	
	t-Butyl	1.394	
	n-Pentyl	1.340	
	i-Pentyl	1.389	
	neo-Pentyl	1.369	
	t-Pentyl	1.479	
	s-Pentyl [-CH(C ₂ H ₅) ₂]	1.462	
	n-Hexyl	1.355	
	t-Hexyl [-C(CH ₃) ₂ (n-C ₃ H ₇)]	1.524	
	t-Hexyl $[-C(CH_3)_2(i-C_3H_7)]$	1.570	
	neo-Hexyl [-CH ₂ CH ₂ C(CH ₃) ₃]	1.360	

TABLE 2.5.1.3. Comparison of ionization energies/heats of formation with estimated values predicted from estimation schemes^a

			Holm	es et al. 54	Bachir	et al. 58
Compound	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H/({\rm Ion})}{({\rm kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H({ m Ion})}{({ m kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H({\rm Ion})}{({\rm kJ/mol})}$
Alkynes	_					
CH₃C≡CH	10.36	1186	[10.34]	1184	10.36	[1184]
$C_2H_5C=CH$	10.178	1147	[10.13]	1142	10.21	[1151]
$n-C_3H_7C \equiv CH$	10.05	1113	[10.04]	1113	10.11	[1121]
n-C₄H ₉ C≡CH	(9.95)	(1079)	[10.02]	1088	10.06	[1092]
$n-C_5H_{11}C \equiv CH$	(10.04)	(1071)	[9.93]	1063	10.06	[1075]
$n-C_6H_{13}C \equiv CH$	(9.95)	(1038)	[9.93]	1038	10.04	[1046]
$i-C_3H_7C \equiv CH$	9.97	1096	[9.95]	1096	10.10	[1109]
$i-C_3H_7C \equiv CCH_3$	9.31	996	[9.32]	996	9.33	[996]
t-C₄H ₉ C≡CH	(9.80)	(1050)	[9.80]	1050	10.01	[1071]
$CH_3C = CCH_3$	9.562	1068	[9.55]	1067	9.54	[1067]
$C_2H_5C = CCH_3$	9.44	1038	[9.43]	1038	9.42	[1038]
$n-C_3H_7C \equiv CCH_3$	9.366	1013	[9.37]	1013	9.35	[1013]
$n-C_4H_9C \equiv CCH_3$	(9.33)	(983)	[9.37]	987	9.31	[983]
$n-C_5H_{11}C = CCH_3$	9.31	962	[9.32]	962	9.30	[958]
$n-C_6H_{11}C = CCH_3$	(9.30)	(941)	[9.28]	941	9.29	[941]
$C_2H_5C = CC_2H_5$	9.323	1004	[9.28]	1000	9.31	[1004]
$n-C_3H_7C = C_2H_5$	(9.26)	975)	[9.24]	975	9.24	[975]
$n-C_4H_9C = CC_2H_5$	9.22	954	[9.19]	950	9.20	[950]
$n-C_5H_{11}C = CC_2H_5$	9.20	929	[9.19]	929	9.19	[929]
$n-C_6H_{13}C = CC_2H_5$	9.19	908	[9.19]	908	9.18	[908]

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

TABLE 2.5.1.3. Comparison of ionization energies/heats of formation with estimated values* — Continued

				es et al. 54		i <i>et al</i> . ⁵⁸
Compound	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H/({\rm Ion})}{(1.1/m-1)}$	<u>IP</u>	$\frac{\Delta_{\rm f}H({\rm Ion})}{(1+1)^{2}}$	$\frac{IP}{I}$	$\Delta_{\rm f}H({ m Ion})$
	(eV)	(kJ/mol)	(eV)	(kJ/mol)	(eV)	(kJ/mol)
lkenes						
CH ₃ CH=CH ₂	9.73	958	[9.73]	958	9.71	[958]
C ₂ H ₅ CH=CH ₂	9.58	925	[9.59]	925	9.60	[925]
$1-C_3H_7CH=CH_2$	9.52	895	[9.54]	900	9.53	[895]
1-C ₄ H ₉ CH=CH ₂	9.44	870	[9.48]	874	9.49	[874]
$1-C_5H_{11}CH=CH_2$	9.44	849	[9.45]	849	9.49	[853]
$1-C_6H_{13}CH=CH_2$	9.43	828	[9.41]	828	9.48	[833]
$-C_3H_7CH=CH_2$	8.96	812	[8.94]	812	8.92	[808]
$-C_4H_9CH=CH_2$	9.45	849	[9.43]	853	9.45	[853]
$C_2H_5)_2C=CH_2$	9.06	820	[9.06]	820	9.03	[816]
E-CH ₃ CH=CHCH ₃	9.100	866	[9.12]	866	9.09	[866]
E-C ₂ H ₅ CH=CHCH ₃	9.036	840	[9.05]	841	9.00	[837]
E-n-C ₃ H ₇ CH=CHCH ₃	(8.97)	(812)	[8.99]	816	8.95	[812]
-C ₃ H ₇ CH=CHCH ₃	8.97	803	[8.96]	803	8.94	[803]
E/Z-n-C ₄ H ₉ CH=CHCH ₃	(8.84)	(782)	[8.92]	791 766	8.92	[791]
E-n-C ₅ H ₁₁ CH=CHCH ₃	8.85	757 812	[8.97]	766	8.91	[761]
$C_2H_3CH=CHC_2H_3$	8.96 8.37	812	[8.94]	812	8.92	[808]
$CH_3)_2C = C(CH_3)_2$	8.27	728	[8.04]	707	8.23	[724]
Alcohols						
СН₃ОН	10.85	845	[10.82]	845	10.68	[828]
C₂H₅OH	10.47	774	[10.45]	774	10.40	[770]
1-C ₃ H ₇ OH	10.22	732	[10.20]	728	10.23	[732]
1-C ₄ H ₉ OH	10.06	695	[10.03]	695	10.14	[[] 703]
1-C ₅ H ₁₁ OH	10.00	669	[9.96]	661	10.12	[678]
1-C ₆ H ₁₃ OH	(9.89)	(640)	[9.86]	636	10.10	[661]
-C₃H ₇ OH	10.12	703	[10.10]	703	10.20	[711]
s-C₄H ₉ OH	9.88	661	[9.96]	669	10.03	[674]
-C₄H ₉ OH	10.09	690	[10.03]	686	10.09	[690]
-C₄H₀OH	9.97	648	[9.90]	644	10.09	[661]
Ethers						
CH₃OCH₃	10.025	782	[9.94]	774	9.86	[766]
C ₂ H ₅ OCH ₃	9.72	720	[9.77]	715	9.69	[717]
1-C ₃ H ₇ OCH ₃			9.58			
-C ₃ H ₇ OCH ₃	(9.42)	657	[9.41]	657	9.56	[669]
1-C ₄ H ₉ OCH ₃	(9.54)	(661)	[9.32]	640	9.52	[661]
1-C ₃ H ₇ OC ₂ H ₅	(9.45)	(640)	[9.46]	640	9.42	[636]
$C_2H_5OC_2H_5$	9.51	665	[9.56]	669	9.52	[665]
1-C ₄ H ₉ OC ₂ H ₅	9.36	611	[9.36]	611	9.36	[611]
-C ₄ H ₉ OCH ₃	9.41	619	[9.26]	602	9.46	[623]
Aldehydes						
CH₃CHO	10.229	821	[10.21]	820	10.23	[820]
C ₂ H ₃ CHO	9.953	773	[9.97]	774	9.96	[774]
ı-C₃H₁CHO	9.84	741	[9.82]	741	9.80	[736]
1-C ₄ H ₉ CHO	9.74	711	[9.76]	711	9.71	[707]
n-C ₅ H ₁₁ CHO	9.67	686	[9.66]	685	9.69	[688]
-C₃H ₇ CHO	9.705	721	[9.69]	719	9.77	[727]
-C₄H ₉ CHO	9.70	699	[9.71]	700	9.67	[695]
s-C₄H ₉ CHO	(9.59)	(690)	[9.58]	690	9.61	[692]
-C ₄ H ₉ CHO	9.50	674	[9.45]	669	9.62	[686]
neo-C ₅ H ₁₁ CHO	(9.61)	(661)	[9.61]	661	9.65	[665]
Ketones						
CH ₃ COCH ₃	9.705	719	[9.77]	724	9.704	[761]
C ₂ H ₅ COCH ₃	9.51	678	[9.53]	680	9.48	[675]
1-C ₃ H ₇ COCH ₃	9.38	644	[9.40]	646	9.33	[639]
	1.30	V-7-T	[/. ,]			
n-C ₄ H ₉ COCH ₃	9.35	628	[9.26]	619	9.26	[619]

J. Phys. Chem. Ref. Data. Vol. 17. Suppl. 1, 1988

TABLE 2.5.1.3. Comparison of ionization energies/heats of formation with estimated values* — Continued

			Holme	Bachiri et al. 58		
Compound	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H/({ m Ion})}{({ m kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f}H({ m Ion})}{({ m kJ/mol})}$	$\frac{IP}{(eV)}$	$\frac{\Delta_{\rm f} H({\rm Ion})}{({\rm kJ/mol})}$
Ketones - Continued	(61)	(10)	(01)	(107 1101)		(12) 1101)
n-C ₃ H ₇ COC ₂ H ₅	9.12	598	[9.25]	611	9.12	[598]
n-C ₄ H ₉ COC ₂ H ₅	(9.02)	(573)	[9.14]	586	9.05	[577]
i-C ₃ H ₇ COCH ₃	9.30	636	[9.21]	628	9.31	[636]
i-C ₃ H ₇ COC ₂ H ₅	(9.10)	(594)	[9.15]	598	9.10	[590]
(i-C ₃ H ₇) ₂ CO	8.95	552	[8.92]	548	8.94	[552]
s-C ₄ H ₉ COCH ₃	9.21	598	[9.24]	602	9.17	[594]
i-C ₄ H ₉ COCH ₃	9.30	607	[9.43]	619	9.22	[602]
t-C ₄ H ₉ COCH ₃	9.11	590	[9.14]	590	9.17	[594]
neo-C ₅ H ₁₁ COCH ₃	(9.23)	(573)	[9.29]	577	9.21	[569]

^aIn these lists, values obtained through the use of the estimation scheme of Holmes et al⁵⁸ are heats of formation of ions at 298 K. The scheme of Bachiri et al⁵⁸ predicts ionization energies. For purposes of comparison, both quantities are given here, the conversion being made using standard heats of formation of corresponding neutral molecules from Table 1. The derived quantity is enclosed in brackets. Parentheses indicate a quantity which is not well established (see conventions for Table 1).

series, the slope of the plot would be -1 and the intercept would be $[HA(M^+) + 13.6 \text{ eV}]$.

It has been observed 45a,60,61 that the value which can be assigned to the M⁺-H bond strength (i.e. the HA) is indeed often approximately constant for a homologous series, at least over a limited range. For instance, it was reported⁶² that linear plots of PA versus IP for primary, secondary, and tertiary amines display the same slope, but have different intercepts (i.e. different values of HA). However, a detailed statistical analysis⁶³ of the relationships between proton affinities and ionization potentials for many different compound types (alcohols, ethers, primary-, secondary- and tertiary-amines, nitriles, mercaptans, sulfides, aldehydes, ketones, carboxylic acids, esters, amides, and atoms) demonstrated that only the parent radical cations of sulfides and mercaptans displayed a characteristic (constant) value of the hydrogen affinity. For other compound types, it was concluded that the hydrogen affinity itself varies linearly with the ionization energy:

$$HA(\mathbf{M}^+) = c + \Delta IP(\mathbf{M}) \tag{46}$$

Several series of compounds for which reliable evaluated ionization energy and proton affinity data are both available are summarized in Table 2.5.2.1. along with values for the hydrogen affinities. The published analysis utilized vertical ionization energies corresponding to the orbital of the site of protonation, and a proton affinity scale which, although internally consistent, was constricted in length (due to the incorrect assumption in early equilibrium studies using ICR that the operating temperature was 300 K rather than 320 K) and related to an absolute standard whose proton affinity value has now been revised downward by 3 kcal/mol. Repeating that statistical analysis, but using instead the thermochemically more meaningful adiabatic ionization energies which relate to the M+-H bond strengths, and the

evaluated scale of proton affinities⁴, it is seen that Eq. (46) does hold for alcohols, aldehydes, ketones, primary amines, cyclic ethers and esters. In the series of aliphatic ethers, thioethers, and secondary and tertiary amines, values of the hydrogen affinity appear to decrease slightly with decreasing ionization energy, but the differences are too small to be meaningful (i.e. the slope of a plot of Eq. (46) is -0.7 or greater), and the assumption that the hydrogen affinity is constant will be approximately valid. The hydrogen affinities of mercaptans and of aromatic amines are indeed constant. Substituting Eq. (46) into Eq. (45), we derive an expression which permits the estimation of an unknown proton affinity/ionization energy when one of these two parameters is known:

$$PA_1-PA_2 = (d-1)(IP_1-IP_2) = K(IP_1-IP_2)$$
 (47)

where K = (d-1) is the slope of a plot of PA versus IP for a compound series:

$$PA_{x} = C + KIP_{x} \tag{48}$$

Values for C and K derived from the statistical analysis of the data are given in Table 2.5.2.1. for those compound types for which sufficient information was available to make a meaningful analysis.

Attention has also been given to relating ionization energies and proton affinities of various series of compounds to the appropriate Taft substituent constants 64,65,66,67 . It has been shown that the adiabatic ionization energies of compounds RX (where R is an alkyl group) correlate linearly with $\sigma^*(R)$ and $\sigma_1(R)$ (measures of the polarizability and electron-releasing and donating ability of R) for constant electron-withdrawing group X. This is easily understood in terms of a lowering of the energy required to remove an electron with increasing electron-donating ability of the groups, R.

TABLE 2.5.2.1. The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series

 $PA(M) = C + K \cdot IP(M)$ $HA(M^{+}) = c + d \cdot IP(M)$ (C - c = 1312 kJ/mol, d - K = 1.00)

1047 1010 986 971 974 976 953 958 967 938 918 895 910 879 <908	804 822 838 846 852 874 846	494 485 472 456 464 464 439 460 460 448 444 427 448 439 <444 427 448 439 <441
986 971 974 976 953 958 967 938 918 895 910 879 < 908	788 798 800 805 800 799 810 804 822 838 846 852 874 846	485 472 456 464 464 439 460 448 444 427 448 439 <444
986 971 974 976 953 958 967 938 918 895 910 879 < 908	788 798 800 805 800 799 810 804 822 838 846 852 874 846	485 472 456 464 464 439 460 448 444 427 448 439 <444
986 971 974 976 953 958 967 938 918 895 910 879 < 908	788 798 800 805 800 799 810 804 822 838 846 852 874 846	485 472 456 464 464 439 460 448 444 427 448 439 <444
986 971 974 976 953 958 967 938 918 895 910 879 <908	798 800 805 800 799 810 804 822 838 846 852 874 846	472 456 464 464 439 460 448 444 427 448 439 <444
971 974 976 953 958 967 938 918 895 910 879 < 908	800 805 800 799 810 804 822 838 846 852 874 846	456 464 464 439 460 460 448 444 427 448 439 <444
974 976 953 958 967 938 918 895 910 879 < 908	805 800 799 810 804 822 838 846 852 874 846	464 464 439 460 460 448 444 427 448 439 <444
976 953 958 967 938 918 895 910 879 <908	800 799 810 804 822 838 846 852 874 846	464 439 460 460 448 444 427 448 439 <444
953 958 967 938 918 895 910 879 <908	799 810 804 822 838 846 852 874 846	439 460 448 444 427 448 439 <444
958 967 938 918 895 910 879 <908	804 822 838 846 852 874 846	460 448 444 427 448 439 <444
967 938 918 895 910 879 <908	804 822 838 846 852 874 846	460 448 444 427 448 439 <444
938 918 895 910 879 <908	822 838 846 852 874 846	448 444 427 448 439 <444 448 427
938 918 895 910 879 <908	822 838 846 852 874 846	448 444 427 448 439 <444 448 427
918 895 910 879 <908	838 846 852 874 846 786 824 832	444 427 448 439 <444 444 494 448 427
895 910 879 <908	846 852 874 846 786 824 832	427 448 439 <444 494 448 427
895 910 879 <908	846 852 874 846 786 824 832	427 448 439 <444 494 448 427
910 879 <908 1020 933 908	852 874 846 786 824 832	448 439 <444 494 448 427
879 <908 1020 933 908	874 846 786 824 832	439 <444 494 448 427
<908 1020 933 908	786 824 832	< 444 494 448 427
1020 933 908	786 824 832	494 448 427
933 908	824 832	448 427
933 908	824 832	448 427
933 908	824 832	448 427
908	832	427
892	836	414
		12-7
987	781	456
960	7 93	444
949	801	439
936	806	431
936	806	431
936	823	448
917	836	444
898	843	427
897	851	435
	857	410
864		414
879	846	
836	864	389
	896	448 452
866		
855	912	448
855 847		
855	915	444
855 847	914	444
855 847 841		
855 847 841 841	914	444
855 847 841 841 839 839	914 923 915	444 448
855 847 841 841 839	914 923	444 448 444
	855	866 896 855 908 847 912

24

TABLE 2.5.2.1. The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series—Continued

 $PA(M) = C + C \cdot IP(M)$ $HA(M^{+}) = c + d \cdot IP(M)$ (C - c = 1312 kJ/mol, d - K = 1.00)

		kJ/mol		
	IP	PA	HA	
condary Amines: $(K = -0.72, C = 1502 \text{ kJ/mol}, HA = 397 \text{ kJ/mol})$				
(CH ₃) ₂ NH	794	923	406	
$(CH_3)(C_2H_5)NH$	786	932	406	
$(C_2H_5)_2NH$	773	945	406	
$(n-C_3H_7)_2NH$	756	952	397	
(i-C₃H₁)₂NH	746	963	397	
$(n-C_4H_9)_2NH$	742	956	385	
(s-C₄H ₉) ₂ NH	736	966	389	
(i-C ₄ H ₉) ₂ NH	754	956	397	
Fertiary Amines: $(K = -0.83, C = 1573 \text{ kJ/mol}, HA = 385 \text{ kJ/mol})$				
$(CH_3)_3N$	754	942	385	
(CH3)2(C2H5)N	747	952	385	
$(CH_3)(C_2H_5)_2N$	723	962	372	
$(C_2H_5)_3N$	723	972	385	
$(n-C_3H_7)_3N$	715	979	381	
Aromatic Amines: $(K = -1.0, C = 1636 \text{ kJ/mol}, HA = 305 \text{ kJ/mol})$				
	741	977	205	
C6H5NH2	741	877	305	
$C_6H_5N(CH_3)_2$	687	935	310	
$3-(CH_3)C_6H_4N(CH_3)_2$	677	939	305	
$4-(CH_3)C_6H_4N(CH_3)_2$	669	944	301	
$3,5-(CH_3)_2C_6H_3N(CH_3)_2$	671	950	301	
$C_6H_5N(C_2H_5)_2$	674	952	314	
Mercaptans: $(K = -0.98, C = 1678 \text{ kJ/mol}, HA = 381 \text{ kJ/mol})$				
CH ₃ SH	911	784	381	
C₁H₁SH	896	798		
			381	
n-C₃H₁SH	887	802	377	
i-C ₃ H ₇ SH	882	812	381	
t-C ₄ H ₉ SH	871	824	381	
Phioethers: $(K = -0.83, C = 1531 \text{ kJ/mol}, HA = 360 \text{ kJ/mol})$				
CH ₃ SCH ₃	838	839	364	
C ₂ H ₃ SCH ₃	824	851	364	
(C ₂ H ₅) ₂ S	813	858	360	
$(n-C_3H_7)_2S$	801	864	351	
$(i-C_3H_7)_2S$	796	877	360	
$(n-C_4H_9)_2S$	793	873	356	
$(t-C_4H_9)_2S$	779	890	356	
Nitriles:				
CH ₃ CN	1177	788	653	
C ₂ H ₃ CN	1142	806	636	
n-C ₃ H ₇ CN	1129	810	628	
i-C ₃ H ₇ CN	1133	813	632	
	1133	015	032	
Esters: $(K = -0.58, C = 1401 \text{ kJ/mol})$	4046	700	***	
HCOOCH ₃	1043	790	523	
HCOOC₂H₃	1024	808	519	
$HCOO(n-C_3H_7)$	1015	813	515	
HCOO(; C H)	1008	820	515	
$nCOO(I\text{-}C_3n_7)$			515	
	1013	813	212	
HCOO(n-C ₄ H ₉)	1013 991	815 828		
HCOO(i-C ₃ H ₇) HCOO(n-C ₄ H ₃) CH ₃ COOCH ₃ CH ₃ COOC ₂ H ₃	991 966	828 840	506 494	

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

TABLE 2.5.2.1. The relationship between proton affinity, ionization energy, and hydrogen affinity for homologous series—Continued

$$PA(M) = C + K \cdot IP(M)$$

 $HA(M^{+}) = c + d \cdot IP(M)$
 $(C - c = 1312 \text{ kJ/mol}, d - K = 1.00)$

		kJ/mol		
	IP	PA	HA	
Esters: $(K = -0.58, C = 1401 \text{ kJ/mol})$				
C ₂ H ₅ COOCH ₃	979	838	506	
n-C ₃ H ₇ COOCH ₃	971	837	498	
i-C ₃ H ₇ COOCH ₃	951	843	481	
t-C ₄ H ₉ COOCH ₃	955	849	490	
Acids:				
CH ₃ COOH	1028	796	510	
C ₂ H ₅ COOH	1015	802	506	

3. Negative lons

The previous publication of evaluated heats of formation of ions, "Energetics of Gaseous Ions"², contains ionization/appearance potential data for over 4000 species leading to evaluated heats of formation for more than 600 positive ions. By contrast, that volume contains thermochemical data for only 117 anions, including only 12 organic (C, H containing) anions. These statistics reflect the relative importance of studies on cation versus anion thermochemistry at the time of the cut-off for the literature search for that volume, 1971.

The large discrepancy in the numbers of early studies on anions as compared to cations is easy to rationalize. Most neutral species display a much lower cross section for production of anions than for cation production, with the necessary consequence that conventional electron impact mass spectrometry is much more adaptable to studies of positive ions. Similarly, the presence of excess energy in a cation can cause fragmentation, with the identities of the fragment cations providing useful structural information. In contrast, loss of an electron from a bound anion to form the corresponding neutral species is often energetically preferred to a dissociation process producing a fragment anion. Thus, the "cation bias" of much of gaseous ion thermochemistry until the last decade is understandable.

The renaissance in gas phase anion chemistry and thermochemistry came about with the development of chemical ionization mass spectrometry as a commonly-used technique. Anions are often more useful than cations for analytical work in that they can originate with less internal energy. In a proton transfer reaction leading to an anion product, the new bond which is formed—with its share of the excess energy of reaction—is in the departing neutral species (reaction 11) while in the analogous reaction involving cations (reaction 6), the new bond is

in the ion. Likewise, thermal electron attachment to those species which form stable radical anions is considerably faster than particle transfer, so that the chemical ionization step can be much more sensitive.

3.1. Aims

The compilation of anion thermochemistry in this work has slightly different aims than the companion cation compilation, in that the latter presents only the "best" available values for the ionization energy/heat of formation of a given structure. A complete archive of the literature having to do with cations has not been given, because the previous compilations 1,2,3,4 have summarized the literature exhaustively. Although there have been a number of compilations concerned with the thermochemistry of anions in the last few years 11,68-75 these have not presented data which are critically evaluated, i.e., the best values are not assigned, save for atomic ions⁷⁰. The advances in the last decade in ion/molecule chemistry and in such techniques as photoelectron and photodetachment spectrometry have resulted in a tremendous increase in the number of chemical structures for which some anionic thermochemistry is known. This publication therefore includes a collection of the literature data which is as complete as possible, and an assignment of the "best" value for the thermochemistry where sufficient information is available.

The thermochemical parameters of critical interest in this compilation are the heat of formation of the anion and the electron affinity of the radical or neutral molecule corresponding to the anion. In order to properly evaluate these, however, data on the energetics of chemical processes involving the anions (Brønsted basicity of the anion, parameters for solvation by neutral species, etc.) are also included. The extensive thermochemical ladders of relative acidities, electron affinities,

solvation thermochemistry, and similar data derived from chemical equilibria have provided a powerful tool for evaluating the thermochemistry of anions: chemical intuition. The use of structure-reactivity relationships allows the examination of the structure of an acid and a prediction about what its acidity, and therefore anion heat of formation, should be. The extra thermodynamic techniques such as linear free energy and enthalpy relationships often allow prediction of expected values accurate to better than a kJ/mol. Although results derived from such relationships can not always be trusted in cases of unusual structures, they nevertheless provide a reasonable rationale for assigning "best" values in many cases.

A problem that has become increasingly important recently is the question of the thermochemistry of the allied neutral species. As indicated below in the section on thermochemical relationships, the limiting factor in deriving anion thermochemical data is often the reliability of the data on the related thermochemistry of the neutral species (heats of formation, bond strengths). The information generated by the field of ion chemistry has outpaced the availability of neutral thermochemical data in recent years. In many cases, the best values for certain bond strengths are derived from data on the thermochemical properties of ions, rather than the other way around.

3.2. Experimental Techniques

Detailed descriptions of the various techniques used to obtain anion thermochemical data will not be presented here, since these are well documented in the literature by their practitioners. Brief descriptions of each technique follow, with comments about accuracy and limitations. The phrase in square brackets following the name is the acronym used in the database to refer to the method.

3.2.1. Laser Photoelectron Spectroscopy [LPES]

A fixed frequency laser (commonly 2.54 eV photons) is used to irradiate a beam of anions, and the energies of the detached electrons are analyzed⁷⁰. The method often provides information on the vibrational states of the neutral and ionic species as well. However, the assignment of the (0–0) threshold can be complicated by these states. The precision is commonly better than 0.2 kJ/mol, and can be much better.

3.2.2. Laser Photodetachment [LPD]

In this technique, which may be considered the converse of photoelectron spectroscopy, the laser wavelength is varied to determine the threshold for detachment of a (presumably) thermal electron⁷¹ from an anion. This experiment has usually been carried out in an ICR ion trap, with the decrease in the ICR signal of the ion as the detected quantity; the lower power of variable

wavelength lasers often requires a longer irradiation period than with the ion beam in photoelectron spectroscopy. Precision is ca. 1-4 kJ/mol. The detection of the true threshold is often complicated by a gradual onset, although the general theory of the onset has been worked out^{68,69}. This method actually yields the vertical detachment energy, which is equated with the electron affinity. This assumption is usually valid, but fails for molecules for which the geometries of the anion and neutral are considerably different (i.e., for which there is poor Franck-Condon overlap). A notable case is CF₃⁻, where the photodetachment value is larger than the adiabatic value by 0.8 eV⁷⁷.

A recent determination of the spectrum of the hydroxide anion is at a resolution of ca. 2 J/mol⁷⁰ while coaxial LPD for O⁻ furnishes a resolution of 0.006 cm⁻¹, or 0.07 J/mol⁷⁶!

3.2.3. Photodetachment [PD]

Early photodetachment experiments were carried out using an arc lamp and a monochromator to irradiate the ICR cell⁷¹. Precision was lower than with the laser experiment.

3.2.4. Photodissociation [PDis]

Irradiation of anions does not always yield electron detachment as the first threshold process since bond cleavage may also be an allowed process. The wavelength threshold for such a process can provide information on the heat of formation of the anion, if the heats of formation of the products are known.

3.2.5. Ion/Molecule Equilibrium Constant Determinations [IMRE,Kine,TDEq,TDAs]

As discussed in Sec. 2.3.5., this evaluation takes into account (although previous works in the series did not) all information on ion thermochemistry generated by ion/molecule equilibrium constant determinations. In the case of anions, ion/molecule equilibrium studies on electron transfer reactions:

$$A^- + B \rightleftharpoons B^- + A \tag{49}$$

lead to scales of relative electron affinities.

$$K_{eq} = \frac{[B^-][A]}{[A^-][B]}$$
 (50)

while equilibrium constants for hydride or halide transfer reactions:

$$A + BY^{-} \rightleftharpoons B + AY^{-} \tag{51}$$

(where Y is H, F, Cl, Br, or I) lead to thermochemical ladders of relative acidities or halide affinities. Other scales of anionic thermochemistry are derived from equilibrium constants for solvation equilibria:

$$Y^{-} + X \rightleftharpoons [X \cdot Y^{-}] \tag{52}$$

Further, if the forward and reverse rate constants for a reaction are known, then the equilibrium constant, and thus ΔG , can be calculated from kinetic data [Kine].

The bulk of the available data on anion thermochemistry in the past decade has been derived from ion/molecule equilibrium constant determinations and photoelectron/photodetachment spectroscopy. Extensive scales, spanning an energy range of nearly 400 kJ/mol, have been determined for proton transfer (leading to relative Brønsted acidities of molecules), electron transfer, and halide transfer reactions.

In general, the free energy changes associated with such equilibria are measured to a precision of ca. 0.5 kJ/mol. The absolute uncertainty of anion heats of formation derived from such results is usually on the order of 5-10 kJ/mol, and depends on the accuracy of the method of "anchoring" the resulting scales of relative thermochemical values.

There remain at present several points of uncertainty regarding these data. There is an active debate⁷⁸ about the actual temperature of the ions in an ICR cell. Although some early results indicated that effective ion temperatures could be as much as several hundred degrees above ambient⁷⁸, the accuracy of the kinetic rate constant "thermometer" used as the basis of that judgement was not established. Comparisons of equilibrium constant data obtained in ICR cells with data derived from other sources indicate that the effective ion temperatures in ICR cells are not more than 10 degrees higher than measured gas temperatures in the cells^{22,78}.

The measured equilibrium constant data lead directly to values of free energies, which require some knowledge of the entropy changes of the processes under consideration in order to derive the desired enthalpy changes. Entropy changes have been obtained either through statistical mechanical calculations 79,80, or by measuring equilibrium constants as a function of temperature [TDEq = temperature dependent equilibrium constant], leading through a van't Hoff treatment of the results to experimental values for the entropy and enthalpy changes. Finally, the dynamic range (i.e. ion trapping time) of all the mass spectrometric techniques now in use for ion/molecule equilibrium constant determinations is such that the maximum free energy change which can be determined for particle transfer reactions is no greater than ca. 30-40 kJ/mol at most, and often only 10 kJ/mol at room temperature. The dynamic range for determinations of thermochemical parameters of association reactions is much greater [TDAs = temperature dependent association].

There have been questions raised regarding the accuracy of this method, since alcohol bond strengths derived in this way were consistently 9 kJ/mol smaller than accepted values. It was originally thought that this discrepancy was due to the temperature problem alluded to above⁷⁸, because the acidity scale measured in the ICR spectrometer⁸⁰ was compressed relative to that determined by pulsed high pressure mass spectrometry⁷⁹. If the equilibria established in the reaction cell of the ICR

spectrometer were actually at a higher temperature than the value which was used to convert K_{eq} to $\Delta(\Delta_{acid}G)$, then the calculated free energy scale from ICR experiments would be compressed. However, the gas phase basicity scales measured by ICR and by high pressure mass spectrometric methods agree quite well⁴. In addition, Taft⁸¹ has recently redetermined many of the relative acidities that make up the thermochemical ladder, and finds that the region of the acidity scale from trifluoroethanol to acetone has a larger range than the original work indicated. These results have been confirmed in the laboratory of one of the present authors⁸². The region of the acidity scale from trifluoroethanol up to methanol has therefore been adjusted to include these new data. The data affected by this revision are still referred to by the original literature reference, e.g. 79BAR/SCO, and the original values are still displayed, but the method is denoted IMRE°. The revised values are preferred in the evaluation.

3.2.6. Ion/Molecule Reaction Bracketing [IMRB]

For most of the techniques currently used for studying thermal ion/molecule reaction equilibria and kinetics, ions can only be examined for, at most, several thousand collisions with the reactive neutral gas. Thus, any reaction more endothermic than a few kcal/mol can not be observed on the time scale of the presently used techniques. In the observation of a series of reactions for which the functional groups present at the reactive site of the molecule are always the same, and the energy of the reaction is being varied by changing some distant substituent, then if the rate constant falls to less than the observable rate over some small energy range, it is a fair assumption that the reaction pathway has become endothermic at that point. From this, an estimate of the thermoneutral (equilibrium) point may be made. This technique must be applied with caution, because the mechanism of the observed reaction may not be the same for the entire series of molecules, so that apparent variations in reactivity may not actually reflect the thermochemistry of the assumed reaction.

3.2.7. Electron Impact Appearance Potentials [EIAP]

Since a bound anion must be thermochemically more stable than the combined energies of the free electron plus the neutral species, simple attachment of electrons, even thermal ones, in general results in rapid autodetachment. In certain cases, however, the excited anion state can fragment to yield either an anion plus a neutral species (dissociative attachment), or an anion plus a cation (ion pair production). The latter process has not been well studied save for relatively small species, and is not at present a source of much thermochemical data. On the other hand, a considerable amount of thermochemical data has been derived from experiments in which the onset energy for dissociative attachment is measured. A

complication in the interpretation of such onsets involves the unknown internal energy of both the anionic and neutral fragments. A particularly useful case is where two onsets are observed, with the fragments differing only in the identity of the species associated with the electron:

$$AB + e \rightarrow A^{-} + B \cdot \tag{53}$$

$$\rightarrow A \cdot + B^{-} \tag{54}$$

If the electron affinity of one of the product species is known, that of the other can be inferred from the known electron affinity and the difference in the onset energies for the two channels.

Most workers have not used monoenergetic electron beams, so the precision in the energy onsets is generally larger than 0.1 eV (10 kJ/mol). The resulting anion heats of formation include that uncertainty plus the uncertainties in the heats of formation of the associated reactant and neutral species. A few retarding potential difference measurements have been carried out, to improve the accuracy of such results.

3.2.8. Neutral Beam Ionization/Appearance Potentials [NBIP/NBAP]

Collision of a neutral species with an energetic particle of low ionization potential, such as an alkali atom, can result in electron transfer, giving an alkali cation and an anion⁸³. The electron affinity of the neutral species is equal to the translational energy of the alkali atom less its ionization potential. Determinations of electron affinities by this method have the advantage that one obtains values for the true electron affinity: electron attachment to a neutral species, rather than detachment from an anion. Certain anions can be produced by this technique which are not accessible via electron impact due to low energy exit channels, e.g. CCl₄. Due to the limited energy resolution of the neutral alkali beam, the precision of this technique is not high, typically 20 kJ/mol. The onset energies of fragment ions can also provide useful thermochemical information, if the thermochemistry of the co-produced neutral species is known.

Normally this technique results in a determination of the adiabatic electron affinity, but for a sufficiently fast beam of neutral species, the onset corresponds to the vertical attachment energy of the electron, which, in contrast to detachment methods, is smaller than the adiabatic value.

3.2.9. Photoionization [PI]

This technique involves production of cation-anion pairs by vacuum ultraviolet photons. It has been used primarily for small molecules $(O_2, F_2, \text{ etc.})$. The difference in onset for dissociative ion pair production and-dissociative ionization

$$AB + h\nu \rightarrow A^- + B^+ \tag{55}$$

$$AB + h\nu \rightarrow A \cdot + B^+ + e \tag{56}$$

corresponds to the electron affinity of A.

3.2.10. Endothermic Reaction Energy, Including Charge Transfer [Endo,EnCT,CIDT]

If an ion/molecule reaction is appreciably endothermic at thermal (room temperature) energies, it is not observable by present techniques. For some processes it is possible to increase the rate by increasing the translational energy of the reactants so that products can be observed. Assuming that all the translational energy is available to bring about the reaction through the intermediacy of a long-lived complex in which energy is statistically distributed, the onset energy for observation of a given reaction can be taken as the threshold for the process, and thermochemistry assigned accordingly. Here the acronym "Endo" describes the use of such onset energies for deriving thermochemical data, "EnCT" the use of such onsets in charge transfer processes.

A variant is the case of collision of a non-reactive species, which serves only to provide the energy necessary for the negative ion to fragment or detach the electron. This is termed the "Collision Induced Dissociation Threshold" method [CIDT].

3.2.11. Surface ionization (Magnetron) [SI]

The production of ions on a surface can yield thermochemical data if a number of parameters are known, including the work function of the surface. A common version of this experiment, the Magnetron technique⁸⁴ [Surface Ionization, SI], lacks mass analysis, and therefore many of the values for thermochemical parameters resulting from this method correspond to anions of uncertain identity. Precision is thought to be several tenths of a volt (>20 kJ/mol).

3.2.12. Electron Swarm [ES]

In this technique⁸⁵, the electron affinity of a neutral species (usually a closed shell molecule) is calculated by a statistical method, using the rate of electron attachment, the autodetachment lifetime, and the vibrational frequencies of the species. The attachment rate is measured in a drift tube — electron swarm experiment, and extrapolated to thermal energy. The autodetachment lifetime is taken from results of beam experiments. The precision is probably a few tenths of an eV (30-40 kJ/mol) at best.

3.2.13. Lattice energy [Latt]

The heat of formation of an anion can be derived from a Born-Haber cycle using the lattice energy and heat of formation of a crystal and the thermochemistry of the appropriate gas phase cation. This method is not especially accurate relative to more recent techniques, but for some singly charged inorganic anions it provides the only data available.

3.2.14. Kinetic Branching Methods [Bran, CIDC]

If certain ion/molecule complexes are subjected to collision induced dissociation (CID), the weakest bond between the two species in the complex is the most likely one to break. If the functional groups forming the bond are identical, with the acids differing only in distant substitution, then either species has a chance to acquire the proton on breakup of the complex. The branching ratio in the reaction:

$$ROH \cdot OR' \xrightarrow{M} ROH + R'O$$
 (57a)

$$\stackrel{M}{\rightarrow} RO^- + R'OH$$
 (57b)

has been shown to reflect the relative acidities of the two species⁸⁷. Once the sensitivity of this branching ratio for compounds of known acidity has been established, then CID of clusters with one compound of known acidity and one unknown can lead to an estimate for the acidity of the unknown species. This appears to be reliable to 1-2 kJ/mol in determining relative acidities. This approach has some limitations. First, values for the gas phase acidities for several members of the series must first be known from other sources for proper calibration. Further, the temperature of the reacting system is not defined, and so problems may arise in interpretation for systems with significant entropy changes. The general method has also been applied to the estimation of relative electron affinities87 for complexes of aromatic radical anions with aromatic molecules.

The excited intermediate complex can be prepared other ways than by collision. If an ion/molecule reaction is sufficiently exothermic, and has more than one available reaction channel, then the branching ratio of products formed on breakup of the complex can reflect product stabilities. This assumption has been used to estimate the acidities of the simple alkanes⁸⁸ since many of the localized carbanions from those compounds do not appear to be bound with respect to electron loss. Such ions exist only in ion/molecule complexes, where the cluster energy may serve to prevent electron detachment before reaction.

3.2.15. Electron Transmission Spectroscopy [ETS]

In this technique, the scattering angles of a monoenergetic electron beam impacting on a gas at less than the ionization threshold are determined. The presence of resonances in the spectrum implies electron capture to produce a temporary state, followed by autodetachment. This is the principal technique for measurement of negative electron affinities. Occasionally, a series of resonances can be extrapolated to below zero electron energy to give an estimate of a positive electron affinity¹¹.

3.2.16. Electron Capture Detector [ECD]

An electron capture detector for a gas chromatograph, when operated in a variable temperature pulse sampling mode, can provide data on electron capture/detachment ratios. These can be converted into electron affinities. Use of the method is limited to the determination of electron affinities in the 0.2-0.8 eV (20-80 kJ/mol) range. The precision of such measurements is commonly quoted as less than 1 kJ/mol⁸⁹.

3.2.17. Mobility of lons in a Gas [Mobl]

If the mobility of an ion in a gas can be measured in response to a weak electric field, the potential well depth, corresponding to $\Delta_{\rm aff}H$, for the ion associating with the neutral gas can be determined.

3.2.18. Laser Optogalvanic Photodetachment Spectroscopy [LOG]

The gas of interest is subjected to an electrical discharge, and the discharge region is probed by a laser. The LOG⁹⁰ spectrum is recorded by scanning the wavelength of the laser, and monitoring laser-induced changes in the discharge impedance. The spectrum produced will be similar to the laser absorption spectrum but relative intensities of spectral features may be very different. The method is particularly suitable for detecting unstable (radical) species.

3.3. Thermochemical Cycles

The relationships between the different quantities measured in the above experimental techniques can be exploited to derive additional thermochemical information. In Table 2, such derivations have been made wherever possible. In the table, the quantities which have been derived from the experimentally-determined value are indicated by superscripted letters, which correspond to the various types of derivation described here, while the quantity actually determined in the reported experiment is given without any superscripted letter. A list of the various approaches to derivation and their corresponding superscript letters is given in the Table in Sec. 5.2.

The heat of formation of an anion can be derived from the heat of formation of the acid, its gas phase acidity, the heat of formation of the proton:

$$\Delta_{f}H(A^{-}) = \Delta_{acid}H(AH) - \Delta_{f}H(H^{+}) + \Delta_{f}H^{\circ}(AH) \quad (58)$$

The quantity $\Delta_f H^{\circ}(AH)$ is lacking in many cases where acidities are now available; various group additivity estimation schemes (see below, and Sec. 4.) have been employed to fill in this information.

As discussed in Sec. 1.6.3., the calculation of the anion heat of formation as the heat of formation of the neutral species less the electron affinity:

$$\Delta_{f}H(A^{-}) = \Delta_{f}H^{\circ}(A) - EA(A)$$
 (59)

is not, strictly speaking, correct, since for most of the species given here the heat of formation of the neutral species is a 298 K value, while the electron affinity is a threshold 0 K value. The preference is for anion heats of formation calculated by Eq. 58.

In an inversion of the bond strength/electron affinity Eq. 32 for calculating acidities, a known acidity and bond strength can yield an *electron affinity*.

$$EA(A) = BDE(A-H) + IP(H\cdot) - \Delta_{acid}H(AH)$$
 (60)

Based on the temperature cancellation effect, this should correspond to the 0 K value. This is also an adiabatic value, which can be less than the vertical electron affinity obtained from the optical techniques if the geometries of the neutral and anion differ appreciably.

The difference between the anion and neutral heats of formation (at 298 K) give a 298 K electron affinity:

$$EA(A) = \Delta_f H^{\circ}(A) - \Delta_f H(A^{-})$$
 (61)

If the geometry change is small, this should be a reasonable approximation to the 0 K value.

Gas phase acidities, taken as the enthalpy of acidity, can be calculated from the homolytic bond strength of the acidity site, the electron affinity of the resulting radical, and the ionization energy of the hydrogen atom:

$$\Delta_{\text{acid}}H(AH) = BDE(A-H) - EA(A) + IP(H)$$
 (62)

The last is common to all acids, and is very accurately known (1311.98 kJ/mol), and does not present a limitation in determining the values. A more valid concern is the temperature of definition for these terms. The acidity and bond strength are commonly taken as 298 K values, while the electron affinity and ionization potential are threshold values defined at 0 K. The cancellation necessary for this equation to be considered valid is discussed in Sec. 1.6.3.

Sometimes a heat of formation of an anion or an electron affinity value may be known without a value for the bond strength being available. The *acidity of the conjugate acid* can be derived in those cases from the acid heat of formation:

$$\Delta_{\text{acid}}H(AH) = \Delta_f H(A^-) + \Delta_f H(H^+) - \Delta_f H^{\circ}(AH)(63)$$

While the primary goal of this work is not to obtain values for *homolytic bond strengths*, such values can be derived from gas phase acidities and electron affinities in cases where they are not known from more conventional sources.

$$BDE(A-H) = \Delta_{acid}H(AH) + EA(A) - IP(H-)$$
 (64)

$$BDE(A-H) = \Delta_t H^{\circ}(AH) - \Delta_t H^{\circ}(A) - \Delta_t H^{\circ}(H)$$
(65)

3.4. Priority of Data

At the present time, the heat of formation of an anion in the gas phase is not directly measurable, since gas phase plasma calorimetry is not a known technique. Likewise, direct measurement of an electron affinity, in the sense of exothermic electron attachment to a neutral, is not feasible in a calorimetric sense, although the combination of attachment and detachment rate constants can be used. The electron affinity and anionic heat of formation are available from either thermochemical cycles, based on other known and measurable quantities, or by reasonable assumptions about the reversibility of processes such as electron detachment from anions.

For electron affinities, we adopt the following order of priority for the evaluation of "best" values. There are exceptions in many cases to this order, where a given method is known not to be suitable. The user should be aware of the difference between adiabatic and vertical values that these techniques yield.

Laser photoelectron spectroscopy

Laser photodetachment

Photodetachment

From bond strengths and gas phase acidities

Neutral beam ionization/appearance potentials

Electron impact appearance potentials

Ion/molecule bracketing reactions

Electron swarm

For gas phase acidities, the following priorities are assigned to data sources:

Direct gas phase equilibrium constant determinations Kinetic methods for gas phase acidities:branching ratios in collisional dissociation and ion/molecule complex breakup.

From bond strengths and electron affinities

Ion/molecule bracketing reactions (using either the heat of formation of the anion or of the acid as the unknown quantity).

4. Thermochemistry of Neutral Species

Tables 1 and 2 display values for heats of formation of the neutral gas phase molecules which are "related" to the archived ions. In Table 1, which is concerned with cation thermochemistry, the "related" neutral species is either (a) the neutral molecule which corresponds to the ion plus an electron (for ionization potential data) or (b) the molecule which has one less proton than the ion of interest (for proton affinity data). In Table 2, concerned with anion thermochemistry, the term "related" means that the neutral is formed from the ion either by loss of an electron (electron affinity) or gaining of a proton (gas phase acidity). For every case, the identity of the neutral

molecule corresponding to the displayed heat of formation is made unambiguous.

4.1. Literature Sources

Values for the heats of formation of neutral molecules were taken from the experimental literature whenever possible. If a value for a particular compound was available from an evaluated data compilation, this value was generally selected for inclusion here. The primary compilations which were used were as follows.

4.1.1. Organic Compounds

J. B. Pedley and J. Rylance, "Sussex-N. P. L. Computer Analysed Thermochemical Data: Organic and Organometallic Compounds," University of Sussex (1977). The numerous data from this evaluated compilation⁹¹ of 298 K heats of formation of gas phase organic compounds are identified by the squib 77PED/RYL. A second edition of this work (86PED/NAY) has appeared⁹², but regrettably, was available to the authors of the current compilation too late to obviate an extensive literature search for heats of formation from the primary literature to cover the period 1976-mid-1986. Since the updated compilation of Pedley, Naylor and Kirby92 (which is complete only through 1982) became available only as this work was nearing completion, references to 77PED/RYL or to recent primary literature have been retained even in cases where the data are given in 86PED/NAY.

4.1.2. Inorganic Compounds

- (1) D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, I. Halow, S. M. Bailey, K. L. Churney, and R. L. Nuttall, "The NBS Tables of Chemical Thermodynamic Properties: Selected Values for Inorganic and C₁ and C₂ Organic Substances in SI Units," J. Phys. Chem. Ref. Data, Vol. 11, Suppl. 2 (1982), hereafter referred to as 82TN270, from the original publication of this compilation¹⁴ as a series of NBS Technical Notes called the 270-series. (It should be noted that when this source is used in Table 2, both the value and an associated error limit are given, while only the former is given in Table 1.)
- (2) (a) D. R. Stull and H. Prophet, "JANAF Thermochemical Tables," NSRDS-NBS 37 (1971); (b) M. W. Chase, J. C. Curnutt, H. Prophet, R. A. McDonald, and A. N. Syverud, "JANAF Thermochemical Tables," 1975 Supplement, J. Phys. Chem. Ref. Data 2, 1 (1975); (c) M. W. Chase, Jr., J. L. Curnutt, J. R. Downey, Jr., R. A. McDonald, A. N. Syverud, and E. A. Valenzuela, J. Phys. Chem. Ref. Data, 11, 695 (1982). Information from these sources¹³ is referenced as 71JANAF, 75JANAF, or 82JANAF. An updated composite edition^{13c} of this com-

pilation was in press at the time this work was being prepared, but was not actually available until these tables were near completion. A few values for heats of formation from the updated version have been inserted here where warranted by changes in recommended values, but an exhaustive check of the new publication was not made.

(3) L. V. Gurvich, I. V. Veits, V. A. Medvedev, G. A. Khachkuruzov, V. S. Yungman, G. A. Bergman, et al, "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); V. P. Glushko, Gen. Ed., Vols. 1 through 4 (in 8 parts), (1978–1982), Izdatel'stvo "Nauka" Moscow. These volumes¹⁵ are collectively cited as 82TPIS.

4.1.3. Specialized Classes of Compounds and Radicals

In addition, various literature compilations which cover well-defined, but restricted, classes of compounds such as nitriles, organometallic compounds, free radicals, or strained hydrocarbons were utilized. The preferential use of data compilations as sources of experimental data recognizes that these data have been evaluated for internal consistency insofar as possible.

Many values for heats of formation of free radicals were taken from the review of McMillen and Golden⁹³. With respect to the alkyl radicals, however, a recent reevaluation of data from the literature has led to the suggestion that C-H bond energies in alkanes should be revised upwards⁹⁴. The heats of formation of these radicals are still a matter of controversy at this writing. Values cited in the tables are based on the following revised⁹⁴ C-H bond strengths: Primary C-H bond (101 kcal/mol, 422 kJ/mol); Secondary C-H bond (99 kcal/mol, 415 kJ/mol); Tertiary C-H bond (95 kcal/mol, 398 kJ/mol).

The corresponding values for the heats of formation of the alkyl radicals are in some cases (e.g. t-butyl radical) entirely consistent with the differences between well-established heats of formation of the corresponding alkyl cations and experimental ionization energy values, but there are also cases for which the relevant values show inconsistencies. These are pointed out in Table 1 by a specific comment.

4.1.4. Other Literature Sources

Experimental information about heats of formation of species not included in evaluated compilations was generally obtained from primary literature sources. When more than one value for a heat of formation was available from such unevaluated primary sources, and no supplementary information was available which would allow an educated choice, the most recent value was usually arbitrarily chosen in the possibly naive expectation that "improved instrumentation" as well as a greater (historical) awareness of the problems inherent in an analysis of the thermochemistry of the particular species would lead to a more reliable value.

Care was taken in utilizing these data from unrelated literature sources to be aware of ambiguities in thermochemical reference states. Values for heats of formation derived from heats of reaction (e.g. hydrolysis, bromination) were used in preference to directly-determined heats of combustion because of the inherent problems associated with numbers derived from relatively small differences between two large numbers. In many cases, heats of formation of neutral species were derived using well-established ionization energies or proton affinity values in combination with well-established heats of formation of relevant ions; these values are identified by an explanatory sentence in the comment field.

4.2. Conventions Used and Assumptions Made

Implicitly, in assigning gas phase heats of formation to the neutral species, the compounds are assumed to be ideal gases at S. T. P. Whenever sufficient information is readily available, values for heats of formation at both 0 and 298 K are given. In some cases, the 0 K value has been obtained by combining the 298 K values from a preferred literature source (i.e., an evaluated compilation) with the 298—0 K difference taken from another reference. In other cases, this difference was calculated from experimental or estimated extrathermodynamic quantities such as vibrational frequencies and the appropriate elemental thermochemical functions. Another approach was to use isoelectronic or isostructural analogies (e.g., data for O₃ may be compared with that on NO₂⁻ and neutral NO₂).

4.3. Use of Condensed Phase Heats of Formation

Numerous methods exist for measuring and interpreting experimental heats of sublimation and heats of vaporization. Where available, such measurements were used to translate condensed phase data into gas phase values for heats of formation. In such cases, the cited reference is the source of the condensed phase heat of formation data, although the bibliography includes the references from which the information about heats of sublimation or vaporization were obtained.

In most cases, data on heats of sublimation (and the associated methodologies for translating condensed phase heats of formation to gas phase values at 298 K) are from the recent publication⁹⁵, 87CHI, for organic compounds.

Regrettably, while work on this publication was in progress no such single literature source for heats of vaporization was available, although such a compilation has since appeared⁹⁶. In fact, however, experimental data on heats of vaporization do not exist for numerous species of interest here, either because of experimental difficulties associated with such determinations (i.e. lack of adequate volatility, purity, or thermal stability) or per-

haps because of a lack interest in, or availability of, the compound.

Estimation methods for heats of vaporization and sublimation have been described in the literature^{95,97}. Some require auxiliary experimental data (e.g. critical constants). Other such estimation methods can be applied only to well-defined classes of compounds. For heats of vaporization, these estimates are usually reliable to approximately 4 kJ/mol (1 kcal/mol). In presenting data on heats of formation incorporating the use of such estimated heats of vaporization, a choice had to be made of whether to cite the source of the experimental heat of formation of the liquid or the paper from which the method for estimating the heat of vaporization was obtained; the experimental work is given as the primary citation. For heats of sublimation, no generally accurate estimation approaches exist. Thermochemical values obtained using estimated heats of sublimation are clearly labelled as estimates in the tables.

4.4. Estimated Heats of Formation

Estimates were also made for heats of formation of neutral molecules and radicals for which no experimental data were available. Several estimation approaches were utilized and are now briefly described. The relationships between the various estimation approaches have been described in a recent review⁹⁸.

4.4.1. Estimates from Data on Isomeric Species

One approach utilizes experimental information about isoenergetic processes for the formation of two or more isomeric species in a particular reaction. That is, given a pair of isomers for which information about the heat of formation is available for only one of the pair, an estimate of the thermochemistry of the second compound can be based on the casual and generally rather reliable assumption that if two isomers are formed in comparable yield in a particular process then their Gibbs energies and enthalpies of formation are generally comparable. Likewise, though less reliable, one may assert if one isomer is formed in higher yield, then this is the more stable product. Estimates made in this way often include the assumption that heats of vaporization and of solution are also comparable for the relevant pair of isomers; this will be a valid approximation except when there are great differences in the extent of hydrogen bonding (such as might exist for isomeric alcohols and ethers), and even in these cases, approximate corrections (such as assuming constant H-bond strengths) can be made.

In estimating thermochemical data from known information about an isomeric species, a common assumption made is that $\Delta(\Delta_f H) = \Delta(\Delta_f G)$ for the pair of isomers (i.e. $\Delta(\Delta_f S)$ is negligible). A related approach examines experimentally-determined reaction rates and/or kinetic activation energies. The thermochemical estimate is

based on the assumption that the structural effects on rates and equilibria will vary in a parallel manner, and that thermodynamic and kinetic control of arbitrary reactions result in the same products. While not in fact absolutely true, experience has shown this to be a useful assumption for predicting substituent effects for numerous homologous series.

Another approach to estimating heats of formation is based on the assumption that $\Delta(\Delta_i H)$ can be equated with $\Delta E_{\rm tot}$ for two isomers, where $\Delta E_{\rm tot}$ is the difference in total energies of the two species calculated by quantum mechanics. For this assumption, as well as all other estimation approaches in this study employing results from quantum mechanics, ab initio calculations were given preference over results from any of the plethora of semi-empirical methods in the literature. (The reader should note that heats of formation from MNDO and from molecular mechanical calculations were occasionally used, however). Care was explicitly taken to contrast only species studied with the same basis set and degree of geometry optimization. Implicit, however, are the requirements that both the zero-point energy and 0 K - 298 K corrections are essentially identical for a pair of isomers. These last assumptions are surprisingly valid where sufficient experimental data are available to test them.

All values for heats of formation based on these approaches are labelled as estimates (EST) in the Tables.

4.4.2. Summing of Increments

There remain three related approaches which were employed to estimate heats of formation of molecules here. The best characterized is Benson's "group increment" approach 99 in which the molecule of interest is defined as a collection of groups, and a "group" is then defined as a polyvalent atom (ligancy \geq 2) with all of its associated ligands in the molecule. The heat of formation of the molecule is obtained by summing the contributions of the heats of formation of the various groups, correcting for various higher order interactions and "correction" terms. These corrections include the presence of gauche configurations in substituted alkanes, gem-substitution of large and/or polar groups, and the presence of rings that are strained because of heteroatoms and/or are not six-membered. These group energies and the various corrections have been obtained using both statistical analysis and by chemical intuition, and for "reasonable" molecules generally give reasonable results. Estimates using this approach are better defined, though not necessarily of better quality, than the others.

Because this approach is now very common in the chemical literature, many of the papers included here which are primarily concerned with aspects of ion chemistry (e.g. ionization energy, gas phase basicity or acidity determinations) include estimates of heats of formation of relevant neutral species based on this approach; rather

than cite the work of the authors who made the (rather standard) estimate, these values, when they were used, have been labelled as estimates. In Table 2 estimates utilizing this approach are labelled "Est", but are accompanied by error bars.

A related approach takes advantage of regularities in trends in heats of formation of different homologous series of compounds. As an example of how this approach works, if it is observed that the heats of formation of several RXR compounds differ from those of RYR compounds by some approximately constant increment, then this difference is defined as a "correction term" for deriving heats of formation of any -Y- compound from the heat of formation of the corresponding -X- compound (or vice versa)¹⁰⁰. The unknown heat of formation is taken to the be the sum of the known heat of formation and the suitable correction term associated with the exchange of the substituent and parent components. One may also derive correction terms from suitable bond energies, e.g., assume that the O-H bond energy in all carboxylic acids is the same. This approach is more commonly used in anion chemistry and is designated as Est2 in Table 2 (but as EST without a special designator in Table 1).

The final estimation approach used here is commonly called "macroincrementation" 101,102, and, as the name implies, involves building up the molecule of interest by adding increments (as in the Benson approach), but with the difference that the incremental heats of formation are specifically derived from thermochemical data for molecules or large ("macro") molecular fragments which incorporate factors which need to be considered, such as resonance, strain energy, steric effects, etc. This approach assumes that "if for each of two sets of molecules the total number of bonds, atoms and structural types is the same, then the total heat of formation of each set of molecules is the same. Then, if all but one of the heats of formation are available, the remaining one can be estimated by simple arithmetic." Macroincrementation maximizes the direct use of chemical intuition with regard to electronic and/or steric effects, as well as the direct use of available experimental data. The majority of estimates for organic compounds in Table 1 were made using this approach.

The heats of formation of only a few inorganic or organometallic compounds were estimated. Where estimates were made, it generally was assumed that the heat of ligand exchange was negligible, i.e. the heats of reaction of the following generic reactions for suitably similar ligands (L₁ and L₂) could be taken to be zero:

$$M-L_1 + L_2 \rightleftharpoons M-L_2 + L_1 \tag{66}$$

$$L_1-M-L_1 + L_2-M-L_2 \rightleftharpoons 2(L_1-M-L_2)$$
 (67)

Likewise, simple additive assumptions were made as to heats of vaporization and sublimation and the 0 K - 298 K energy differences.

5. Summary of Conventions Used in Tables

In an attempt to present as much information as possible in Tables 1 and 2, while keeping the pages uncluttered, it was sometimes necessary to resort to the use of bold face, italic typefaces, asterisks, etc. to convey additional information. The various conventions are summarized below. The user is particularly cautioned that these conventions are different for Table 1 and Table 2. In particular, italicized numbers have different meanings in Table 1 (zero Kelvin heats of formation) and Table 2 (a hydride or halide affinity, and information relating to thermochemistry of neutral species).

5.1. Positive Ion Table (Table 1)

Value underscored: A well-established value of an ionization energy or ion heat of formation.

Value enclosed in parentheses: A value of an ionization energy or heat of formation which is not well established, or not evaluated, for one of the following reasons: (1) Only one determination of the ionization energy has been reported, and there are no auxiliary data which would permit one to judge its accuracy; (2) The heat of formation of relevant neutral species is/are not well established; (3) Two or more contradictory values for the ionization energy or appearance energy have been reported, and while one value has been selected, there is sufficient doubt that one can not regard the selected value as well-established. (For data falling under category (3), an explanatory comment is always included.)

Value given in italics: Thermochemical data corresponding to a temperature of absolute zero.

Literature citations: In Table 1, there is no column giving references to the source of ionization energy/appearance energy data. Such data are always taken from the earlier compilations^{1,2,3,4} unless specifically noted in a comment. When data are from the 1981–1986 primary literature, the reference is always specifically mentioned in the comment, and is specifically given in the bibliography. Heats of formation derived from proton affinity data (and the proton affinity data themselves) are taken from the evaluated compilation⁴ or from more recent literature, which will always be specifically cited in the comment and listed in the bibliography.

Sort scheme: Data are sorted by empirical formula ordered according to the so-called Hill scheme, which is the same sort scheme used by Chemical Abstracts. Formulas are written as $C_nH_mX_xY_y...$, where the primary sort is ordered by n, the number of carbon atoms, and the first sub-sort is ordered according to m, the number of H atoms. All other atoms in the molecule (X, Y, etc) are ordered alphabetically, and the various sub-subsorts follow accordingly. Any molecules which do not contain carbon appear according to a strictly alphabetical sort.

Proton affinity data: To locate the proton affinity of a molecule, look under the empirical formula of the protonated molecule, i.e. the proton affinity of CH₄ appears under CH₅.

Estimated heats of formation of neutral molecules: The literature citation column contains the acronym EST for estimated values.

5.2 Negative Ion Table (Table 2)

Chemical species: Each entry is headed by an empirical formula of the relevant anion, with the atoms ordered according to the Hill formulation. Below this there appears a structural representation of the anion where this can be conveniently represented on one line; the last-listed atom is usually the atom judged to carry the negative charge (insofar as this can be ascertained). These formulas may contain simplifying abbreviations in common use by organic chemists, for example "Me" for CH₃, "Et" for C₂H₅, "Pr" for C₃H₇, "COT" for cyclooctatetraene, or "Ph" for phenyl. For chemical species which have structures which are too complex to be represented by a semi-structural formulation, a name is given. The names chosen for inclusion are easily recognizable by most chemists, or at least can be readily located in standard texts.

Units: In Table 2, all data are presented in kJ/mol, except the values for electron affinities, which (as specifically indicated) are given in electron volts.

Presentation of Data: Each line presents data from a different reference, which is cited at the end of the line. The value (or values) which results (or result) from a primary experimental measurement will appear without an affiliated superscript alphabetic letter. These letters point out data which have been derived from the experimental result; the derivations are described in Sec. 3.3., and summarized (along with their alphabetic identifiers) in Table 5.2. The data in the Table are divided into columns as follows:

Ion $\Delta_{\mathrm{f}}H(\mathrm{A}); \ \mathrm{EA}(\mathrm{A}) \ \Delta_{\mathrm{acid}}H(\mathrm{AH}); \ \Delta_{\mathrm{acid}}G(\mathrm{AH}); \ \mathrm{Method}; \ \mathrm{Comment}; \ \mathrm{Reference}$ or eV or or $[\mathrm{X}\cdot\cdot\mathrm{Y}^-] \ \Delta_{\mathrm{aff}}H(\mathrm{X}\cdot\cdot\mathrm{Y}^-) \ \Delta_{\mathrm{aff}}G(\mathrm{X}\cdot\mathrm{Y}^-)$

Ion: The chemical formula of the anion of interest.

 $\Delta_t H(A^-)$ or $[X \cdot Y^-]$: The second column presents the heat of formation of the listed anion in kJ/mol. The column heading specifies that the data correspond to anion A^- which may also be represented as $[X \cdot Y^-]$. The second designation is included for the cases where the heat of formation of the anion has been derived from data on the clustering of anion Y^- to neutral molecule X (see reaction 52). For example, data on the heat of formation of $AlF_4^ (X \cdot Y^-)$ is derived from information on the fluoride affinity of AlF_3 (that is, AlF_3 is X and F^- is Y^-).

EA(A): The electron affinity of neutral species A is listed in this column in electron volts.

 $\Delta_{\text{acid}}H(AH)$ or $\Delta_{\text{aff}}H(X \cdot \cdot Y^-)$ and $\Delta_{\text{acid}}G(AH)$ or $\Delta_{\text{aff}}G(X \cdot \cdot Y^-)$: The fourth and fifth columns serve double purposes, with normal typefaced data representing the enthalpy change (fourth column) or Gibbs energy-change (fifth column), respectively, of reaction 10 for the species AH leading to a value for the heat of formation of anion A⁻. Data given in italics represent enthalpy changes for reaction 52, that is the affinity of molecule X for anion Y⁻. These have been derived either from direct determinations of equilibrium constants for reaction 52, or from equilibrium constants for Y⁻ transfer reaction 51 which yield scales of relative Y⁻-affinities.

Method: This column gives an acronym to indicate the experimental technique used in determining a particular piece of data. These are discussed in detail in Sec. 3.2. For quick reference, an alphabetized summary of the acronyms with their definitions, and the locations of the relevant discussions, is given in Table 5.2. This table also includes other acronyms, abbreviations, and symbols used in Table 2 for ready reference.

Comment: Where necessary for clarity, details of a particular experiment are given as a comment. In this column, there also appears information about auxiliary thermochemistry concerning neutral species. All data pertaining to neutral species appear in a different italicized typeface.

Reference: The squib given in this column refers to the article in which the primary datum reported on a particular line was reported. The complete reference can be found in the bibliography for Tables 1 and 2.

Thermochemistry of neutral species: The relevant heats of formation of neutral species and accompanying references are given in the top line of the "Comment" column. All data and the references pertaining to neutral molecules are presented in a different italicized typeface, so that they will not be mistaken for data concerning the anion.

Sort scheme: Data are sorted by empirical formula using the same sort scheme as that used for the Positive Ion Table. This is the Hill (or Chemical Abstracts) scheme.

Acidity data: Data on the acidity of a given neutral species is given under the empirical formula of the conjugate base, i.e. the acidity of CH₃OH is found under CH₃O⁻.

Asterisk in left hand margin: Due to the comprehensive nature of the Negative Ion compilation, there can be numerous entries in Table 2 for a given quantity associated with a particular negative ion, unlike the convention adopted for the cation table, where only one value of an ionization energy/heat of formation is given. A special indication must be given, therefore, to denote the preferred value. Any line with an asterisk in the left margin contains the selected "best" value for a given piece of data pertaining to that ion. There may be more than one line thus marked for a given anion, since the best values for an acidity value and an electron affinity value may be from different sources.

(The quantity without a superscripted letter is the primary piece of information for any given line.)

Absence of asterisk in margin: If no line is marked as preferred in the data collected for an ion, then no definitive evaluation could be made. Some preference should be given to the first reference cited in such cases, but this is a qualitative judgement on the part of the compiler, and should not be given undue weight.

Superscript "o" after method acronym [IMRE]: Original data which were re-evaluated to take into account new results which expanded a portion of the acidity^{81,82} scale; corrected values are shown above "original" data, with original reference cited for both values.

Primary data originating from cited experimental reference: In Table 2, on any given line (which presents information derived from a single paper) items which were derived from the primary experimental data using the relationships listed in Sec. 3.3. and summarized in Table 5.2., have a superscripted letter indicating the relationship used to derive the value (see Table 5.2.). The primary data do not display a superscript.

TABLE 5.2. Acronyms, abbreviations and symbols used in Negative Ion Table

BDE(A-H):	Bond dissociation energy of A-H bond
Bran:	Branching ratio in an exothermic reaction (see Sec.
	Sec. 3.2.14.)
Calc:	Calculation
CIDC:	Collision-induced dissociation of cluster ion-branching
	ratio (see Sec. 3.2.7.)
CIDT:	Collision induced dissociation threshold (see Sec.
	3.2.10.)
Def:	Defined
EA(A):	Electron affinity of A.
ECD:	Electron capture detector (see Sec. 3.2.16.)
EIAP:	Electron impact appearance potentials (see Sec. 3.2.7.)
EnCT:	Endothermic charge transfer threshold (see Sec.
	3.2.10.)
Endo:	Endothermic reaction threshold energy (see Sec.
	3.2.10.)
ES:	Electron swarm (see Sec. 3.2.12.)
Est:	Estimate, based on addition of increments
Est2:	Estimate, based on thermochemistry of analogous com-
	pounds
ETS:	Electron transmission spectroscopy (see Sec. 3.2.15.)
IMRB:	Ion/molecule reaction—bracketing (see Sec. 3.2.6.)
IMRE:	Ion/molecule reaction equilibrium constant determina-
	tion (see Sec. 3.2.5.)
Kine:	Attachment/detachment rate ratio (see Sec. 3.2.5.)
Latt:	Lattice energy calculation (see Sec. 3.2.13.)
LOG:	Laser optogalvanic spectroscopy
LPD:	Laser photodetachment (see Sec. 3.2.2.)
LPES:	Laser photoelectron spectroscopy (see Sec. 3.2.1.)
Mobl:	Mobility of ion in gas (see Sec. 3.2.17.)
NBAP:	Neutral beam appearance potential (see Sec. 3.2.8.)
NBIP:	Neutral beam ionization potential (see Sec. 3.2.8.)
PD:	Photodetachment (see Sec. 3.2.3.)

Photodissociation (see Sec. 3.2.4.)

PDis:

TABLE 5.2. Acronyms, abbreviations and symbols used in Negative Ion Table — Continued

PI:	Photoionization (see Sec. 3.2.9.)
PLA:	Plasma absorption
SI:	Surface ionization (Magnetron) (see Sec. 3.2.11.)
TDAs:	Temperature dependent association equilibrium con-
	stant determination (see Sec. 3.2.5.)
TDEq:	Temperature dependent equilibrium constant determi-
	nation (see Sec. 3.2.5.)
$\Delta_{\mathbf{f}}H(\mathbf{A}^{-})$:	Heat of formation of A
$\Delta_{\text{aff}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$:	Enthalpy of association of neutral X to anion Y-, the
	affinity of X for Y-
$\Delta_{\text{aff}}G(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$:	Gibbs energy of association of neutral X to anion Y-
$\Delta_{\text{scid}}H(AH)$:	Acidity of molecule AH; see definition below under f

Single letter codes which define chemical reaction types (superscripts)

```
a: \Delta_{t}H(A^{-}) = \Delta_{acid}H(AH) - \Delta_{t}H^{\circ}(AH) + \Delta_{t}H(H^{+})
b: \Delta_{t}H(A^{-}) = \Delta_{t}H^{\circ}(A) - EA(A)
c: \Delta_{t}H(X \cdot Y^{-}) = -\Delta_{aff}H(X \cdot Y^{-}) + \Delta_{t}H^{\circ}(X) + \Delta_{t}H(Y^{-})
d: EA(A) = \Delta_{acid}H(AH) - IP(H^{+}) - BDE(A - H)
e: BDE(A - H) = \Delta_{acid}H(AH) - IP(H^{+}) + EA(A)
f: \Delta_{acid}H(AH) = \Delta_{t}H(A^{-}) + \Delta_{t}H(H^{+}) - \Delta_{t}H^{\circ}(AH)
g: \Delta_{Rxn}H = \Delta_{Rxn}G + T\Delta_{Rxn}S
h: \Delta_{Rxn}G = \Delta_{Rxn}H - T\Delta_{Rxn}S
i: EA(A) = \Delta_{t}H^{\circ}(A) - \Delta_{t}H(A^{-})
j: \Delta_{aff}H(X \cdot Y^{-}) = \Delta_{t}H^{\circ}(X) + \Delta_{t}H(Y^{-}) - \Delta_{t}H(X \cdot Y^{-})
```

5.3. References to Tables 1 and 2

The bibliography given at the back of the volume includes (a) references to the sources data having a bearing on the thermochemistry of the positive ions given in Table 1 (including ionization potentials, appearance potentials, proton affinities, and other related information) except when those references appeared in the bibliographies of references 1 through 4; (b) references to the sources of all data on the thermochemistry of negative ions from Table 2; and (c) references to the sources of the data on the thermochemistry of neutral molecules.

The references are identified in the tables, and in the bibliography, by a squib, made up of the year of the publication, the first three letters of the surname of the first author, followed by a slash and the first three letters of the surname of the second author. Example: A publication by J. B. Pedley and J. Rylance which appeared in 1977 would be designated by 77PED/RYL.

The references given in the bibliography are sorted according to these squibs, that is, first according to year, and then alphabetically according to the first three letters of the names of the first two authors. Example: Within the papers which appeared during a given year, reference to a paper by "Beauchamp and Armentrout" (BEA/ARM) would precede a reference to a paper by "Beach and Jackson" (BEA/JAC), which in turn would appear above a reference to "Beauchamp and Schwarz" (BEA/SCH). Note that papers of a given first author do not necessarily follow one another in the listing.

6. Acknowledgements

This work was initiated by Henry M. Rosenstock in the late 1970's. Until his death in 1982, Dr. Rosenstock was the guru of the project, assembling the current list of collaborators, participating vigorously in planning sessions, and, on occasion, engaging in scientific discussions which sometimes had the distinct character of teaching seminars, with Henry Rosenstock making certain that the rest of us clearly understood the science associated with our data evaluation project. There is no question that the quality of the evaluations reported here has been substantially improved by the interactions of the authors with this distinguished scientist.

The authors also acknowledge the contributions of the original group, D. Sims, S. S. Shroyer, and W. J. Webb, who started work on this project under Dr. Rosenstock's direction in 1978. Much of the literature search for the years 1971–1977 was completed by this team, as was the abstracting of data for the years 1971–72.

John Holmes especially wishes to record the contributions of Fred Lossing to this formidable task; his unquenchable enthusiasm and countless stimulating discussions over the past 15 or more years are most gratefully acknowledged.

At the National Bureau of Standards, Kathy Maugh, Jose Portal, Carol Martin, Clairemarie Lanthier, Kathy Whalen, and Elizabeth Rogers have helped in abstracting data from the literature, retrieving Chemical Abstracts Registry Numbers, proofreading, and numerous other tasks necessary to the completion of the project. Kathy Whalen and Elizabeth Rogers were responsible for affixing the drawings of molecules to the cameraready pages. The careful, detailed work of all of these collaborators is acknowledged with thanks. We should also mention the help received from Julian Ives and Connie Seymour on preparation of the camera-ready copy.

Dr. Stephen E. Stein has collaborated with one of the present authors (W. G. M.) to develop a searchable PC version of this work, which can be purchased through the Office of Standard Reference Data.

Mahnaz Motevalli-Aliabadi of the University of Maryland, Baltimore County Campus, participated in the task of estimating heats of formation of neutral molecules during the early part of the project. Clairemarie Lanthier also provided estimations.

The molecular representations for the camera-ready copy were drawn by Andrea Fladager Buckley and Frances Baldwin.

The list of professional colleagues who have contributed data in preprint form or who have critically examined these tables and contributed advice, or pointed out errors is so long that a complete accounting is impossible. However, special mention should go to Dr. Charles DePuy of the University of Colorado for consultations on the table of anion thermochemistry. Dr. Malcolm Chase (NBS), editor of the JANAF tables, consulted with us about the discussion given here on the thermochemical conventions for the electron. Drs.

Eugene Domalski, Arthur Greenberg, Wing Tsang, and Deborah Van Vechten were frequently consulted about all aspects of that part of the project involving compilation of thermochemistry of neutral species. Dr. Pierre Ausloos critically reviewed the work several times during the five year period, and also contributed expert evaluations of thermochemical data from time to time. Also, we thank the three reviewers who provided thoughtful, informative, helpful comments on the manuscript; one of these, Dr. David A. Dixon, took the trouble to discuss the publication with us in some depth.

The project was carried out under the joint sponsorship of the Office of Standard Reference Data and the Center for Chemical Physics, National Bureau of Standards. We would like to acknowledge the support of Dr. David R. Lide, Director of OSRD, and Dr. Pierre Ausloos, Director of CCP, as well as Dr. Howard White, program manager in the Office of Standard Reference Data.

6. References to Introduction

- ¹J. L. Franklin, J. G. Dillard, H. M. Rosenstock, J. T. Herron, K. Draxl, and F. H. Field, *Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions*, Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U. S.) 26, (1969).
- ²H. M. Rosenstock, K. Draxl, B. W. Steiner, and J. T. Herron, "Energetics of Gaseous Ions," J. Phys. Chem. Ref. Data, Vol. 6, Suppl. 1 (1977).
- ³R. D. Levin and S. G. Lias, *Ionization Potential and Appearance Potential Measurements*, 1971–1981, Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U. S.) 71, (1982).
- ⁴S. G. Lias, J. F. Liebman, and R. D. Levin, "Evaluated Gas Phase Basicities and Proton Affinities of Molecules; Heats of Formation of Protonated Molecules," J. Phys. Chem. Ref. Data, Vol. 13, 695 (1984).
- ⁵J. E. Bartmess, to be published.
- ⁶S. G. Lias and R. D. Levin, to be published.
- ⁷S. G. Lias, J. F. Liebman, and R. D. Levin, to be published.
- ⁸R. G. Keesee and A. W. Castleman, Jr., "Thermochemical Data on Gas-Phase Ion-Molecule Association and Clustering Reactions," J. Phys. Chem. Ref. Data 15, 1011 (1986).
- ⁹D. A. Dixon and S. G. Lias, "Absolute Values of Gas Phase Proton Affinities and Basicities of Molecules: A Comparison between Theory and Experiment," Chapter 7 in *Molecular Structure and Energetics, Vol. 2* (J. F. Liebman and A. Greenberg, Editors), VCH Publishers, Inc.: Deerfield Beach, Fla., 1987, p. 269.
- ¹⁰J. E. Del Bene, "Quantum Chemical Reaction Enthalpies," Chapter 9 in *Molecular Structure and Energetics, Vol. 1* (J. F. Liebman and A. Greenberg, editors), VCH Publishers, Inc.: Deerfield Beach, Fla., 1986, p. 319.
- ¹¹A.A. Christodoulides; D.L. McCorkle, L.G. Christophorou, "Electron Affinities of Atoms, Molecules, and Radicals", Ch. 13 in *Electron-Molecule Interactions and Their Applications, Vol. 2*, Academic Press: New York, 1984, pp, 423-641.
- ¹²K. D. Jordan and P. D. Burrow, "Studies of the Temporary Anion States of Unsaturated Hydrocarbons by Electron Transmission Spectroscopy," Acc. Chem. Res. 11, 341 (1978).
- ¹³(a) D. R. Stull and H. Prophet, "JANAF Thermochemical Tables," Nat. Stand. Ref. Data Ser. (U. S.) 37, (1971); (b) M. W. Chase, J. L. Curnutt, A. T. Hu, H. Prophet, A. N. Syverud, and L. C. Walker, "JANAF Thermochemical Tables, 1974 Supplement," J. Phys. Chem. Ref. Data 3, 311 (1974); (c) M. W. Chase, Jr., C. A. Davies, J. R. Downey, Jr., D. J. Frurip, R. A. McDonald, and A. N. Syverud, "JANAF Thermochemical Tables, Third Edition, Parts I and II," J. Phys. Chem. Ref. Data 14, Suppl. 1 (1985).

- ¹⁴D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, I. Halow, S. M. Bailey, K. L. Churney, and R. L. Nuttall, "The NBS Tables of Chemical Thermodynamic Properties: Selected Values for Inorganic and C₁ and C₂ Organic Substances in SI Units," J. Phys. Chem. Ref. Data 11, Suppl. 2 (1982).
- ¹⁵L. V. Gurvich, I. V. Veits, V. A. Medvedev, G. A. Khachkuruzov, V. S. Yungman, G. A. Bergman, et al., *Termodinamicheskie Svoistva Individual'nykh Veshchestv* (Thermodynamic Properties of Individual Substances); V. P. Glushko, Gen. Ed., Vols. 1 through 4 (in 8 parts), (1978-1982), Izdatel'stvo "Nauka" Moscow.
- ¹⁶S. G. Lias, "Thermochemistry of Polyatomic Cations," in Kinetics of Ion-Molecule Reactions, (P. Ausloos, Editor), New York: Plenum, 1979, p. 223.
- ¹⁷H. M. Rosenstock, "Standard States in Gas Phase Ion Thermochemistry," in *Kinetics of Ion-Molecule Reactions*, (P. Ausloos, Editor), Plenum: New York, 1979, p. 246.
- ¹⁸A. N. Syverud, personal communication (1978).
- ¹⁹A. Sommerfeld, Z. Physik 47, 1 (1928).
- ²⁰A. R. Gordon, J. Chem. Phys. 4, 678 (1936).
- ²¹W. H. Evans, personal communication to H. M. Rosenstock (1976).
- ²²S. G. Lias and P. Ausloos, "Ionization Energies of Organic Compounds by Equilibrium Measurements," J. Am. Chem. Soc. 100, 6027 (1978).
- ²³(a) T. Shimanouchi, "Tables of Molecular Vibrational Frequencies. Consolidated Volume I," Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U. S.) 39, (1972); (b) T. Shimanouchi, "Tables of Molecular Vibrational Frequencies. Consolidated Volume II," J. Phys. Chem. Ref. Data 6, 993 (1977); (c) T. Shimanouchi, "Tables of Molecular Vibrational Frequencies, Part 9," J. Phys. Chem. Ref. Data 7, 1323 (1978); (d) T. Shimanouchi, "Tables of Molecular Vibrational Frequencies, Part 10," J. Phys. Chem. Ref. Data 9, 1149 (1980).
- ²⁴M. E. Jacox, "Ground State Vibrational Energy Levels of Polyatomic Transient Molecules," J. Phys. Chem. Ref. Data 13, 945 (1984).
- ²⁵J. C. Traeger and R. G. McLaughlin, "Absolute Heats of Formation for Gas Phase Cations," J. Am. Chem. Soc. 103, 3647 (1981).
- ²⁶W. A. Brand and T. Baer, J. Am. Chem. Soc. 106, 3154 (1984).
- ²⁷F. P. Lossing, Can. J. Chem. **50**, 3973 (1972).
- ²⁸J. Franck, "Elementary Processes of Photochemical Reactions," Trans. Faraday Soc. 21, 536 (1926).
- ²⁹(a) E. U. Condon, "Nuclear Motions Associated with Electron Transitions in Diatomic Molecules," Phys. Rev. 32, 858 (1928); (b) E. U. Condon, "The Franck-Condon Principle and Related Topics," Am. J. Phys. 15, 365 (1947).
- ³⁰W. A. Chupka, "Effect of Unimolecular Decay Kinetics on the Interpretation of Appearance Potentials," J. Chem. Phys. 30, 191 (1959).
- ³¹H. M. Rosenstock, "The Measurement of Ionization and Appearance Potentials," Int. J. Mass Spectrom. Ion Phys. 20, 139 (1976).
- ³²J. Dannacher, "The Study of Ionic Fragmentation by Photoelectron-Photoion Coincidence Spectroscopy," Org. Mass Spectrom. 19, 253 (1984).
- ³³J. L. Holmes, "Assigning Structures to Ions in the Gas Phase," Org. Mass Spectrom. 20, 169 (1985).
- ³⁴C. E. Moore, "Ionization Potentials and Ionization Limits Derived from the Analyses of Optical Spectra," Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U. S.) 34, (1970).
- ³⁵S. Leutwyler, M. Hofmann, H.-P. Harri, and E. Schumacher, "The Ionization Potentials of the Alkali Dimers Na₂, NaK, and K₂," Chem. Phys. Lett. 77, 257 (1981) and references cited therein.
- ³⁶K. Maeda, G. P. Semeluk, and F. P. Lossing, "A Two-Stage Double Hemispherical Electron Energy Selector," Int. J. Mass Spectrom. Ion Phys. 1, 395 (1968).
- ³⁷E. M. Clarke, "Ionization Probability Curves Using an Electron Selector," Can. J. Phys. 32, 764 (1954).
- ³⁸P. Marmet, and L. Kerwin, "An Improved Electrostatic Electron Selector," Can. J. Phys. 38, 787 (1960).
- ³⁹P. Marmet and J. D. Morrison, "Secondary Reactions in the Ion Chamber of a Mass Spectrometer," J. Chem. Phys. 36, 1238 (1962).
- ⁴⁰H. M. Rosenstock and M. Krauss, Mass Spectrometry of Organic Ions, Chapter 1, New York: Academic Press (1963).

⁴¹H. M. Rosenstock, M. B. Wallenstein, A. L. Wahrhaftig and H. Eyring, Proc. Natl. Acad. Sci. U. S., 38, 667 (1952).

- ⁴²(a) C. R. Brundle and A. D. Baker, Electron Spectroscopy: Theory, Techniques and Applications, New York: Academic Press, 1977; (b) J. W. Rabalais, Principles of Ultraviolet Photoelectron Spectroscopy, New York: Wiley-Interscience, 1977; (c) J. H. D. Eland, Photoelectron Spectroscopy: An Introduction to Ultraviolet Photoelectron Spectroscopy in the Gas Phase, New York: John Wiley & Sons, 1974; (d) D. W. Turner, C. Baker, A. D. Baker, and C. R. Brundle, Molecular Photoelectron Spectroscopy, New York: Wiley-Interscience, 1970.
- ⁴³(a) P. Kebarle, "Higher-Order Reaction-Ion Clusters and Ion Solvation," Chapter 7 in *Ion-Molecule Reactions* (J. L. Franklin, Editor), New York: Plenum Press, 1972; (b) P. Kebarle, "Ion Thermochemistry and Solvation from Gas Phase Ion Equilibria," Ann. Rev. Phys. Chem. 28, 445 (1977).
- 44(a) E. E. Ferguson, "Flowing Afterglow Studies," Chapter 8 in Ion Molecule Reactions (J. L. Franklin, Editor), New York: Plenum Press, 1972;
 (b) D. K. Bohme, "The Kinetics and Energetics of Proton Transfer," in Interactions between Ions and Molecules, (P. Ausloos, Editor), New York: Plenum Press, 1975, p. 504.
- ⁴⁵(a) J. L. Beauchamp, "Ion Cyclotron Resonance Spectroscopy," Ann. Rev. Phys. Chem. 22, 527 (1971); (b) R. W. Taft, "Gas Phase Proton Transfer Equilibria," in *Proton Transfer Reactions*, (E. F. Caldin and V. Gold, Editors), New York: John Wiley & Sons, 1975, p. 31; (c) D. H. Aue and M. T. Bowers, "Stabilities of Positive Ions from Equilibrium Gas Phase Basicity Measurements," in *Gas Phase Ion Chemistry*, (M. T. Bowers, Editor), New York: Academic Press, 1979, p. 1; (d) C. R. Moylan and J. I. Brauman, "Gas Phase Acid-Base Chemistry," Ann. Rev. Phys. Chem. 34, 187 (1983).
- ⁴⁶(a) S. G. Lias, P. Ausloos, and Z. Horvath, "Charge Transfer Reactions in Alkane and Cycloalkane Systems. Estimated Ionization Potentials," Int. J. Chem. Kinetics 8, 725 (1976); (b) M. Meot-Ner (Mautner), L. W. Sieck, and P. Ausloos, "Ionization of Normal Alkanes: Enthalpy, Entropy, Structural, and Isotope Effects," J. Am. Chem. Soc. 103, 5342 (1981).
- ⁴⁷M. Meot-Ner (Mautner), S. F. Nelsen, M. R. Willi, and T. B. Frigo, "Special Effects of an Unusually Large Neutral to Radical Cation Geometry Change. Adiabatic Ionization Energies and Proton Affinities of Alkylhydrazines," J. Am. Chem. Soc. 106, 7384 (1984).
- ⁴⁸S. F. Nelsen, "Hydrazine-Hydrazine Cation Electron Transfer Reactions," in *Molecular Structure and Energetics, Volume 3*, (J. F. Liebman and A. Greenberg, Editors), VCH Publishers, Inc.: Deerfield Beach, Fla., 1986, p. 1.
- ⁴⁹K. Hiroaka, "Endothermic Ion-Molecule Reactions: The Reactions of H₃O⁺ and H₃S⁺ with Isobutane," Int. J. Mass Spectrom. Ion Phys. 27, 139 (1978).
- ⁵⁰S. G. Lias, "Thermochemical Information from Ion-Molecule Rate Constants," in Ion Cyclotron Resonance Spectrometry II, Berlin: Springer-Verlag (1982), p. 409.
- ⁵¹(a) P. B. Armentrout and J. L. Beauchamp, "Ion Beam Studies of the Reactions of Atomic Cobalt Ions with Alkanes: Determination of Metal-Hydrogen and Metal-Carbon Bond Energies and an Examination of the Mechanism by which Transition Metals Cleave Carbon-Carbon Bonds," J. Am. Chem. Soc. 103, 784 (1981); (b) P. B. Armentrout, L. F. Halle, and J. L. Beauchamp, "Reaction of Cr⁺, Mn⁺, Fe⁺, Co⁺, and Ni⁺ with O₂ and N₂O. Examination of the Translational Energy Dependence of the Cross Sections of Endothermic Reactions," J. Chem. Phys. 76, 2449 (1982); and references cited therein.
- ⁵²E. Murad, "Abstraction Reactions of Ca⁺ and Sr⁺ Ions," J. Chem. Phys. 78, 6611 (1983) and references cited therein.
- ⁵³W. S. Koski, "Reactions of Electronically Excited Positive Ions," in Interactions between Ions and Molecules, (P. Ausloos, ed.) New York and London: Plenum (1975), p. 215, and references cited therein.
- ⁵⁴J. L. Holmes, M. Fingas, and F. P. Lossing, "Towards a General Scheme for Estimating the Heats of Formation of Organic Ions in the Gas Phase. Part I. Odd-Electron Cations," Can. J. Chem. 59, 80 (1981).
- 55J. L. Holmes and F. P. Lossing, "Towards a General Scheme for Estimating the Heats of Formation of Organic Ions in the Gas Phase.

- Part II. The Effect of Substitution at Charge-Bearing Sites," Can. J. Chem. 60, 2365 (1982).
- ⁵⁶J. L. Holmes and F. P. Lossing, "The Need for Adequate Thermochemical Data for the Interpretation of Fragmentation Mechanisms and Ion Structure Assignments," Int. J. Mass Spectrom. Ion Phys. 47, 133 (1983).
- ⁵⁷F. P. Lossing and J. L. Holmes, "Stabilization Energy and Ion Size in Carbocations in the Gas Phase," J. Am. Chem. Soc. 106, 6917 (1984).
- ⁵⁸M. Bachiri, G. Mouvier, P. Carlier, and J. E. Dubois, "Evaluation-Quantitative des Effets de Substituants sur les Premiers Potentiels d'Ionisation de Composes Monofonctionnels Aliphatiques," J. Chim. Phys. 77, 899 (1980).
- ⁵⁹J. F. Liebman, unpublished results, derived from his earlier equations discussed in *Structural Thermochemistry and Reactivity of Ions*, P. Ausloos and S. G. Lias, Editors, Amsterdam, D. Reidel, 371 (1987).
- ⁶⁰S. G. Lias and P. Ausloos in "Ion-Molecule Reactions: Their Role in Radiation Chemistry," Washington: Am. Chem. Soc. (1975), pp. 91-95.
- ⁶¹S. G. Lias, J.-A. A. Jackson, H. Argentar, and J. F. Liebman, "Substituted N,N-Dialkylanilines: Relative Ionization Energies and Proton Affinities through Determination of Ion-Molecule Reaction Equilibrium Constants," J. Org. Chem. 50, 333 (1985).
- ⁶²D. H. Aue, H. M. Webb, and M. T. Bowers, "Quantitative Relative Gas Phase Basicities of Alkylamines: Correlations with Solution Basicity," J. Am. Chem. Soc. 94, 4726 (1972).
- ⁶³I. Koppel, U. Molder, and R. Pikver, "On Relationship Between Ionization Potentials and Proton Affinities in Gas Phase," Org. Reactivity (Engl. Ed.) 17, 457 (1980).
- ⁶⁴L. S. Levitt and H. F. Widing, "The Alkyl Inductive Effect. Calculation of Inductive Substituent Parameters," Prog. Phys. Org. Chem. 12, 119 (1977).
- ⁶⁵I. A. Koppel and U. H. Molder, "The Dependence of Ionization Potentials and Proton Affinities on Structure. II. Proton Affinities. Correlations with Substituent Constants and Polarizability," Org. Reactivity 20, 3 1983).
- ⁶⁶I. A. Koppel and U. H. Molder, "Internal Substituent Parameters and Correlation of Proton Affinities," Org. Reactivity (Engl. Ed.) 21, 213 (1984).
- ⁶⁷I. A. Koppel, U. H. Molder, and R. I. Pikver, "The Dependence of Ionization Potentials and Proton Affinties on Structure. I. Ionization Potentials. Correlations with Substituent Constants and Polarizability," Org. Reactivity (Engl. Ed.) 18, 380 (1981).
- ⁶⁸R. D. Mead, A. E. Stevens, W. C. Lineberger, Gas Phase Ion Chemistry, Vol. 3, M.T. Bowers, Ed. Academic Press, Orlando, FL, 1984; Ch. 22 "Photodetachment in Negative Ion Beams".
- ⁶⁹P. S. Drzaic, J. Marks, J. I. Brauman Gas Phase Ion Chemistry, Vol. 3, M.T. Bowers, Ed. Academic Press, Orlando, FL, (1984); Ch. 21 "Electron Photodetachment from Gas Phase Molecular Anions".
- ⁷⁰H. Hotop and W. C. Lineberger, "Binding Energies in Atomic Negative Ions: II," J. Phys. Chem. Ref. Data 14, 731 (1985).
- ⁷¹T. M. Miller, Adv. Electron. Electron Phys. 1981 55, 119.
- ⁷²R. R. Corderman and W.C. Lineberger Ann. Rev. Phys. Chem. 30, 347 (1979).
- ⁷³R. C. Dunbar Gas Phase Ion Chemistry, Vol. 2, M.T. Bowers, Ed. Academic Press, Orlando, FL, (1979).
- ⁷⁴R. S. Berry and S. Leach, Adv. Electron. Electron Phys. 57, 1 (1982).
- ⁷⁵P. Kebarle and S. Chowdhury, "Electron Affinities and Electron Transfer Reactions", Chem. Rev. 87, 513 (1987).
- ⁷⁶D. M. Neumark, K. R. Lykke, T. Andersen and W. C. Lineberger, "Laser Photodetachment Measurement of the Electron Affinity of Atomic Oxygen," Phys. Rev. A32, 1890 (1985).
- ⁷⁷J. H. Richardson, L. M. Stephenson and J. I. Brauman, "Photode-tachment of Electrons from Trifluoromethyl and Trifluorosilyl Ions; the Electron Affinities of CF₃ and SiF₃," Chem. Phys. Lett. 30, 17 (1975).
- ⁷⁸J. E. Bartmess in "Structure/Thermochemistry and Reactivity of Ions" (P. Ausloos and S. G. Lias, Editors), Amsterdam: D. Reidel (1987).
- ⁷⁹J. B. Cumming and P. Kebarle, "Summary of Gas Phase Measurements Involving Acids, AH. Entropy Changes in Proton Transfer Reactions Involving Negative Ions. Bond Dissociation Energies D(A-H) and Electron Affinities, EA(A)," Can. J. Chem. 56, 1 (1978).

- ⁸⁰J. E. Bartmess, J. A. Scott, and R. T. McIver, Jr., "The Gas Phase Acidity Scale from Methanol to Phenol," J. Am. Chem. Soc. 101, 6047 (1979).
- ⁸¹R. W. Taft, personal communication.
- 82J. E. Bartmess, to be published.
- ⁸³K. Lacmann and D. R. Herschbach, "Collisional Excitation and Ionization of K Atoms by Diatomic Molecules: Role of Ion-pair States," Chem. Phys. Lett. 6, 106 (1970).
- 84F. M. Page and G. C. Goode, "Negative Ions and the Magnetron," New York: Wiley (1969).
- 85L. G. Christophorou, P. M. Collins and J. C. Carter, "Electron Attachment in the Field of the Ground and Excited States of the Azulene Molecule," J. Chem. Phys. 52, 4413 (1970).
- ⁸⁶G. S. A. McLuckey, D. Cameron and R. G. Cooks, "Proton Affinities from the Dissociation of Proton Bound Dimers," J. Am. Chem. Soc. 103, 1313 (1981); (b) Boand, R. Houriet, and T. Gaumann, "The Gas Phase Acidity of Aliphatic Alcohols," J. Am. Chem. Soc. 105, 2203 (1983).
- ⁸⁷D. J. Burinsky, E. K. Fukuda and J. E. Campana, "Electron Affinities from Dissociations of Mixed Negative Ion Dimers," J. Am. Chem. Soc. 106, 2770 (1984).
- ⁸⁸C. H. DePuy, V. M. Bierbaum and R. Damrauer, "Relative Gas Phase Acidities of the Alkanes," J. Am. Chem. Soc. **106**, 4051 (1984).
- ⁸⁹E. C. M. Chen and W. E. Wentworth, J. Phys. Chem. 87, 45 (1983).
- ⁹⁰C. R. Webster, I. S. McDermid, and C. T. Rettner, "Laser Optogal-vanic Photodetachment Spectroscopy: A New Technique for Studying Photodetachment Thresholds with Application to I⁻," J. Chem. Phys. 78, 646 (1983).
- ⁹¹J. B. Pedley and J. Rylance, Sussex-N. P. L. Computer Analysed Thermochemical Data: Organic and Organometallic Compounds, University of Sussex (1977).
- ⁹²J. B. Pedley, R. D. Naylor, and S. P. Kirby, *Thermochemical Data of Organic Compounds*, Second Edition, London/New York: Chapman and Hall (1986).

- ⁹³D. F. McMillen and D. M. Golden, *The Annual Review of Physical Chemistry*, Vol. 33, Annual Reviews, Palo Alto, CA (1982).
- ⁹⁴W. Tsang, "The Stability of Alkyl Radicals," J. Am. Chem. Soc. 107, 2872 (1985).
- ⁹⁵J. S. Chickos, "Heats of Sublimation" in *Molecular Structure and Energetics*, Vol. 2 (J. F. Liebman and A. Greenberg, Editors), VCH Publishers, Deerfield Beach 67 (1987).
- 96V. Majer and V. Svoboda, Enthalpies of Vaporization of Organic Compounds: A Critical Review and Data Compilation, Oxford: Blackwell Scientific Publications, 1985.
- ⁹⁷J. S. Chickos, A. S. Hyman, L. H. Ladon, and J. F. Liebman, J. Org. Chem. 46, 4294 (1981).
- ⁹⁸J. F. Liebman and D. Van Vechten, "Universality: The Differences and Equivalences of Heats of Formation, Strain Energy, and Resonance Energy," in *Molecular Structure and Energetics*, Vol. 2, 315 (J. F. Liebman and A. Greenberg, Editors), VCH Publishers, Deerfield Beach (1987).
- ⁹⁹(a) S. W. Benson and J. H. Buss, "Additivity Rules for the Estimation of Molecular Properties. Thermodynamic Properties," J. Chem. Phys. 29, 546 (1958); (b) S. W. Benson, Thermochemical Kinetics: Methods for the Estimation of Thermochemical Data and Rate Parameters, 2nd Ed. John Wiley & Sons, New York (1976).
- ¹⁰⁰For a recent example, see: K. Bystrom, "Enthalpies of Combustion, Vaporization and Formation for Di-n-propyldiazene N-oxide and Dit-butyldiazene N-oxide," J. Chem. Thermodyn. 13, 139 (1981).
- ¹⁰¹H. M. Rosenstock, J. Dannacher, and J. F. Liebman, "The Role of Excited Electronic States in Ion Fragmentation: C₆H₆+," Radiat. Phys. Chem. 20, 7 (1982).
- ¹⁰²J. F. Liebman, "Macroincrementation Reactions: A Holistic Estimation Approach for the Properties of Organic Compounds," in *Molecular Structure and Energetics*, Vol. 3 (J. F. Liebman and A. Greenberg, Editors), VCH Publishers, Deerfield Beach 262 (1986).

Table 1. Positive Ion Table

YONI		Tourisation potential A IVIan) A IVA (A IVIan)							
ION Neutral	Ionization potential eV	l ∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
. 4		·	,,,, =,,,, = , ,,, ,,,,,,,,,,,,,,,,,,,,						
Ac +	5.17±0.12	216	905	97	406	Q2TTNT270	7440-34-8		
	J.1/EU.12	210	703			82TN270	/++0-34-8		
Ag +									
Ag	7.576	242.7 <i>242</i> .6	1015.6 <i>1015.1</i>	68.0 <i>67.9</i>	284.6 <i>284.1</i>	82TN270	7440-22-4		
	See also: 80KRA		1013.1	07.9	204.1				
AgAl ⁺							***************************************		
AgAl	(7.8±0.5)	(287)	(1200)	107	448	79HUB/HER	12379-67-8		
	0 K values.								
AgBr ⁺		······							
AgBr	≤9.59	≤246	≤1028	25	103	79HUB/HER	7785-23-1		
	0 K values.								
AgCl +									
AgCl	(≤10.08)	(≤255)	(≤1065)	22	93	79HUB/HER	7783-90-6		
	0 K values.								
AgF ⁺									
AgF	(11.0±0.3)	(256)	(1071)	2	10	79HUB/HER	7775-41-9		
	0 K values.								
AgH ⁺									
AgH	(9.2)	(280)	(1170)	67	282	79HUB/HER			
	$\Delta_{\mathbf{f}}H(\operatorname{Ion})$ from G IP is $\Delta_{\mathbf{f}}H(\operatorname{Ion})$ -			on (86ELK/AR	tM). 0 K value	.			
	11 is ΔfH(1011) -	ZZfri(Iveutiai)· 	<u> </u>					
Ag ₂ +									
Ag_2	(7.35)	(267) <i>(268)</i>	(1119) <i>(1120)</i>	98.0 00	410.0 <i>411</i>	82TN270	12187-06-3		
		(200)	(1120)	98	411				
Al ⁺									
Al	5.986	216.3	904.9	78.2	327.3	85JANAF	7429-90-5		
		216.8	907.3	78.8	329.7				
AlAu ⁺									
AuAl	(7.6±0.3)	(263)	(1101)	88	368	79HUB/HER	12250-38-3		
	0 K values.								
AlBO ₂ +									
AIBO ₂	(9.5±0.5)	(90)	(376)	-129±4	-541±17	71JANAF			
AlBr ⁺						·	*****************		
AlBr	(9.3)	(218.3)	(913.2)	3.8±3.0	15.9±12.6	85JANAF	22359-97-3		
	• •	(220.0)	(920.4)	5.5±3.0	23.1±12.5				

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	al ∆ _f H(I	on)	$\Delta_{\rm f}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	• .	kJ/mol	kcal/mol		reference	number
AIDm. +		.					·····
AlBr ₃ + AlBr ₃	(10.4)	(142)	(593)	-98.1	-410.4	85JANAF	7727-15-3
	(10.4)	(147)	(616)	-92.5	-387.2	65JANAI	1121-13-3
	IP is onset of p						
AlCI ⁺							
AICI	9.4	204	855	-12.3	-51.5	85JANAF	13595-81-8
		204	855	-12.3	-51.7		
AlClF+							
AlCiF	(7.9±1.0)	(66)	(276)	-117	-489	85JANAF	
	, ,	(65)	(271)	-117	-488		
AlCl ₃ +							
AlCl ₃	(12.01)	(137)	(574)	-140	-585	85JANAF	7446-70-0
2		(138)	(576)	-139	-583		
AIF ⁺							
AIF	9.73±0.01	160.9	673.1	-63.5±0.8	-265.7±3.4	79HUB/HER	13595-82-9
		160.9	673.9		-265.6±3.4		
	IP from 84DYI	K/KIR.					
AlF ₂ +				*			
AIF ₂	(8.1)	(8)	(33)	-179	-749	81WOO	13569-23-8
	IP from 85JAN	AF.					
AlF ₃ +							
AIF ₃	≤15.45	≤67	≤282	-289	-1209	85JANAF	7784-18-1
		<i>≤68</i>	≤285	-288	-1206		
	IP from 84DYI	K/KIR.					
AlI +							-
AlI	(9.3±0.3)	(230.7)	(965.3)	16.3±1	68.0±4.2	85JANAF	29977-41-1
		(231.0)	(966.6)	16.6±1	69.3±4.2		
AlI ₃ +							
AlI ₃	(9.1)	(160)	(670)	– 49	-208	82TN270	7784-23-8
	IP is onset of p	hotoelectron b	oand.				
AlO +							
AIO	9.46±0.06	234.1	979.6	16.0±2	66.9±8	85JANAF	14457-64-8
		234.2	979.7	16.0±2	67.0±8		
	IP from 82ARN	M/HAL. See a	lso: 80MUR/H	IIL, 81KAP/ST.	A.		
AlO ₂ +							
AlO ₂	(10.0±1.0)	(200)	(835)	-31	-130	82KAS/CHE	11092-32-3
AlP+							<u>-</u>
AIP	(8.4±0.4)	(295)	(1232)	101	422	79HUB/HER	20859-73-8
	0 K values.	` /	` '				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	$\Delta_{\mathbf{f}}H(\mathrm{Ne}% \mathbf{f})$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
AlSe +							
AlSe	(8.3±0.5) 0 K values.	(243)	(1016)	52	215	79HUB/HER	23330-87-2
Al ₂ +							
Al ₂	(5.4±1.0)	(240.9) (240.8)	(1008.0) (1007.3)		487.0±3.5 486.3±3.5	85JANAF	32752-94-6
Al ₂ Br ₆ +							
Br Al Br Br Br	(10.97)	(21)	(87)	-232	-971	82TN270	18898-34-5
Al ₂ Cl ₆ ⁺							
CI AI CI CI	(12.18)	(-28)	(-116)	-309	-1291	82TN270	13845-12-0
Al ₂ O ⁺							
Al ₂ O	(7.7±0.2)	(144) <i>(145)</i>	(603) (605)	−33±5 − <i>33</i>	-140±22 -138	82KAS/CHE	12004-36-3
Al ₂ O ₂ +			· · · · · · · · · · · · · · · · · · ·				
AI O AI	(9.9±0.5)	(131)	(551)	-97±12	-404±48	82KAS/CHE	12252-63-0
Am [†]							
Am	5.99 See also: 81CHE/	206 GAB.	862	68	284	85KLE/WAR	7440-35-9
Ar ⁺							
Ar	15.75973±0.00001		1520.57	0	0	*DEF	7440-37-1
	See also: 81KIM/I	<u>363.42</u> KAT.	<u>1520.57</u>				
ArH ⁺							
ArH		277	1159				
	From proton affin	ity of Ar (R	N 7440-37-1).	PA = 88.6 kca	l/mol, 371. kJ/i	mol.	
ArHe ⁺							
ArHe	15.735 $\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from 81	<i>362.8</i> Dab/Her	1518.0 . 0 K values.	-0.055	-0.23	79HUB/HER	12254-69-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
ArHg ⁺							
ArHg	(10.217±0.012) IP from 85LIN/BI	<i>(250.6)</i> RO.	(1048.6)	15.0	62.8	84BOU/BRA	87193-95-1
ArKr ⁺				·			******
ArKr	13.484±0.015 IP from 82DEH/P	<i>310.6</i> RA. 0 K val	<i>1299.7</i> ues.	-0.3	~1.3	79HUB/HER	51184-77-1
ArNe ⁺				· · · · · · · · · · · · · · · · · · ·			
ArNe	15.685±0.004 IP from 82PRA/D	<i>361.6</i> EH2. 0 K va	<i>1512.9</i> alues.	-0.10	-0.43	76BOB/BAR	12301-65-4
ArXe +							
ArXe	11.968±0.012 IP from 82DEH/P	<i>275.7</i> RA. See als	<i>1153.4</i> o: 85PRA/DE	<i>-0.32</i> EH, 85PRA/DE	<i>−1.35</i> .H2. 0 K value	76BOB/BAR	58206-67-0
Ar ₂ +		······································					
Ar ₂	14.501±0.025 IP from 82DEH/P	<i>334.2</i> RA2. See a	<i>1398.1</i> lso: 81DEH/F	-0.24 POL, 82LEV/L	<i>~1.01</i> IA. 0 K values	79HUB/HER s.	12595-59-4
As ⁺				· · · · · · · · · · · · · · · · · · ·	·		
As	9.7883±0.0002	298.0 <i>297.7</i>	1246.9 1245.8	72.3 <i>72.0</i>	302.5 <i>301.4</i>	82TN270	7440-38-2
AsBr ₃ +							
AsBr ₃	(10.0)	(200) (205)	(835) (858)	-31 -25.5	-130 -106.9	82TN270	7784-33-0
	IP is onset of phot	oelectron b	and.				
AsCIO+							
AsOCI	(11.1) IP from 83BIN.	(249)	(1040)	-7	~31	83BIN	14525-25-8
AsCl ₃ +		· · · · · · · · ·					
AsCl ₃	(10.55±0.025)	(181) <i>(181)</i>	(756) <i>(758)</i>	63 62	-262	82TN270	7784-34-1
	See also: 83OZG.	(101)	(136)	-02	-260		
AsF ₃ +		· · · · · · · · · · · · · · · · · · ·					
AsF ₃	(12.84±0.05)	(108)	(453)	-188	~786	82TN270	7784-35-2
		(109)	(457)	-187	-782		
AsF ₃ H ⁺			<u> </u>				
F ₃ AsH	E	23	96	D) DA = 1551	no1/m =1 640 *	·I/m ol	
	From proton affin	ity of AsF3	(KIN //84-35-2	6). PA = 155 k	cai/moi, 648 k	J/mol.	
AsH ₃ +			1000			OATT TATE	mmo t to c
AsH ₃	9.89	244 246	1020 1028	16 <i>18</i>	66 <i>7</i> 4	82TN270	7784-42-1
	See also: 82ELB/D		· -				

Table 1. Positive Ion Table - Continued

ION		•	Ionization potential $\Delta_f H(Ion)$				CAS registry	
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number	
AsH ₄ +			<u>-</u>					
AsH ₄		202	846					
	From proton affi	inity of AsH	3 (RN 7784-42	-1). $PA = 179$	2 kcal/mol, 750	kJ/mol.		
As ₂ +								
As ₂	(10.1±0.2)	(278)	(1165)	45.5±0.7	190.4±2.9	73BEN/MAR	23878-46-8	
	Constant OFFITT	(278)	(1164)	45.5±0.7	190.4±2.9			
	See also: 85HIR/	51K.						
As ₄ +								
As	(0.07.0.07)	(244)	(1010)	24	144	0.000 10.00	10107.00.5	
As——As	(9.07±0.07) See also: 85HIR/	(244) STR.	(1019)	34	144	82TN270	12187-08-5	
As4+ AsAs AsAs	000 4350. 0511114	0110						
As ₄ O ₆ +			<u> </u>				 	
o- A s	(0.C)	((0)	4 000	***	1000	0.0577 1.057.0	10505 (50	
As -1-01	(9.6) IP is onset of pho	(-68) stoelectron b	(-283) and	-289	-1209	82TN270	12505-67-8	
6. 1. 0°	II is onser or pine	nociceiron o	ano.					
Au ⁺		 			 	<u></u>		
Au	9.225	300	1256	87	366	82TN270	7440-57-5	
		300.2	1256.0	<i>87.5</i>	365.9			
AuB +			····					
AuB	(8.7±0.5)	(337)	(1411)	137	572	79HUB/HER	12408-81-0	
	0 K values.							
AuCe +						· · · · · · · · · · · · · · · · · · ·		
AuCe	(6.0±0.3)	(248)	(1036)	109	457	82TN270	12408-82-1	
		(248)	(1039)	110	460			
AuHo ⁺								
AuHo	(6.2±0.5)	(242)	(1013)	99.1	414.5	82TN270	12044-80-3	
	•	(243)	(1016)	100	418			
AuLa ⁺								
AuLa	(5.9±0.5)	(247)	(1033)	111	464	82TN270	12429-32-2	
	, ,	(247)	(1035)	111	466			
AuNd ⁺		 	7			,		
AuNd AuNd	(5.8±0.8)	(228)	(955)	94	395	82TN270	12429-33-3	
	(2.310.0)	(229)	(957)	95	397	021112/0	14447-33-3	
AuPr ⁺								
AuPr AuPr	(5.4±0.8)	(224)	(937)	99	416	0977%19790	12420 24 4	
4 544 7	(J.4±0.0)	(224) (224)	(937) (939)	99 100	416 <i>418</i>	82TN270	12429-34-4	

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$		$\Delta_f H(\text{Neutral})$		Neutral	CAS registry				
Neutral	eV	kcal/mol		kcal/mol		reference	number			
AuSi ⁺										
AuSi	(9.5±0.5) 0 K values.	(340)	(1422)	(121)	(505)	79HUB/HER	12256-53-0			
Au ₂ +										
Au ₂	(9.5±0.3)	(343) <i>(341)</i>	(1433) <i>(1427)</i>	123.5 122.0	516.7 510.4	79HUB/HER	12187-09-6			
B+							,			
B	8.29808±0.00002	325.9 324.7	1363.3 1358.2	134.5 <i>133.3</i>	562.7 557.6	82TN270	7440-42-8			
BBr ₂ H +	· · · · · · · · · · · · · · · · · · ·		······································							
внвг2	(10.92±0.02)	(227) (231)	(949) <i>(966)</i>	-25±5 -21±5	-105±21 -88±21	71JANAF	13709-65-4			
	IP from 81FRO/K	IR.								
BBr ₃ +	(10.51±0.02)	(194)	(810)	-49±0.2	-204±1	71JANAF	10294-33-4			
BCI +				· · · · · · · · · · · · · · · · · · ·						
BCI BCI	(10.2)	(269.0) (268.3)	(1125.5) (1122.5)	33.8 <i>33.1</i>	141.4 <i>138.4</i>	85JANAF	20583-55-5			
		$\Delta_f H$ (Ion) from appearance potential (18.37±0.02 eV) in BCl ₃ . Cited ionization potential is difference between heats of formation of ion and neutral.								
BCIF ₂ + BCIF ₂	(13.06±0.11)	(88)	(370)	-213	-890	82TN270	14720-30-0			
BCl ₂ +						·····				
DCI7	(7.8) (159) (664) -20 ± 15 -83 ± 63 71JANAF 13842-52-9 $\Delta_f H(\text{Ion})$ from appearance potential (12.30 $\pm0.02\text{eV}$) in BCl ₃ . Cited ionization potential is difference between heats of formation of ion and neutral.									
BCl ₂	$\Delta_f H$ (Ion) from ap	pearance po	tential (12.30	±0.02 eV) in B	Cl ₃ .		13842-52-9			
BCl ₂	$\Delta_f H$ (Ion) from ap	pearance po	tential (12.30	±0.02 eV) in B	Cl ₃ .		13842-52-9			
BCl ₂	$\Delta_f H$ (Ion) from ap	pearance po	tential (12.30	±0.02 eV) in B	Cl ₃ .		13842-52-9 14720-31-1			
BCl ₂ F + BCl ₂ F	$\Delta_f H$ (Ion) from ap Cited ionization p	pearance po otential is di	fference betw	±0.02 eV) in Boreen heats of fo	Cl ₃ . rmation of ior	and neutral.				
BCl ₂ F + BCl ₂ F	$\Delta_f H$ (Ion) from ap Cited ionization p	pearance po otential is di	fference betw	±0.02 eV) in Boreen heats of fo	Cl ₃ . rmation of ior	and neutral.				
BCl ₂ F + BCl ₂ F BCl ₂ H +	$\Delta_{ m f}H({ m Ion})$ from ap Cited ionization p	(130) (215) (216)	otential (12.30 fference between (544)	±0.02 eV) in B0 reen heats of fo -151 -59.3±1	Cl ₃ . rmation of ior -631 -248.1±4	and neutral.	14720-31-1			
BCl ₂ F+ BCl ₂ F BCl ₂ F BCl ₂ H+ HBCl ₂	$\Delta_{ m f}H({ m Ion})$ from ap Cited ionization p (12.18 ± 0.10)	(130) (215) (216)	otential (12.30 fference between (544)	±0.02 eV) in B0 reen heats of fo -151 -59.3±1	Cl ₃ . rmation of ior -631 -248.1±4	and neutral.	14720-31-1			
BCl ₂ F+ BCl ₂ F BCl ₂ F HBCl ₂ F	$\Delta_{ m f}H({ m Ion})$ from ap Cited ionization p (12.18 ± 0.10)	(130) (215) (216)	otential (12.30 fference between (544)	±0.02 eV) in B0 reen heats of fo -151 -59.3±1	Cl ₃ . rmation of ior -631 -248.1±4	and neutral.	14720-31-1			
BCl ₂ F+ BCl ₂ F BCl ₂ F+ HBCl ₂ BCl ₃ + BCl ₃ +	$\Delta_{ m f}H({ m Ion})$ from ap Cited ionization p (12.18 \pm 0.10) (11.91 \pm 0.02) IP from 81FRO/K	(130) (215) (216) IR.	(544) (901) (904)	±0.02 eV) in Boreen heats of fo -151 -59.3±1 -58.6±1	Cl ₃ . rmation of ior -631 -248.1±4 -245.2±4	82TN270 71JANAF	14720-31-1 10325-39-0			
BCl ₂ F + BCl ₂ F BCl ₂ H + HBCl ₂	$\Delta_{ m f}H({ m Ion})$ from ap Cited ionization p (12.18 \pm 0.10) (11.91 \pm 0.02) IP from 81FRO/K	(130) (215) (216) IR.	(544) (901) (904)	±0.02 eV) in Boreen heats of fo -151 -59.3±1 -58.6±1	Cl ₃ . rmation of ior -631 -248.1±4 -245.2±4	82TN270 71JANAF	14720-31-1 10325-39-0			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H(Ner)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
BFS+							
FBS	(10.90±0.01)	(165)	(690)	-86	-362	*EST	83995-89-5
	IP from 84COO/F	KRO.					
BF ₂ +							
BF ₂	(9.4)	(75)	(314)		-589.9±12	71JANAF	
	From appearance	potential of	f 15.81±0.04 e	V in BF ₃ . IP is A	$\Delta_{\mathbf{f}}H(\text{Ion}) \cdot \Delta_{\mathbf{f}}H$	I(Neutral).	
BF ₂ H ⁺							
HBF ₂	(13.60±0.05)	(138)	(578)	−175.4±0.8	-733.8±3.3	71JANAF	13709-83-6
		(139)	(582)	-174.5±0.8	-730.1±3.3		
	IP from 81CHO/F	UR.					
BF ₃ +							
BF ₃	15.56±0.03	87.1	364.3	-271.7	-1137.0	82TN270	7637-07-2
J		87.8	<i>367.3</i>	-271.0	-1134.0		
	See also: 84FAR/	SRI, 84DEH	I/PAR, 81ASI	B/SVE, 81KIM/ 	KAT.		· · · · · · · · · · · · · · · · · · ·
BH+						_ 	
ВН	9.77±0.05	331.1	1385.4	105.8±2.0	442.7±8.4	85JANAF	13766-26-2
		330.3	1382.2	105.0±2.0	439.5±8.4		
BHO ₂ +							
вно2	(12.6±0.2)	(156)	(654)	-134	-562	82TN270	13460-50-9
·							
BHS ⁺	11 11 . 0.02	(260)	(1122)	12.10	50.42	70 T A N I A 17	14457 05 0
HBS	11.11±0.03	(268)	(1122)	12±10	50±42	78JANAF	14457-85-3
вн ₂ +							
ВН2	(9.8±0.2)	(274)	(1146)	48±15	201±63	71JANAF	14452-64-3
вн ₃ +						·	
BH ₃	12.3±0.1	(308)	(1287)	24	100	82TN270	13283-31-3
		· · · · · · · · · · · · · · · · · · ·	· ´. · · ·				
BI ₃ +	(0.25.0.02)	(330)	(064)	17.0	71 1	92TW1270	12517 10 7
BI ₃	(9.25±0.03)	(230) (231)	(964) <i>(967)</i>	17.0 <i>18</i>	71.1 <i>75</i>	82TN270	13517-10-7
		(202)					
BKO ₂ +							
KBO ₂	(8.62±0.14)	(38)	(160)	-161±2	-672±10	85FAR/SRI	
	See also: 85FAR/S	SRI.					
BLiO ⁺							
LiBO	7.7±0.5	(136)	(568)	-42	-175	*EST	77965-53-8
	IP from 85NEU.						
BLiO ₂ +							
LiBO ₂	(9.8±0.5)	(66)	(274)	-160	-671	71JANAF	
<i>2</i>	IP from 85NEU.	\ <i>)</i>	\- · · /	-34			

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(kcal/mc	Ion) ol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry
							114111001
BNaO ₂ +							
NaBO ₂	(9.18±0.10)	(58)	(242)	-154	-644	82TN270	
		(59)	(244)	-153	-642		
BO+							·
ВО	13.0±0.3	(300)	(1254)	0	0	83PED/MAR	12505-77-0
		(299)	(1251)	-1	-3		
	See also: 79BAG/	NIK, 85N	EU.				
BO ₂ +			·				
BO ₂	(13.5±0.3)	(240)	(1003)	-72	-300	82TN270	13840-88-5
L	IP from 79BAG/N		(1000)		500	02111270	150 10-00-5
na +	· · · · · · · · · · · · · · · · · · ·						
BSe +	(40.0)	(215)	(4000)	7 0	224	4011111111111111111	20752 51 5
BSe	(10.3) 0 K values.	(315)	(1320)	<i>78</i>	326	79HUB/HER	29750-36-5
	o k values.						
B ₂ Cl ₂ +							
B ₂ Cl ₂		(223)	(934)				
	From appearance	potential	(17.24±0.03 eV)	in B ₂ Cl ₄ ass	sumed to give B2	₂ Cl ₂ + + 2Cl.	
B ₂ Cl ₃ +						7.	
B ₂ Cl ₃		120	502				
220.3	From appearance			/ in BaCla. 0	K values.		
				2 4		*	
B ₂ Cl ₄ +							
B ₂ Cl ₄	10.32±0.02	121	506	-117	-490	82TN270	13701-67-2
		121	506	-117	- 490		
B ₂ F ₃ +			 			<u> </u>	
B ₂ F ₃		-7	-28				
2 3	From appearance			/ in B ₂ F ₄ . 0	K values.		
	— ————————————————————————————————————				· · · · · · · · · · · · · · · · · · ·	*	
B ₂ F ₄ +		, ,			4	0.000	40047 55 1
B_2F_4	12.07±0.01	-66	-275	-344	-1440	82TN270	13965-73-6
		-65	-272	-343	-1437		
В ₂ Н ₆ ⁺							
- 0							
/H<	11.38±0.03	271	1134	8.5	35.6	82TN270	19287-45-7
H ₂ B()BH ₂		275	1149	12.3	51.4		
H	See also: 81ASB/S	VE, 81KI	M/KAT.				
B ₂ H ₇ +							

B₂H₇ †

H₂B BH₂ H[†]

228 955

From proton affinity of Diborane(6). (RN 19287-45-7). PA = ~146 kcal/mol, ~611 kJ/mol.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	-	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
$B_2O_2 + O = BB = O$	13.58 IP from 84RUS/	204 CUR. See al:	854 so: 79BAG/NIK.	-109±2	-456±8	71JANAF	13766-28-4
B ₂ O ₃ + B ₂ O ₃	13.5±0.15 IP from 79BAG	110 <i>110</i> /NIK.	460 462	-201.3 -201	-842.1 -841	79BAG/NIK	1303-86-2
B ₃ F ₃ O ₃ + F _B O _{BF} O _B O	(13.9±0.1)	(-244)	(~1024)	-565±1	−2365±4	71JANAF	13703-95-2
B ₃ H ₃ O ₃ ⁺ H _B O B H O B H	(13.5±0.5)	(20)	(85)	-291	-1218	71JANAF	289-56-5
B ₃ H ₆ N ₃ ⁺	9.88±0.02	106 112	441 467	-122.3 -116.2	-511.8 -486.2	82TN270	6569-51-3
B ₃ H ₇ N ₃ +	From proton affi	49 inity of boraz	206 ine (RN 6569-51-	3). PA = 19	4.1 kcal/mol, 8	312 kJ/moi.	
B ₄ H ₁₀ +	10.76±0.04	264	1104	16	66	82TN270	18283-93-7
B ₄ H ₁₁ + (H ₂ B H _H H	. From proton affi	237 nity of $\mathrm{B_4H_1}$	993 ₀ (RN 18283-93-7	7). PA = ~14	14 kcal/mol, ~6	502 kJ/mol.	

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potentia	l Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
B ₅ H ₉ +			<u> </u>								
H	9.90±0.04	246 253	1028 1057	17.5 24.4	73.2 102.1	82TN270	19624-22-7				
B ₅ H ₁₀ +		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·							
H H H H H H H H H H H H H H H H H H H	From proton aft	214 Finity of B ₅ H ₉	896 (RN 19624-2	2-7). PA = 169	kcal/mol, 70	7 kJ/mol.					
B ₅ H ₁₁ +				······································							
HO2 H B B H	(10.1) IP is onset of ph	(257) otoelectron ba	(1078) and.	24.6	103.3	82TN270	18433-84-6				
B ₆ H ₁₀ +											
H B BH H	(9.0) IP is onset of ph	(230) otoelectron ba	(963) and.	23	95	82TN270	2377-80-2				
B ₁₀ H ₁₄ +	·										
HBH HBH H	9.88±0.03	235 <i>2</i> 47	985 <i>1031</i>	7.6 18.7	31.6 78.1	82TN270	17702-41-9				
Ba ⁺				······································							
Ва	5.212	163 163	683 <i>684</i>	43 <i>43</i>	180 <i>181</i>	82TN270	7440-39-3				
BaBr+			<u> </u>								
BaBr	(5.0)	(88.9) (91.0)	(371.8) (380.8)	-26.4±10.0 -24.3±10.0		85JANAF	14832-97-4				
BaBr ₂ +											
BaBr ₂	(8.5)	(90)	(377)	-106	-443	82EMO/KIE	10553-31-8				
	IP is onset of phonon 79LEE/POT2.	(93) otoelectron ba	<i>(391)</i> and (79LEE/F	-102 POT). See also:	-429 82EMO/KIE						
			···								

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
BaCl +	.,		<u></u>				
BaCl	5.01±0.010	81 <i>82</i>	340 <i>341</i>	-34 -34	-143 -142	85JANAF	14832-99-6
BaCl ₂ +							
BaCl ₂	(9.4) IP is onset of pho 0 K values.	<i>(97)</i> toelectron	<i>(405)</i> band (79LEE/	–120 POT, 79LEE/F	-502 POT2). See als	82EMO/KIE o: 82EMO/KIE.	10361-37-2
BaF ⁺			·	<u> </u>			
BaF	(4.8±0.3)	(34) <i>(34)</i>	(144) <i>(142)</i>	-77 -77	-324 -326	82TN270	13966-70-6
ВаНО+							
ВаОН	4.35±0.3 IP from 81MUR.	45 See also: 8	189 1FAR/SRI.	-55±4	-230±17	81MUR	12009-08-4
BaH ₂ O ₂ +							
Ba(OH) ₂	(8) IP from 81FAR/S	(44) RI.	(186)	-140	-586	82TN270	17194-00-2
BaI +			· · · · · · · · · · · · · · · · · · ·				
BaI	(5.0±0.3)	(105.2) (105.9)	(440.0) (443.1)		1 -42.4±84 -39.3±84	85JANAF	12524-20-8
BaI ₂ +							
BaI ₂	(8.24)	(116) <i>(117)</i>	(487) (490)	-74 -73	-308 -305	82EMO/KIE	13718-50-8
	IP is onset of phot	toelectron	band (79LEE/I	POT, 79LEE/P	OT2). See also	o: 82EMO/KIE.	
BaO +				 			
BaO	6.91±0.06	129.8 <i>130.3</i>	542.9 <i>545.1</i>	-29.6±2 -29.1±2	-123.8±8 -121.6±8	85JANAF	1304-28-5
	See also: 81MUR.						
BaO ₄ W ⁺							
BaWO ₄	(9.8±0.5)	(-181)	(-757)	-407	-1703	76DEL/HAL	
Be ⁺							
Ве	9.322	<u>292.5</u> <u>291.5</u>	<u>1223.7</u> <u>1219.4</u>	77.5 76.5	324.3 <i>320.0</i>	82TN270	7440-41-7
BeCl ₂ +							
BeCl ₂	(11.15) IP is onset of phot	(171)	(717)	-86	-359	82TN270	7787-47-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
BeF +							
BeF				-40.6±2	-169.9±8	85JANAF	13597-96-1
	A value of 160 to	ol/m ol 702 1	T/malia ahta	-41.2±2	-172.2±8		
	A value of 168 kc BeF ⁺ based on e	annoi, 103 i experimenta	CJ/MOLIS ODTAI Lionization po	neu for the ent	naipy of forma of 9.1+0.5 or 9.3	ition of S+1 0 eV·	
	the enthalpy of fo						
	BeF ₂ is 147 kcal/r			-			
BeF ₂ +							
BeF ₂	(14.6±0.5)	(147)	(615)	-190	-794	82TN270	7787-49-7
 ВеН ⁺							
ВеН	8.21±0.04	272	1136	82	344	79HUB/HER	13597-97-2
		271	1132	81.2	339.8		
BeO ⁺			 -				
BeO	(10.1±0.4)	(265.5)	(1110.9)	32.6±3	136.4±13	85JANAF	1304-56-9
	, ,	(264.9)	(1108.5)	32.0±3	134.0±13		
Be ₂ O +				,			
Be ₂ O	(10.5±0.5)	(227)	(950)	-15±10	-63±42	71JANAF	12009-99-3
Be ₂ O ₂ +						<u> </u>	
(BeO) ₂	(10.8±0.7)	(151)	(632)	-98±12	-410±50	71JANAF	70478-90-9
Be ₃ O ₃ +					***************************************		
(BeO) ₃	(10.9±0.6)	(-1)	(-2)	-252±9	-1054±38	71JANAF	61279-73-0
n o +		·					
Be ₄ O ₄ +	(11.0)	(-126)	(-529)	-380±12	-1590±50	71JANAF	61279-74-1
(BeO) ₄	(11.0)	(-126)	(-329)	-360±12	-1390±30	/IJANAI*	012/9-/4-1
Be ₅ O ₅ +			(4050)	505.00	2112 05	G(XANAE)	(1000 ME 0
(BeO) ₅	(~11)	(~-251)	(~-1052)	-505±23	-2113±95	71JANAF	61279-75-2
Be ₆ O ₆ +							
(BeO) ₆	(~11)	(~-239)	(~-1000)	-492±22	-2061±92	71JANAF	61279-76-3
Bi+							
Bi	7.289	218	910	49	207	82TN270	7440-69-9
		217.7	910.7	49.6	207.4		
BiCl ₃ +			······································		•		
BiCl ₃	(10.4)	(176)	(738)	-64	-266	82TN270	7787-60-2
J		(177)	(739)	-6 3	-264		
	IP is onset of photo	oelectron b	and (83NOV/	POT). See also	o: 83OZG.		
ВіН ₃ ⁺							
BiH ₃	(10.1)	(288)	(1204)	55	230	64GUN	18288-22-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
BiO ⁺							
BiO	(9.0±0.5)	(236) (236)	(989) <i>(988)</i>	29±3 29	121±13 120	83PED/MAR	1332-64-5
BiS +						<u> </u>	
BiS	(8.7±0.5) 0 K values.	(243)	(1017)	42	178	79HUB/HER	12048-34-9
BiTe +							
BiTe	(8.4±0.5) 0 K values.	(235)	(983)	41	173	79HUB/HER	12010-57-0
Bi ₂ +							
Bi ₂	(7.3±0.5)	(221)	(924)	53 53 *	220	82TN270	12187-12-1
		(221)	(926)	53.1	222.2		
Bk+							
Bk	6.30±0.09	219	918	74	310	85KLE/WAR	7440-40-6
Br ⁺							
Br	11.814	299.2	1251.7	26.7	111.9	82BAU/COX	10097-32-2
	See also: 81KIM	<i>300.6</i> /KAT.	1257.8	28.2	117.9		
BrCa ⁺							
CaBr	5.54	123	513	-5	-21	79HUB/HER	10024-43-8
	IP from 84MEY	SCH. 0 K va	lues.				
BrCl +							
BrCl	11.01	257	1077	4	15	82TN270	13863-41-7
	IP from 84DYK/	259 (108	1084	5	22		
BrCl ₅ N ₃ P ₃ + Cl ₂ P P Br Cl ₂	I Hombad IN						
BrCl ₅ N ₃ P ₃ +							
N CI	(9.83±0.1)	(52)	(218)	-174	-730	*EST	14740-93-3
Cl ₂ P Br	(>.0020.1)	(32)	(210)	417	750	2.01	11710 25 5
N P N							
BrCs +		-			·		
CsBr	7.72±0.05	130	545	-48	-200	84PAR/WEX	7787-69-1
		133	554	-45.5±1.8	-190.4±7.5		
BrF+		****					
BrF	11.77±0.01	257.4	1077.1		-58.5±1.7	85JANAF	13863-59-7
		259.3	1084.8	-12.1±0.4	-50.8±1.7		
	See also: 84DYK	JOS.					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
BrF ₃ +							
BrF ₃	(12.15±0.04)	(219)	(917)	-61.1	-255.6	82TN270	7787-71-5
		(222)	(928)	-58.4	-244.4		
BrF5+							
BrF ₅	(13.17±0.01)	(201)	(842)	-103	-429	82TN270	7789-30-2
		(205)	(858)	<i>-99</i>	-413		
BrH ⁺							***
HBr	11.66±0.03	260	1089	- 9	-36	82TN270	10035-10-6
		262	1096	-7	-29		
	IP from 79HUB/F	HER, 77ROS	S/DRA, 82LE	V/LIA. See als	o: 81KIM/KA	T.	
BrH ₂ +							
H ₂ Br		218	911				
	From proton affir			-6) (84POL/MU	JN, 85MCM/I	KEB).	
	PA = 139 kcal/m	ol, 582 kJ/m	ol.				
BrH ₃ Si ⁺							
SiH ₃ Br	10.6	(226)	(945)	-19±4	-78±17	82JANAF	13465-73-1
	IP is onset of pho	toelectron ba	and.				
BrI ⁺							
IBr	9.790±0.004	235.5	985.4	9.8	40.8	82TN270	7789-33-5
		237.7	994.4	11.9	49.8		
	See also: 84DYK/	JOS, 71POT	/PRI.				
BrIn ⁺							
InBr	(9.09)	(202)	(845)	-8	-32	79HUB/HER	14280-53-6
		(204)	(854)	-6	-23		
BrK ⁺							
KBr	7.85±0.1	138	577	-43	-180	82TN270	7758-02-3
		140	586	-41	-171		
BrLi ⁺							
LiBr	(8.7)	(164)	(685)	-37±3	-154±13	71JANAF	7550-35-8
		(166)	(693)	-35±3	-146±13		
	IP is onset of phot	oelectron ba	ind.				
BrNO +							
NOBr	10.17±0.03	254	1063	20	82	82BAU/COX	13444-87-6
BrNa +			670	•			
NaBr	8.31±0.1	157 160	659 668	-34 - <i>32</i>	-143 - <i>134</i>	82TN270	7647-15-6
							
BrO+							
BrO	(10.2)		(1110)	30.1	125.8	82TN270	14380-62-2
	***		(1118)	31.9	133.5		
	IP is onset of phot	oelectron ba	ina,				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	n)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
BrRb+							
RbBr	7.94±0.03	139 <i>142</i>	583 <i>592</i>	-43.7 -41.4	−182.8 −173.4	82TN270	7789-39-1
BrSi ⁺							
SiBr	(7.3)	(224.6) (225.9)	(939.6) (945.1)		235.3±46.0 240.8±46.0	85JANAF	14791-57-2
BrSr +					· · · · · · · · · · · · · · · · · · ·		
SrBr	(5.5)	(106) <i>(108)</i>	(442) <i>(450)</i>	-21±10 -19.2±10	-89±42 -80.4±42	85JANAF	14519-13-2
BrTl ⁺							
TlBr	9.14±0.02	202 204	844 <i>853</i>	~9 ~7	-38 <i>-29</i>	82TN270	7789-40-4
	See also: 83BAN/	BRI.					
Br ₂ +						·	· · · · · · · · · · · · · · · · · · ·
Br ₂	10.515±0.005	250 253	1046 <i>1061</i>	7.4 11	31.0 <i>46</i>	82BAU/COX	7726-95-6
	Cited IP leads to 10.865±0.005 eV. See also: 81KIM/I	IP from 84V	g); formation AN/DEL2, 84	of Br ₂ ⁺ (² П _{1/2} IDYK/JOS, 77I	_{2g}) requires ROS/DRA.		
Br ₂ Ca ⁺	1000	<u> </u>				····=-,	
CaBr ₂	≤9.68	≤130	≤545	-93	~389	82TPIS	7789-41-5
	IP is onset of pho	<i>≤134</i> toelectron ba	<i>≤560</i> and (79LEE/I	<i>-89±2</i> POT2).	~374±9		
Br ₂ Cl ₄ N ₃ P ₃ +					 		
Cl ₂ P N P Br	(9.80±0.1)	(63)	(265)	-163	-681	*EST	15964-99-5
Br´ Čı Br ₂ F ₄ N ₃ P ₃ +							
F2 P P Br	(10.63±0.03) IP from 81CLA/S		(-563)	-380	-1589	*EST	29871-63-4
Br ₂ Fe ⁺	(10.7.0.0)	(22T)	(001)	10.05	44.0	ma T A S Y A S T	6500 44 0
FeBr ₂	(10.7±0.5)	(237)	(991)	-10±0.5	~41±2	71JANAF 	7789-46-0
Br ₂ Ge ⁺							

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\rm f}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	-	kcal/mol		reference	number
Br ₂ H ₂ Si ⁺							
SiH ₂ Br ₂	(10.7)	(201)	(842)	-45±4	-190±17	82JANAF	13768-94-0
	IP is onset of pho-	toelectron b	and.				
Br ₂ Hg ⁺							
HgBr ₂	10.560±0.003	223	934	-20±2	-85±8	71JANAF	7789-47-1
	Cited ionization p	otential (83	LIN/TZE) re	fers to formatio	on of HgBr ₂ + ($(2_{\Pi_{3/2},\sigma}).$	
	IP for formation of	of HgBr ₂ + ($(2\pi_{1/2} g)$ is 10	.8846±0.0012 e	V. See also: 81	LEE/POT.	
Br ₂ Li ₂ +							
Br.	(≤10.05±0.08)	(≤112)	(≤469)	-120	-501	81LIN/BES	12380-84-6
Br							
Br ₂ Mg ⁺							
MgBr ₂	10.47	169	708	-72	-302	82TPIS	7789-48-2
		173	723	-69±4	-287±15		
	IP is onset of phot	oelectron b	and (79LEE/	POT2).			
Br ₂ OS +							to the second se
SOBr ₂	(10.1)	(204)	(851)	-29	-123	82TN270	507-16-4
		(209)	(872)	-24	-102		
	IP is onset of phot	oelectron b	and.				
Br ₂ Pb ⁺							
PbBr ₂	9.6	(196)	(822)	-25±1	-104±6	75JANAF	10031-22-8
	IP is onset of photo	oelectron ba	and (84NOV/	POT2, 82LEV/	LIA).		
3r ₂ S ₂ +							
S_2Br_2	(9.23±0.03)	(221)	(923)	8	33	82TN270	13172-31-1
	IP from 81KAU/V	AH.					
Br ₂ Se ⁺							
SeBr ₂	9.07	204	854	-5	-21	82TN270	22987-45-7
Br ₂ Sn ⁺							
SnBr ₂	9.0	201	839	-7	-29	82TPIS	10031-24-0
-	IP is onset of photo	oelectron ba	and (84NOV/	POT2, 82LEV/	LIA).		
Br ₂ Sr ⁺							
SrBr ₂	(9.11)	(114)	(477)	-96	-402	82TPIS	10476-81-0
L	` ,	(118)	(492)	-92±3	−387±11		
	IP is onset of photo			OT2). See also		•	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Br ₃ Cl ₃ N ₃ P ₃ +				······································			
Br N CI	(0.770, 0.1)	(70)	(20.6)	1.51	(00	*1200	16020 52 2
Br N P CI	(9.72±0.1)	(73)	(306)	-151	-632	*EST	16032-52-3
N P N							
Br CI							
Br ₃ F ₃ N ₃ P ₃ +		···					
Br N Br	(10.37±0.03)	(-74)	(-311)	-314	-1312	*EST	67336-18-9
FN	IP from 81CLA/S		, ,				
F Br							
Br ₃ Ga ⁺					· · · · · · · · · · · · · · · · · · ·		
GaBr ₃	10.40	170	710	-70	-293	82TN270	13450-88-9
Br ₃ In ⁺							· · · · · · · · · · · · · · · · · · ·
InBr ₃	(10.0)	(163)	(683)	-67	-282	82TN270	13465-09-3
	IP is onset of pho	toelectron b	and.		<u>-</u>		
Br ₃ La ⁺							
LaBr ₃	(9.85)	(87)	(364)	-140±2	-586±7	78TPIS	13536-79-3
	IP is onset of pho	toelectron b	and (83RUS/	GOO). 			
Br ₃ OP +							
POBr ₃	10.75±0.02	151	632	-97	-405	71JANAF	7789-59-5
		161	673	-87	-364		
Br ₃ P +							
PBr ₃	9.7	(190)	(797)	-33	-139	82TN270	7789-60-8
		(196)	(821)	-27	-115		
	IP is onset of pho	toelectron b	and.				
Br ₄ Cl ₂ N ₃ P ₃ +							
D. CI	(9.60±0.1)	(82)	(343)	_120	_592	*¤°T	15065 00 1
Br ₂ P N P Br	(3.00±0.1)	(82)	(343)	-139	-583	*EST	15965-00-1
N P N							
Br CI							
Br ₄ Hf ⁺							
HfBr ₄	(10.9)	(87)	(365)	-164	-687	81SPE	13777-22-5
	IP is onset of pho	toelectron b	and.				
Br ₄ Sn ⁺							
SnBr ₄	10.6	169	708	-75	-315	82TN270	7789-67-5
		177	739	-68	-284		
	IP is onset of pho	toelectron b	and.				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Id	n)	$\Delta_{\rm f} H$ (Ne	ustral)	Neutral	CAS registry
Neutral	eV	•	kJ/mol	kcal/mol		reference	number
Br ₄ Ti ⁺						······································	
TiBr ₄	10.3	(90)	(376)	-148±1	-618±5	71JANAF	7789-68-6
	IP is onset of pho	toelectron t	oand.				
Br ₄ Zr ⁺							
ZrBr ₄	(10.7) IP is onset of pho	(93) toelectron b	(387) eand.	−154±2	-645±8	78JANAF	13777-25-8
Br ₅ ClN ₃ P ₃ +							<u> </u>
Br ₂ P N P Br	(9.47±0.1)	(91)	(380)	-128	-534	*EST	15608-37-4
Br ₅ W ⁺							-10
WBr ₅	(8.3±0.2)	(144) <i>(153)</i>	(602) (638)	48±5 39	-199±21 - <i>163</i>	71JANAF	13470-11-6
Br ₆ N ₃ P ₃ +							
B ₂ p N p B ₂	9.62±0.03 IP from 81CLA/S	(82) OW.	(343)	-140 ·	-585	*EST	13701-85-4
Br9Re3 +							
Br Br Br Re Br Br Br Br	(8.4) IP is onset of photon	(125) toelectron b	(521) and.	-69	-289	82TN270	33517-16-7
c+ c	11.260	431.0 <i>429.7</i>	1803.2 1797.6	171.3 170.0	716.7 711.2	82TN270	7440-44-0
CBr +				·			
CBr	(10.43±0.02)	(362.5) (363.4)	(1516.7) (1520.6)	122.0±15 122.9±15	510.4±63 514.3±63	85JANAF	
CBrClF ₂ +							
CF ₂ BrCl	(≤11.83)	(≤168)	(≤703)	-105±2	-438±8	78KUD/KUD	353-59-3
CBrCl ₃ +							
CCl ₃ Br	(10.6) IP is onset of phot	(234) oelectron b	(980) and (81NOV/	-10.2±0.6 CVI3).	-42.7±2.4	77PED/RYL	75-62-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$		$\Delta_{\mathbf{f}}H(\mathbf{N}\mathbf{e})$		Neutral	CAS registry
Neutral	eV	kcal/mo	ol kJ/mol	kcal/mol	kJ/mol	reference	number
CBrF ₃ +							
CF₃Br	11.4	108	450	-155	-650	78KUD/KUD	75-63-8
		111	463	-152	-637		
	IP is onset of phot	toelectror	n band. See also:	82BOC/WIT.			
CBrN+							
BrCN	11.84±0.01	316	1323	43±1	181±4	77PED/RYL	506-68-3
CBr ₂ Cl ₂ +			-18 74 57 477				***·
CCl ₂ Br ₂	(10.4)	(242)	(1012)	2±2	9±8	78KUD/KUD	594-18-3
	IP is onset of phot	oelectron	ı band.				
CBr ₂ F ₂ +							
CF ₂ Br ₂	11.07±0.03	165	689	-91±2	−379±8	78KUD/KUD	75-61-6
CP- 0+				<u> </u>			
CBr ₂ O +	(10.8)	(222)	(929)	-27±0.5	-113±2	77PED/RYL	593-95-3
COD12	IP is onset of phot			~2/±U.J	11324	//LED/KIL	J7J-7J-J
	*						
CBr ₃ +							
CBr ₃	(8.2)	(239)	(1000)	49.6	207.5	*EST	
	From appearance	potentiai	(10.4/±0.02 eV)	in CBr ₄ ; IP is	$\Delta_{\mathbf{f}}H(\mathbf{lon}) - \Delta_{\mathbf{f}}$	H(Neutral).	
CBr ₃ F ⁺							
CFBr ₃	10.67±0.01	190	793	-56±2	-236±8	78KUD/KUD	353-54-8
CBr ₄ +			* · · · · · · · · · · · · · · · · · · ·				
CBr ₄	(10.31±0.02)	(258)	(1079)	20.1±0.8	83.9±3.4	84BIC/MIN	558-13-4
•	, ,	(265)	(1109)	27.2	113.8		
CCe +							
CCe	(7.5±1.0)	(336)	(1406)	163	682	82TN270	12011-58-4
	(()				
CCI+	-						
CCI	(8.9±0.2)	(297)	(1243)	(92)	(384)		
	$\Delta_{\mathbf{f}}H(ext{Ion})$ from ap is $\Delta_{\mathbf{f}}H(ext{Ion})$ - $ ext{IP}$. $ ext{IP}$			nination. ∆ _f H	(Neutral)		
CCIF+							
CCIF	(10.7)	(243)	(1017)	-5±7	-20±29	85LIA/KAR	1691-88-9
	Δ _f H(Ion) from ap Δ _f H(Ion)-Δ _f H(No						
	~1**(**\!\)-\!\dagger_1\(\)			(15 Granuated I			
CCIF ₂ +							
CCIF ₂ +	(8.3)	126	528	-66	-275	*EST	1691-89-0
	Cited heat of form	ation bas	ed on observatio	on of near-ther	moneutral rea	ction:	1691-89-0
		ation bas	ed on observatio	on of near-ther). Value based	moneutral rea	ction:	1691-89-0

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			∆ _f H(Ne	ıtral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
CCIF ₃ +							
CF ₃ Cl	12.39	116	485	-169.7±0.6	-710.0±2.3	77PED/RYL	75-72-9
3		117	491	<i>-168</i>	-704	·	
	See also: 85KIS/N	IOR.					
CCIN+							
CICN	12.34±0.01	318	1329	33.0	138.0	77PED/RYL	506-77-4
		317	1328	32.8	137.3	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	Cited ionization p	otential cor	responds to th	ne formation of			
	$CNCl^{+}(^{2}\Pi_{3/2}).$ F				37 eV.		
CCINO +					<u> </u>	 	
CINCO	(10.72±0.01)	(253)	(1057)	5.5	23.0	83DEW/RZE	13858-09-8
		·	. ,			· · · · · · · · · · · · · · · · · · ·	
CCI ₂ +	10.27	270	11/2	20	1/2	OFT TAREAS	1,005 70 7
CCl ₂	10.36	278	1163	39 minations	163	85LIA/KAR	1605-72-7
	$\Delta_{\mathbf{f}}H$ (Ion) from ap Cited IP is $\Delta_{\mathbf{f}}H$ (Io						
	Cited IF is $\Delta_f H(10)$	11)-17t11(I/G	utrai). See 83	LIM/KAK.			
CCl ₂ F ⁺							
CCl ₂ F	(8.0)	(168)	(703)		-73	*EST	1691-90-3
	From observation	of near-the	rmoneutral re	action: (C ₂ H ₅ ⁴	+ CF ₂ Cl ₂ →	\cdot CCl ₂ F ⁺ + C ₂ H ₅	F)
	(77LIA/AUS). A	ppearance p	otential deter	minations lead	to values of 17	5 kcal/mol,	
	732 kJ/mol, for the	e heat of for	mation of this	s ion. IP is $\Delta_f H$	(Ion) - $\Delta_{\mathrm{f}}H$ (N	eutral).	
CCI.F. +	732 kJ/mol, for the	heat of for	mation of this	s ion. IP is Δ _f H	(Ion) - Δ _f H(N	eutral).	······································
				· · · · · · · · · · · · · · · · · · ·			75 71 0
CCl ₂ F ₂ + CF ₂ Cl ₂	732 kJ/mol, for the	157	656	-114.1±1.3	-477.5±5.6	eutral). 77PED/RYL	75-71-8
	11.75±0.04	157 158		· · · · · · · · · · · · · · · · · · ·			75-71-8
CF ₂ Cl ₂		157 158	656	-114.1±1.3	-477.5±5.6		75-71-8
CF ₂ Cl ₂	11.75±0.04	157 158	656	-114.1±1.3	-477.5±5.6		75-71-8
CF ₂ Cl ₂	11.75±0.04	157 158	656	-114.1±1.3 -113	-477.5±5.6		75-71-8 75-44-5
CF ₂ Cl ₂	11.75±0.04 See also: 85KIS/M	157 158 OR.	656 661	-114.1±1.3 -113	-477.5±5.6 -473	77PED/RYL	
CF ₂ Cl ₂	11.75±0.04 See also: 85KIS/M	157 158 OR. (210) (211)	656 661 (880) (882)	-114.1±1.3 -113	-477.5±5.6 -473	77PED/RYL	
CCI ₂ O+	11.75±0.04 See also: 85KIS/M (11.4)	157 158 OR. (210) (211)	656 661 (880) (882)	-114.1±1.3 -113	-477.5±5.6 -473	77PED/RYL	
CF ₂ Cl ₂ CCl ₂ O+ COCl ₂	11.75±0.04 See also: 85KIS/M (11.4)	157 158 OR. (210) (211)	656 661 (880) (882)	-114.1±1.3 -113	-477.5±5.6 -473	77PED/RYL	
CCI ₂ O+ COCI ₂ CCI ₂ S+ CSCI ₂	11.75±0.04 See also: 85KIS/M (11.4) IP is onset of phot	157 158 COR. (210) (211) oelectron ba	656 661 (880) (882) and.	-114.1±1.3 -113	-477.5±5.6 -473 -220 -218	77PED/RYL 82BAU/COX	75-44-5
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ +	11.75±0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61±0.02	157 158 OR. (210) (211) oelectron ba	656 661 (880) (882) and.	-114.1±1.3 -113	-477.5±5.6 -473 -220 -218	77PED/RYL 82BAU/COX	75-44-5 463-71-8
CF ₂ Cl ₂ CCl ₂ O + COCl ₂ CCl ₂ S + CSCl ₂	11.75±0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61±0.02	157 158 OR. (210) (211) oelectron ba	656 661 (880) (882) and.	-114.1±1.3 -113 -53 -52	-477.5±5.6 -473 -220 -218	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ +	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based	157 158 OR. (210) (211) oelectron ba 215 (199) on the obse	656 661 (880) (882) and. 900 (831) rvation of the	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ →	77PED/RYL 82BAU/COX 79JOS	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ +	11.75 ± 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 ± 0.02 (7.8) $\Delta_{\rm f}H({\rm Ion})$ is based and lack of occurre	157 158 OR. (210) (211) oelectron ba 215 (199) on the obse	656 661 (880) (882) and. 900 (831) rvation of the -C ₃ H ₇ ⁺ + C	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ +	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F)	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCl ₃ + HF + H	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ +	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based	157 158 OR. (210) (211) coelectron ba 215 (199) on the obsee cince of (see theat of form	656 661 (880) (882) and. 900 (831) rvation of the c-C ₃ H ₇ + + Contion between	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ + cn 197 and 200 km	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F) cal/mol, 824 as	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCl ₃ + HF + H	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ + CCl ₃ +	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based and lack of occurre which brackets the	157 158 OR. (210) (211) coelectron ba 215 (199) on the obsee cince of (see theat of form	656 661 (880) (882) and. 900 (831) rvation of the c-C ₃ H ₇ + + Contion between	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ + cn 197 and 200 km	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F) cal/mol, 824 as	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCl ₃ + HF + H	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ + CCl ₃ + CCl ₃ F+	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based and lack of occurre which brackets the (77LIA/AUS). IP is	157 158 OR. (210) (211) coelectron ba 215 (199) on the obsection of (see theat of form is $\Delta_f H(Ion)$	(880) (882) and. 900 (831) rvation of the $-C_3H_7^+ + C_3H_7^+ + C_3H_7^+$	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ + cn 197 and 200 kal). Experiments	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F) cal/mol, 824 au al value: 8.28 e	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCI ₃ + HF + H nd 837 kJ/mol V.	75-44-5 463-71-8 3170-80-7 H ₂ O)
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ + CCl ₃ +	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based and lack of occurre which brackets the	157 158 OR. (210) (211) coelectron ba 215 (199) on the obsection of (see heat of form is $\Delta_f H(\text{Ion})$	(880) (882) and. 900 (831) rvation of the $-C_3H_7^+ + C_1$ mation between $-\Delta_f H(\text{Neutra})$ 868	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ + en 197 and 200 kal). Experiments	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F) cal/mol, 824 ar al value: 8.28 e	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCl ₃ + HF + H	75-44-5 463-71-8 3170-80-7
CCl ₂ O+ CCCl ₂ S+ CSCl ₂ CCl ₃ + CCl ₃ + CCl ₃ F+	11.75 \pm 0.04 See also: 85KIS/M (11.4) IP is onset of phot 9.61 \pm 0.02 (7.8) $\Delta_f H(\text{Ion})$ is based and lack of occurre which brackets the (77LIA/AUS). IP is	157 158 OR. (210) (211) coelectron back 215 (199) on the obseed the ence of (see the heat of form is $\Delta_f H(\text{Ion})$	(880) (882) and. 900 (831) rvation of the $-C_3H_7^+ + C_3H_7^+ + C_3H_7^+$	-114.1±1.3 -113 -53 -52 -6 19 reaction (H ₃ O CFCl ₃ → CCl ₃ + en 197 and 200 kal). Experiments	-477.5±5.6 -473 -220 -218 -27 79 + + CFCl ₃ → + C ₃ H ₇ F) cal/mol, 824 au al value: 8.28 e	77PED/RYL 82BAU/COX 79JOS 82MCM/GOL CCI ₃ + HF + H nd 837 kJ/mol V.	75-44-5 463-71-8 3170-80-7 H ₂ O)

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	-	•			Neutral reference	CAS registry number
CCI ₄ +					·		
CCI ₄	11.47±0.01	241 242	1010 <i>1012</i>	-23.2±0.7 -22.7	-97.1±3 -95.0	77PED/RYL	56-23-5
	See also: 82VON/			-22.7	-95.0		
CCo+							
CCo		(364)	(1524)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from ph	otodisso	ciation onset to	give Co ⁺ (86H	IET/FRE).		
CF+							
CF	9.11±0.01	271.1	1134.2	61.0±2	255.2±8	85JANAF	3889-75-6
	ID 6 94DVV/I	270.2	1130.6	60.1±2	231.6±8		
	IP from 84DYK/L	EW. See	also: 82HEP/11	· · · · · · · · · · · · · · · · · · ·			
CFN ⁺							
FCN	13.32±0.01	316	1321	9±4	36±17	71JANAF	1495-50-7
CFO+							
FCO	8.76±0.32	(160)	(669)	-42±4	-175±16	81DYK/JON2	
	IP from 81DYK/J	ON2.					
CF ₂ +							
CF ₂	11.42±0.01	214	897	-49±3	-205±12	85LIA/KAR	2154-59-8
CF ₂ O +							
COF ₂	13.03	147	617	-153	-640	77PED/RYL	353-50-4
_		148	620	-152	-637		
CF ₂ S +							
CSF ₂	(10.45±0.01)	(157)	(658)	-84	-350	79JOS	420-32-6
	See also: 85BIN/G	RO.					
CF ₂ Se +	***************************************					2.2000	
CSeF ₂	(9.6±0.2)	(154)	(646)	-67	-280	*EST	54393-39-4
	IP from 85BIN/GF	RO, 84BC	C/AYG.				
CF ₃ +							
CF ₃	(≤8.9)	(95.4)	(399.0)	-110	-460	86TSA	2264-21-3
		(96.1)	(402.0)	-109	-457		
	Δ _f H(Ion) from ap _l See also: 81BER/B						
F ₃ I +			The second secon	<u></u>			
CF ₃ I	10.23	95	397	-141±5	-590±21	78KUD/KUD	2314-97-8
Ü	See also: 81BER/B	EA, 84B					
CF ₃ NO +							· . - · · · · ·
CF ₃ NO	(10.5±0.1)	(116)	(484)	-126	-529	*EST	334-99-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
CF ₄ +							
CF ₄				-223.4±0.	l −934.5±0.4	77PED/RYL	75-73-0
			.	-221.6	-927		
	The stable region from the CF_4 mole	of the CF ₄	'ground stat	te is not accessi	ble by a vertical	l transition	
	the photoelectron						
	A value of <14.7						
CF ₄ O +							
CF ₃ OF	(13.0)	(112)	(469)	-188	-785	69STU/WES	373-91-1
	IP is onset of phot	oelectron b	and.				
CF ₅ N ⁺							
CF ₃ NF ₂	(11.9)	(105)	(440)	-169±0.5	-708±2	77PED/RYL	335-01-3
	IP from 82BUR/P.	AW.					
CFe +							······································
FeC		(358)	(1499)				
	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from ph	otodissocia	tion onset to	give Fe ⁺ (86H	ET/FRE).		
CGe ⁺							
GeC	(10.3±0.3)	(388)	(1622)	150	628	79HUB/HER	12334-26-8
	0 K values.						
СН+					, , ,		· · · · · · · · · · · · · · · · · · ·
CH	10.64±0.01	387.8	1622.4	142.4	595.8	79HUB/HER	3315-37-5
	G (CAPT FIR	387.0	1619.1	141.6	592.5		
	See also: 83PLE/M	IAR. 					
CHBrCl ₂ +							
CHBrCl ₂	10.6	233	974	-12	-49	78KUD/KUD	75-27-4
	IP is onset of photo	oelectron ba	and (81NOV)	CVI3).			
CHBrF ₃ +							
CF ₃ BrH		73	305				
	From proton affini	-	*				
	relative to CO stan	dard (84LL	A/LIE). PA	= 137.5 kcal/m	ol, 575.3 kJ/mo	l.	
CHBrN+	-						
BrCNH		231	965				
	From proton affini	ty of BrCN	(RN 506-68-3	B). PA = 178.3	kcal/mol, 746 k	:J/mol.	
CHBr ₂ +							
CHBr ₂	(7.4)	(224)	(936)	54	227	82MCM/GOL	14362-13-1
	Ion heat of formati		-			•	
	Cited ionization po					l	
	that of neutral. Ex					VIV.2)	
	gave values of 8.13:	±0.16 eV (7	/KUS/DRA),	, 8.41±0.03 eV (v) (84AND/D`	Y K3).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
CHBr ₂ Cl + CHClBr ₂	10.59±0.01 IP (77ROS/DRA)	246 in good agr	1031 eement with	2±2 onset of photoe	9±8 lectron band	78KUD/KUD (81NOV/CVI3).	124-48-1
CHBr ₃ + CHBr ₃	10.48±0.02 See also: 82VON/2	247.4 ASB.	1035.0	5.7±1.1	23.8±4.5	84BIC/MIN	75-25-2
CHCl+ CHCl	9.84 $\Delta_{ m f} H$ (Ion) derived	298 from hydrog	1247 gen affinity co	71 onsiderations. I	297 P is ∆ _f H(Ion)	85LIA/KAR)-∆ _f H(Neutral).	2108-20-5
CHCIF ⁺ CCIFH	(8.81 ± 0.02) $\Delta_f H(\text{Ion})$ from oband non-observation Appearance poten IP from 84AND/D	on of: (C ₂ H tial determi	5 + + CHFC	CHFCl ₂ → CH Cl ₂ → CHFCl ⁺	+ C ₂ H ₅ Cl)(*	77LIA/AUS).	33272-71-8
CHCIF ₂ + CHF ₂ CI	(12.2) See also: 81NOV/0	(166) CVI3.	(694)	-115.6±0.5	-483.5±2.2	77PED/RYL	75-45-6
CHCIF ₃ + CF ₃ CIH	From proton affini re-evaluated relativ	_				569 kJ/mol.	
CHCIN [†] CICNH	From proton affini (86MAR/TOP).	224 ty of CICN (937 (RN 506-77-4). PA = 174.8 k	scal/mol, 731	kJ/mol	
CHCl ₂ + CHCl ₂	(8.1) (212) (887) 26 \pm 1 108 \pm 4 83WEI/BEN 3474-12-2 $\Delta_f H$ (Ion) from appearance potential (11.49 \pm 0.02 eV) in CCl ₃ H. Cited IP is difference between heats of formation of ion and neutral. An experimental determination of the IP gave a value of 8.32 eV(84AND/DYK) which would correspond to a $\Delta_f H$ (Radical) of 20 kcal/mol, 84 kJ/mol.						
CHCl ₂ F ⁺ CHFCl ₂	(11.5) IP is onset of photo	• •	(829) nd (82LEV/L		-281±8 ′I3).	78KUD/KUD	75-43-4
CHCl ₃ + CHCl ₃	11.37±0.02 See also: 82VON/A	237 238 .SB, 81KIM	992 <i>997</i> /KAT.		104.8±2 99.7	77PED/RYL	67-66-3

Table 1. Positive Ion Table - Continued

ION Neutral	-	Δ _f H(Io kcal/mol	(Ion) ol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol		Neutral reference	CAS registry	
CHC ₀ +								
CHC ₀	$\Delta_{\mathbf{f}}H$ (Ion) from p	(325) hotodissocia	(1361) tion onset to	give Co ⁺ (86H	ET/FRE).			
CHF+								
CHF	(10.49) ∆ _f H(Ion) from h	(268) ydrogen affir	(1121) nity considera	26±3 itions. IP is $\Delta_f F$	109±12 I(Ion)-∆ _f H(N	85LIA/KAR eutral)(85LIA/KAR	13453-52-6 L).	
CHFN+								
FCNH	$\Delta_{ extsf{f}}H$ (Ion) from c	(224) ore binding e	(934) nergies of iso	electronic neut	ral HNCO (84	IBEA/EYE).		
CHFO+								
HFCO	(12.37±0.02)	(195)	(817)	-90	-377	71JANAF	1493-02-3	
CHF ₂ ⁺ CHF ₂	(8.78) (146) (611) -57±1 -237±5 83PIC/ROD 2670-13-5 Heat of formation of ion derived from observed ion-molecule reactions (74BLI/MCM, 77LIA/AUS); cited ionization potential is the difference between the heats of formation of the ion and the radical.							
С НF₂О ⁺ F ₂ СОН	From proton affi	52 nity of CF ₂ O	219 (RN 353-50-	4). PA = 160.5	kcal/mol, 671	.5 kJ/mol.	teres received a second and another second and another second	
CHF ₃ ⁺ CHF ₃	13.86 See also: 81BIE/	154 <i>156</i> ASB, 85NOV	642 <i>649</i> /POT, 82BO	-166±2 <i>-164</i> C/WIT.	-695±8 -688	78KUD/KUD	75-46-7	
С НF₃I ⁺ СF ₃ IН	From proton affii to CO standard (i					ed relative		
CHF ₃ NO ⁺ CF ₃ NHO	From the proton 294. kJ/mol.	(70) affinity of CF	(294) 3 ₃ NO (RN 33	4-99-6). PA =	70. kcal/mol,			
С НF₄ ⁺ F ₃ СFН	From proton affii	17 nity of CF ₄ (F	70 RN 75-73-0).	PA = ~126 kca	l/mol, ~527 kJ	/mol.	,	
CHF ₄ N ⁺ CHF ₂ NF ₂	(11.5) IP from 82BUR/F		(655)	-109	-455	*EST	24708-53-0	
CHFe ⁺ CHFe	Δ _f H(Ion) from pl		(1349) ion onset to g	rive Fe ⁺ (86HE	T/FRE).			

Table 1. Positive Ion Table - Continued

ION	To de la constantia	A 1771		A TYNI.			GAG			
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
CHI ₃ +										
CHI ₃	9.25±0.02	241 <i>244</i>	1010 <i>1019</i>	28±5 <i>30</i>	118±21 <i>127</i>	78KUD/KUD	75-47-8			
			1019		127					
CHN ⁺										
HCN	13.60±0.01	346	1447	32.3	135.1	82TN270	74-90-8			
	Con alon, 92VDE	346 (CCII 01VIN	1448	32.4	135.5					
	See also: 82KRE	SCH, SIKIN	I/KAI.							
HNC	(12.5±0.1)	(336)	(1407)	48±2	201±8	82PAU/HEH	6914-07-4			
	IP by charge exchange bracketing of HNC ⁺ ions generated in CH ₃ NC(78BIE/JON).									
	See also: 80MCL	/MCG.								
CHNO+										
HNCO	11.61±0.03	243	1015	-25±3	-105±13	86SPI/PER	75-13-8			
HCNO	(10.83)	(302)	(1263)	52	218	*EST	506-85-4			
CHNS+										
HNCS	9.94±0.02	260	1087	31	128	82TN270	3129-90-6			
										
CHO+	2.2.2.2									
НСО	8.10 ± 0.05 $\Delta_f H(ext{Ion})$ from a	197.3	825.6	10.7	44.8	77BEC/LIP	17030-74-9			
	See also: 76GUY				A2).					
•	300 111300 1 7 3	, 0110, 0	.,,	,						
СОН		(230)	(963)							
	$\Delta_f H$ (Ion) from correlation with oxygen 1s binding energy (85MCM/KEB2). See									
	also: 85WAG/KE	M, 83BUR/N	MOM. 							
CHOS+										
COSH		181	757							
	From proton affir					•				
	re-evaluated relat	ive to CO sta	andard (84LL	A/LIE). $PA = 1$	150.7 kcal/mc	ol, 631 kJ/mol.				
CHOSe +		···								
COSeH		230	962							
	From proton affir	From proton affinity of COSe (RN 1603-84-5) (85KAR). PA = 152. kcal/mol,								
	637. kJ/mol.									
CHO ₂ +										
спо2		141	589				2564-86-5			
- 	$\Delta_f H(\text{Ion})$ from appearance potential in HCOOH.									
arra di										
CHP+	(40.50.004)	(000)	(1000)	40 - 7	107.00		(000 50 5			
HCP	(10.79±0.01)	(289)	(1208)	40±15	167±63	71JANAF	6829-52-3			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	$\Delta_f H(Ion)$		utral)	Neutral	CAS registry				
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number				
CHS+	\$ 48 A Mary 1, 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994			······································							
HCS	>(7.3)	243	1018	≤73	≤305	83BUT/BAE					
		243	1018	≤74	≤310						
	•					0-12-2) (82BUT/BA -05-0) (85SMI/ADA					
							.).				
		PA = 188.2 kcal/mol, 787 kJ/mol. IP is $\Delta_f H(\text{Ion}) - \Delta_f H(\text{Neutral})$. See also: 82KUT/EDW, 82KUT/EDW.									
CHS ₂ +											
HSCS		229	959								
	From proton affin	_			A = 164.4 kc	al/mol,					
	688. kJ/mol. See a	also: 85MCN	M/KEB, 85WE	EI/PLA.							
CHTi ⁺											
TiCH	A 22/2 \ .	(289)	(1209)	40.4 7. 7.							
	$\Delta_{\mathbf{f}}H(Ion)$ from or	iset of endo	thermic reacti	on (86ELK/AF	M). 0 K valu	e.					
CHV ⁺						418 118 tun, 1, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
VCH		(307)	(1283)								
	Δ_f H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85ELK/ARM,										
	86ARI/ARM). 0 F	ζ value.									
С н₂ +			_								
CH ₂	10.396±.003	331	1386	93	390	82TN270	60528-76-9				
		331	1386	93	390						
	$\Delta_{f}H$ (Ion) from ap	pearance po	otential deterr	nination (83PL	E/MAR).						
CH ₂ Br ⁺				•							
CH ₂ Br	(7.9)	(224)	(937)	42	174	82MCM/GOL	16519-97-4				
-	Heat of formation	of ion from	appearance p	ootential (11.35	±0.02) in CH ₂	2Br ₂ .					
	Cited ionization potential is $\Delta_f H(\text{Ion})$ - $\Delta_f H(\text{Neutral})$. An experimental value										
	of 8.61±0.01 eV ha	of 8.61±0.01 eV has been reported for the ionization potential (84AND/DYK3).									
CH ₂ BrCl+											
CH ₂ ClBr	10.77±0.01	259	1084	11±2	45±8	78KUD/KUD	74-97-5				
	IP from 77ROS/D	IP from 77ROS/DRA, 81NOV/CVI3.									
CH ₂ Br ₂ +											
CH_2Br_2	10.50±0.02	242	1013	0±1	0±4	EST	74-95-3				
2 2	See also: 82VON/										
or ort			 								
CH ₂ Cl ⁺	(9.4)	(220.2)	(050.0)	21	120	י גרורה זרווונים	(00/ 0/ /				
CH ₂ CI	(8.6)	(229.2) (229.9)	(959.0) (962.1)	31	130	83WEI/BEN	6806-86-6				
	$\Delta_{\mathfrak{c}}H(\operatorname{Ion})$ from an		` '	ninations. Cited	1 ionization n	otential is					
	•	$\Delta_f H(Ion)$ from appearance potential determinations. Cited ionization potential is difference in heats of formation of ion and radical; an experimental									
		determination of the ionization potential gives 8.75±0.01 eV(84AND/DYK) which would									
	correspond to a radical heat of formation of 27 kcal/mol, 115 kJ/mol.										

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	l Δ _f H(Ic	on) $\Delta_f H(\text{Neutral})$			Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
CH ₂ CIF ⁺							
CH ₂ FCI	11.71±0.01	208	869	-62±2	-261±8	78KUD/KUD2	593-70-4
-	IP from 84AND	/DYK.					
CH ₂ Cl ₂ +							······································
CH ₂ Cl ₂	11.32±0.01	238	997	-22.9±0.2	-95.7±0.8	77PED/RYL	75-09-2
2 2		240	1003	-21.2	-88.8	-,	
	See also: 82VO	V/ASB, 81KIN	Л/КАТ.				
CH ₂ Cl ₄ Si ⁺		·					
Cl ₃ SiCH ₂ Cl	(10.7)	(116)	(486)	-130	-546	*EST	1558-25-4
5 2	IP is onset of ph						
CH ₂ Co+							
$CH_2 = Co$		(290)	(1213)				
-	$\Delta_{\mathbf{f}}H(\text{Ion})$ from		. ,	ion and photod	issociation (81	ARM/HAL,	
	81ARM/BEA2,	86HET/FRE)	. 0 K values.				
CH ₂ Cr ⁺					·		
$CH_2 = Cr$		(292)	(1223)				
<u>-</u>	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from (on (86ELK/AR	U).		
	See also: 81ARN						
CH ₂ F ⁺					*		
CH ₂ F	9.05±0.01	199	833	-8±2	-33±8	82MCM/GOL	3744-29-4
-	IP from 84AND	/DYK. $\Delta_{\mathbf{f}} H$ (Io	on) evaluated	from observed	ion-molecule	reactions (77LIA/A	US).
CH ₂ F ₂ +	· · · · · · · · · · · · · · · · · · ·						***************************************
CH ₂ F ₂	12.71	185	773	-108±2	-453±8	78KUD/KUD	75-10-5
<i>2 2</i>	See also: 81BIE/	ASB.					
CH ₂ F ₃ +							
F ₂ CHFH		53	220				
2	From proton aff			. PA = 147 kc	al/mol, 615 kJ/	mol.	
CH ₂ F ₃ O ₃ S ⁺				<u> </u>			
CH ₂ F ₃ O ₃ S · CF ₃ SO ₃ H ₂		(-85)	(-356)				
01 300 3112	From proton affi		• •	3-13-6), PA = ((169) kcal/mol.	(707) kJ/mol.	
	F	, == 3		/	,,,	· · · / · · · · · · · · · · · · · · · ·	
_							
CH ₂ Fe ⁺ CH ₂ = Fe	A	(292)	(1222)	+			
_	Δ _f H(Ion) from p	` '	` '	rive Fe ⁺ (86HE	ET/FRE). See	also: 81ARM/HAL,	84JAC/JAC.
CH ₂ Fe + CH ₂ = Fe CH ₂ I ₂ +	$\Delta_{ m f}$ $\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$	` '	` '	tive Fe ⁺ (86HE	ET/FRE). See	also: 81ARM/HAL,	84JAC/JAC.
CH ₂ = Fe	Δ _f H(Ion) from p	` '	` '	28±5	ET/FRE). See	· · · · · · · · · · · · · · · · · · ·	84JAC/JAC. 75-11-6
CH ₂ = Fe	<u> </u>	ohotodissociat	ion onset to g			· · · · · · · · · · · · · · · · · · ·	
$CH_2 = Fe$ $CH_2I_2 + CH_2I_2$	<u> </u>	photodissociat	ion onset to g	28±5	118±21	· · · · · · · · · · · · · · · · · · ·	
CH ₂ = Fe	<u> </u>	246 249	ion onset to g	28±5	118±21	78KUD/KUD	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
CH ₂ N ⁺ HCNH		226	947	······································			
пемі	From proton affin and HNC (RN 69)	ity of HCN	(RN 74-90-8)	•		/mol)	
CNH ₂	Δ _f H(Ion) from ap	(265) opearance po	(1109) otential deter	minations (84B	UR/HOL).		
CH ₂ NO ⁺ H ₂ NCO	From proton affin	167 ity of HNC	700 O (RN 75-13-	8) (PA = 173 k	cal/mol, 725 k	IJ/mol).	
CH ₂ N ₂ + CH ₂ N ₂	8.999±0.001	263	1098	55±4	230±17	78VOG/WIL	334-88-3
H ₂ NCN	(10.4) IP is onset of phot	(272) oelectron b	(1137) and.	32	134	77PED/RYL	420-04-2
N N N N N N N N N N N N N N N N N N N	(10.3)	(301)	(1259)	63.3±2.7	264.8±11	72LAU/OKA	157-22-2
CH ₂ N ₄ +		· • • • • • • • • • • • • • • • • • • •		•			· · · · · · · · · · · · · · · · · · ·
N-N	(10.95)	(333)	(1392)	80±1	335±4	77PED/RYL	288-94-8
N H	IP is onset of phot	oelectron ba	and (82LEV/)	LIA, 81PAL/SII	M).		
CH ₂ Ni ⁺ CH ₂ =Ni	$\Delta_{ m f}$ $\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$	(285) set of endot	(1193) hermic reacti	on (81ARM/HA	AL). 0 K valu	es.	60187-22-6
CH ₂ O + CH ₂ O	10.874±0.002	224.8 225.8	940.5 944.5	-26.0±0.2 -25.0	-104.7	77PED/RYL	50-00-0
	See also: 81BOM/			/ON/BIE, 84W <i>i</i>	AN/CAP, 81K	IM/KAT.	
нсон	Δ _f H(Ion) from app	230 pearance po	962 tential measu	rement (83BUI	R/MOM).		
СН ₂ О ₂ + нсоон	11.33±0.01 See also: 80VON/E	170.7 BIE, 81KIM,	714.3 /KAT.	-90.5±0.1	−378.8±0.5	78CHA/ZWO	64-18-6
C(OH) ₂	Δ _f H(Ion) from ap _l	175 pearance po	732 tential detern	ninations (82BL	JR/HOL, 83B	·UR/MOM).	71946-83-3

Table 1. Positive Ion Table - Continued

ION	Ionization potential	ı ∆ _f H(Ic	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol	kJ/mol	reference	number
CH ₂ S ⁺							
CH ₂ S	9.34±0.01	240	1006	25	105	82ROY/MCM	865-36-1
	See also: 83ERN	M/AKO, 82KU	JT/EDW.				
HCSH		(270)	(1130)				
	$\Delta_{\mathbf{f}}H(\mathbf{Ion})$ from	appearance po	otential determ	nination (82KU	UT/EDW). 0 I	K values.	
CH ₂ Se ⁺							
CH ₂ Se	(8.95)	(245)	(1024)	38	160	*EST	6596-50-5
4	IP from 84BOC		,				
CH ₂ Ti ⁺	V-V08 -						
CH ₂ =Ti		(277)	(1158)				
2	$\Delta_f H(Ion)$ from G	• •	` '	on (86ELK/AF	RM).		
	0 K value.				,		
CH ₂ V ⁺	184			· · · · · · · · · · · · · · · · · · ·			
$CH_2 = V$		(295)	(1234)				
	$\Delta_f H(Ion)$ from G			reaction			
	(84ARI/ARM, 8						
С H 3 ⁺	P+10						
CH ₃	9.84±0.01	261.3±0.4	1093.3±1.7	34.8±0.3	145.8±1	81HEN/KNO	2229-07-4
J		262	1098	35.6	149.0		
	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from a	appearance po	otential determ	inations (81T	RA/MCL). S	ee also: 83PLE/MAR	
CH ₃ BBr ₂ +							
CH ₃ BBr ₂	10.60	197	824	-48	-199	82HOL/SMI	17933-16-3
CH ₃ BCl ₂ +							
CH ₃ BCl ₂	(11.51)	(185)	(774)	-81	-337	82HOL/SMI	7318-78-7
					··· · · · · · · · · · · · · · · · · ·		
CH ₃ BF ₂ +	(.	(0.0)					
CH ₃ BF ₂	(12.54±0.03)	(90)	(377)	-199	-833	82HOL/SMI	373-64-8
сн ₃ во+							
BH ₃ CO	11.14±0.02	230	964	-27	-111	82TN270	13205-44-2
		232	970	-25.0	-104.8		
CH ₃ Br ⁺							
CH ₃ Br	10.541±0.003	234	979	-9.1±0.3	-38.1±1.3	84BIC/MIN	74-83-9
		238	994	-5.5	-23.0		
						res 10.857 eV. IPs fro	
	82BAI/CON,82L	EV/LIA,77R	OS/DRA,82V	ON/ASB,81H0	OL/FIN,84AN	ID/DYK3,81KIM/KA	T,77KAR/JA
CH ₂ BrH		(237)	(990)				
	$\Delta_{\mathbf{f}}H$ (Ion) from a	ppearance po	tential determi	ination (83HC	L/LOS2).		
CH3BrHg+							
C H₃BrHg ⁺ CH ₃ HgBr	(9.9)	(224)	(937)	-4±0.7	-18±3	77PED/RYL	506-83-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
CH ₃ Cd +							
CH ₃ Cd		(213)	(891)				
· ·	From appearance	potential (9		$H_3)_2Cd$.			
CH ₃ Cl ⁺							
CH ₃ Cl	11.22±0.01	239	1000	-19.6±0.1	-82.0±0.5	79KUD/KUD	74-87-3
·		241	1009	-17.5	-73.4		
	See also: 81KIM/I	KAT, 77KA	R/JAD.				
CH ₂ CIH		(246)	(1029)				
-	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance p	otential deter	mination (83H)	OL/LOS2).		
CH ₃ ClHg ⁺							
CH ₃ H _g Cl	(10.5)	(230)	(962)	-12±0.7	-51±3	77PED/RYL	115-09-3
<u>.</u> -	IP is onset of photo	toelectron b		DRA, 81BAI/C	HI2).		
CH ₃ ClO ⁺							
CH ₃ OCI	(10.39±0.02)	(226)	(944)	-14	-58	*EST	593-78-2
~	IP from 81COL/F		-				
CH ₃ ClO ₂ S ⁺							
CH ₃ SO ₂ CI	11.3	(173)	(722)	-88	-368	*EST	124-63-0
3 2	IP is onset of phot	toelectron b					
CH ₃ Cl ₂ N ⁺							
CH ₃ NCl ₂	9.52	(264)	(1104)	44	185	*EST	7651-91-4
CH ₃ Cl ₂ OP +	10.01	110	407	122.6	EEC. 25	aanen maa	676 07 1
CH ₃ POCl ₂	10.91 IP from 80ZVE/V	119 TL, 82LEV/	497 LIA.	-133±6	-556±25	77PED/RYL	676-97-1
~~ ~ ~ ~ <u></u>							
CH ₃ Cl ₂ P ⁺	(0.6)	(1 (0)	(700)	ra .	04.4	* 57.005	(T) 00 5
CH ₃ PCl ₂	(9.5) IP is onset of phot	(168)	(703)	-51	-214	*EST	676-83-5
	IF is offset of buot	Ociection of	211G.				
CH ₃ Cl ₃ Si ⁺							
CH ₃ SiCl ₃	(11.36±0.03)	(131)	(547)	-131	-549	81BEL/PER	75-79-6
CH ₃ Co +							
CH ₃ Co	(7.0±0.3)	(257)	(1075)	(96)	(400)	81ARM/BEA	76826-90-9
-						31ARM/BEA. 0 K va	
CH ₃ Cr ⁺							
CH ₃ Cr	(7.2)	(257)	(1074)	90	375	86ELK/ARI	
3	$\Delta_f H(\text{Ion})$ from on						
	See also: 81ARM/						
СH ₃ F+		· · · · · · · · · · · · · · · · · · ·					
CH ₃ F	12.47±0.02	228	956	-59	-247	85LIA/KAR	593-53-3
J	See also: 81BIE/A					•	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number
CH ₃ F ⁺						
CH ₂ FH		217 908				
-	$\Delta_{\mathbf{f}}H(ext{Ion})$ from a	ppearance potential dete	rmination (83F	HOL/LOS2).		
CH ₃ F ₂ +		· · · · · · · · · · · · · · · · · · ·				
FCH ₂ FH		110 462				
-	From proton affi	nity of CH ₂ F ₂ (RN 75-10	1-5). PA = 147	kcal/mol, 615 i	kJ/mol.	
CH ₃ F ₂ P ⁺	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
CH ₃ PF ₂	(9.8)	(68) (285)	-158	-66 1	*EST	753-59-3
ŭ <u>-</u>	IP is onset of pho					
CH ₃ F ₂ Si ⁺			····			
CH ₃ SiF ₂		23 95				
	From appearance	e potential (11.70±0.03) of	f ion in (CH ₃) ₂	SiF ₂ .		
CH ₃ F ₃ Si ⁺						
CH ₃ SiF ₃	12.48±0.04	-8 -33	-296	-1237	71JANAF	373-74-0
CH ₃ Fe ⁺						
CH ₃ Fe	(8.1)	(257) (1075)	71	298	86ELK/ARI	
011310		nset of endothermic react			OULLAAN	
	-	JAC/JAC. IP is $\Delta_{\mathbf{f}}H$ (Ion				
CH ₃ Hg ⁺						
CH ₃ Hg		221 926				
3 0		225 942				
	From appearance	potential (10.10±0.02 eV) in (CH ₃) ₂ Hg			
CH ₃ HgI ⁺			· · · · · · · · · · · · · · · · · · · 			• • • • • • • • • • • • • • • • • • • •
CH ₃ HgI	(9.0)	(213) (891)	5.3±0.4	22.4±1.9	77PED/RYL	143-36-2
5	IP is onset of pho					
CH ₃ I	9.538	223.6 935.7	3.7±0.2	15.4±0.9	77PED/RYL	74-88-4
-		226 945	6	25		
	See: 78LIA/AUS,	83POW, 81KIM/KAT, 7	7KAR/JAD.			
CH ₃ Mn ⁺						
CH ₃ Mn		(223) (934)				
-	$\Delta_{\mathrm{f}}H$ (Ion) from or	nset of endothermic react	ion (86ARM).	See also: 81AF	RM/HAL. 0 K value	s.
CH ₃ Mn ₂ +					· · · · · · · · · · · · · · · · · · ·	
CH ₃ Mn ₂		(261) (1090)				
J 4	$\Delta_{\mathbf{f}}H$ (Ion) from or	set of endothermic reacti	ion (86ARM).	K values.		
CII NI+						······································
CH ₃ N ⁺	(0.0)	(260) (1000)	20	125	700000000	2052 20 4
$CH_2 = NH$	(9.9) IP is onset of photon	(260) (1090) coelectron band (82SCH/S	32 SCH, 86WER).	135	78DEF/HEH	2053-29-4
	1		,			
HCNH ₂	.	258 1079				35430-17-2
	$\Delta_f H(Ion)$ from ap	pearance potential deterr	minations(84B)	JR/HOL).		

Table 1. Positive Ion Table - Continued

							
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
CH ₃ NO ⁺ HCONH ₂	10.16±0.06	190 Vat 21 a S	794	-44 N///S A	-186	69BEN/CRU	75-12-7
	See also: 81KIM/	KAI, OIASI	5/5 V E, 61 H E	IV/ISA.			
CH ₂ =NOH	10.11 IP is onset of pho	(240) otoelectron b	(1004) and (82FRO/	7 LAU, 84DOG/	29 POU).	*EST	75-17-2
CH ₃ NO	9.3 IP is onset of pho	231 otoelectron b	967 and (82CHO/	17±0.7 FRO, 82FRO/I	70±3 LAU).	73BAT/MIL	865-40-7
CH ₃ NO ₂ +							
CH ₃ NO ₂	11.02±0.04 See also: 83GIL/I	236 HSI, 83OGD	987 SHA, 81ALI	–17.9±0.2 L/MIG, 81ASB/		77PED/RYL /KAT.	75-52-5
CH ₃ ONO	10.38±0.03 IP from 83GIL/H	223 ISI, 83GIL/H	935 ISI2, 80MEI/I	−15.9±0.2 HSI, 83OGD/SI		74BAT/CHR	624-91-9
CH ₃ NO ₃ +							
CH ₃ ONO ₂	(11.53±0.01)	(237)	(990)	-29±1	-122±4	77PED/RYL	598-58-3
CH ₃ NS ⁺					· · · · · · · · · · · · · · · · · · ·		
HCSNH ₂	8.69 See also: 81HEN/	(210) /ISA.	(877)	9	39	*EST	115-08-2
CH ₃ N ₂ +					- ITTA-		
CH ₃ N ₂	From appearance (RN 334-88-3)(PA			-	⁷ 2		
H ₂ NCNH	From core bindin PA of H ₂ NCN =			•	√EYE).		
CH ₃ N ₃ +							
CH ₃ N ₃	9.81±0.02 See also: 81BOC/	293 DAM.	1227	67	280	69BEN/CRU	624-90-8
CH ₃ Ni ⁺ CH ₃ Ni	Δ _f H(Ion) from o	<i>(265)</i> nset of endot	<i>(1109)</i> hermic reaction	on (81ARM/HA	AL, 86ELK/A	RI). 0 K values.	63583-16-4
СН ₃ О+							
СН ₂ ОН	7.56 \pm 0.01 $\Delta_f H$ (Ion) from pr $\Delta_f H$ (Ion) from ar (82MAC, 83HOL	pearance po	tential measu	yde. PA = 171 rements is 169 l	kcal/mol, 709		17691-31-5
СН ₃ О	(8.6) The reaction: HC (77HIR/KEB). A ³ CH ₃ O ⁺ (84BU)	value of 247	kcal/mol, 103	4 kJ/mol, has be	en reported f		2143-68-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		$\Delta_{\mathbf{f}}H(\mathbf{N}\mathbf{e})$		Neutral	CAS registry
Neutrai	ev	kcal/mol	KJ/MOI	kcal/mol	KJ/MOI	reference	number
CH ₃ O ₂ +							
HC(OH) ₂		96	403				
	From proton affin				_		
	determinations (8	34HOL/LOS	6). PA = 178.	8 kcal/mol, 748	kJ/mol.		
СН ₂ ООН		(185)	(774)				
-	$\Delta_f H(Ion)$ from 87	7FER/RON.					
CH ₃ O ₃ +		·					
C(OH) ₃		37	155				
` '3	$\Delta_{\mathbf{f}}H$ (Ion) from a	ppearance po	otential deteri	ninations(82H	OL/LOS2).		
orr e+	· · · · · · · · · · · · · · · · · · ·						
CH ₃ S ⁺ CH ₂ SH		206	862				20879-50-9
C112311		206 208	802 870				200/Y-3U-Y
	Heat of formation			otential deter	ninations		
	(83BUT/BAE, 82						
CH ₃ S	(8 NK±N 1\	(215)	(901)	20.4.2.1	123.0±8.8	92840844604	7175 75 0
Ciigo	(8.06±0.1) Collisional activat	(215) tion results ((901) 79DH/MCL)	29.4±2.1			7175-75-9
	stable triplet; ab i						
	~10 kcal/mol abov					llv	
	obtained value giv		2 , 0		•	•	
CH ₃ S ₂ +							
CH ₃ SS	(8.0)	200	835	16	69	86HAW/GRI	
3	(/	201	839				
	$\Delta_{\mathbf{f}}H$ (Ion) from ap	pearance po	otential detern	nination (83BL	T/BAE).		
	IP is $\Delta_{\mathbf{f}}H(\operatorname{Ion})$ - Δ	∆ _f H(Neutral).				
CH ₃ Sc ⁺	***************************************				····	·····	
CH ₃ Sc	(5.1)	(212)	(887)	93	391	86SUN/ARI	
-	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or					•	
	See also: 87SUN/				=		
CH ₃ Se ⁺							·
CH ₂ SeH		219	916				
~	From proton affin			-5)(85KAR). 1	PA = 185 kcal/	mol,	
	774 kJ/mol.						
СH ₃ Ti ⁺				· · · · · · · · · · · · · · · · · · ·			
CH ₃ Ti	(6.3)	(248)	(1039)	(102)	(426)	86ELK/ARI	
3	$\Delta_{f}H(Ion)$ from or		-			00222412	
	IP is $\triangle_f H(\text{Ion}) - \triangle$			•	•		
CH ₃ V ⁺	***			·			····
CH ₃ V	(6.6)	(263)	(1102)	111	463	86ARI/ARM	
J	$\Delta_{f}H(Ion)$ from on						
) - $\Delta_{\mathbf{f}}H$ (Neutra		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry				
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number				
CH ₃ Xe ⁺											
CH ₃ Xe		(210)	(877)								
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ derived	from result	s of 86HOV/	MCM.							
CH ₃ Zn ⁺	- Marie 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1, 1 - 1			······································			 				
CH ₃ Zn	(7.2)	(213)	(890)	(47)	(197)						
3	From appearance				` ,						
	Value from onset	of endother	mic reaction	(86GEO/ARM) is in agreeme	nt.					
	IP is $\Delta_{\mathbf{f}}H(\operatorname{Ion})$ - A	∆ _f H(Neutral). 0 K values.								
СH ₄ +					· · · · · · · · · · · · · · · · · · ·						
CH ₄	12.51	271	1132	-17.8±0.1	-74.5±0.4	77PED/RYL	74-82-8				
		272	1140	-16.0	-66.8						
	See also: 83PLE/I	MAR, 81KIN	1/KAT, 84CF	łA/HIL.							
CH ₄ Br ⁺											
CH ₃ BrH		191	800								
J	From proton affir	nity of CH ₃ E	r (RN 74-83-	9). PA = 165.7	kcal/mol, 693	kJ/mol.					
CH ₄ Cl ⁺											
CH ₃ CIH		183	767								
0.1.30.1.1	From proton affir			B). PA = ~163	kcal/mol, ~682	kJ/mol.					
CH ₄ CIN ⁺				······································							
-	(0.10 , 0.02)	(220)	(0(4)	10	77	*1500	(154.14.0				
CH ₃ NHCl	(9.19±0.02)	(230)	(964)	18	77	*EST	6154-14-9				
CH ₄ Cl ₂ Si ⁺											
CH ₃ SiHCl ₂	(11.47)	(168)	(705)	-96±2	-402±8	81BEL/PER	20156-50-7				
СH ₄ F +											
CH ₃ FH		(162)	(678)								
J	From proton affir			3). PA = 145 kg	al/mol, 605 kJ/	mol (mol					
	(86MCM/KEB, 85	MCM/KEB	3).								
CH ₄ I ⁺						* * * * * * * * * * * * * * * * * * *					
CH ₃ IH		(198)	(830)								
J	From proton affin			PA = ~171 kg	al/mol, ~715 k.	J/mol.					
CH ₄ N ⁺											
CH ₂ NH ₂	6.1	(178)	(745)	38±2	159±8	81GRI/LOS	54088-53-8				
22	$\Delta_{f}H(Ion)$ from ap					01014/200	J-1000-JJ-0				
	See also: 81GRI/L	_		-	•						
CHAMI	((T)	(100)	(022)	40 4 0 0	100 4 10 5	MOOKEN LOOP .	10501 01 1				
CH ₃ NH	(6.7)	(199)	(833)	43.6±3.0	182.4±12.5	78SEN/FRA	49784-84-1				
	<u> </u>	$\Delta_f H(Ion)$ from appearance potential determinations (84LOS/HOL). IP is $\Delta_f H(Ion) - \Delta_f H(Neutral)$.									
7.T. V.O. ±		· · · · · · · · · · · · · · · · · · ·			u						
CH ₄ NO +		122	514								
HC(OH)NH ₂	Tonas mastas affi	123	514 ILL (DN 75 1	27) DA 10	2 A Iran 1/m - 1 00	10 leT/m==1					
	From proton affin	ny or ACON	113 (MA 12-1	4-1). FA = 190	o.4 Kcai/moi, 83	o kj/mor					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia	•	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry
	- •						
CH ₄ NO ₂ +							
CH ₃ NOOH	P	169	705	FO 5\ DA 15	10 0 11/1 <i>(</i>	150 1-T/1	
	From proton at	minity of CH ₃ :	NO ₂ (KN /5-	52-5). PA = 17	9.2 Kcal/mol, /	SU kJ/moi.	
CH ₃ ONHO		157	658				
_	From proton at	finity of CH3	ONO (RN 62	4-91-9). PA =	192.5 kcal/mol,	, 805 kJ/mol.	
CH ₄ N ₂ +							
$(E)-CH_3N=NH$	8.8±0.1	(248)	(1037)	45±2	188±8	*EST	26981-93-1
<u> </u>	 						
CH ₄ N ₂ O +							
(NH ₂) ₂ CO	9.7	165	690	-58.8±0.5	-245.9±2.1	77PED/RYL	57-13-6
	See also: 82BIE	:/ASB.				****	
CH ₄ N ₂ S ⁺							
(NH ₂) ₂ CS	7.9	188	785	5±0.5	23±2	82TOR/SAB	62-56-6
CH ₄ O +	***************************************				· · · · · · · · · · · · · · · · · · ·		
CH ₃ OH	10.85±0.01	202.0	845.3	-48.2±0.1	-201.6±0.2	77PED/RYL	67-56-1
3		204.6	856.2	-45.6	-190.7	,,,,,,,,	0.001
	See also: 82MIS					N/KAT, 80BAC/MO	DU, 77KAR/JAI
CH ₂ OH ₂		195±2	815±8				25765-84-8
C112O112	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from			urements (82H)	OL/LOS).		23703-04-0
СH ₄ S ⁺							
CH ₃ SH	9.44±0.005	212.3	888.2	-5.5±0.1	-22.9±0.6	77PED/RYL	74-93-1
	IP from 83BUT	214.8	<i>899.0</i> [/// AT 92//] [-2.9	-12.1		
	If Holl 63BC1	/DAL, OIKIW	J/KA1, 62KU	1/EDW.			
CH ₂ SH ₂		219	916				63933-47-1
		221	925				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from	appearance p	otential deter	mination (83HC	DL/LOS2).		
CH ₄ S ₂ +							
CH ₂ (SH) ₂	(9.42)	(225)	(942)	8±2	33±8	78BEN	6725-64-0
			-			·····	
CH ₄ Sc ⁺		/m / 1	(005)				
CH ₃ ScH	A TY/Y . N.C.	(214)	(895)	(04TPOT TOT	'A) C 1- 1	DETEL TELANT	
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from	onset of endo	mermic react	on (941OL/BE	M). See also: 8	DUCLN/AKI.	
CH ₅ +							
CH ₅		216	905				
	From proton af	-		See also: 85MC	M/KEB.		
	PA = 131.6 kca	I/mol, 551. kJ/	mol.				
CH ₅ As ⁺							
CH ₃ AsH ₂	(8.5)	(207)	(868)	11	48	*EST	593-52-2
_	IP is onset of ph	otoelectron b	and (82ELB/	DIE).			

Table 1. Positive Ion Table - Continued

			ve ion table	e - Contin			
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
CH ₅ N ⁺							
CH ₂ NH ₃		(≤201)	(≤841)				
	The reaction c-C						
	is at least 15 kcal	l/mol exother	rmic (84LIA/B	UC). See also	: 83HOL/LOS	S2, 72GRO.	
CH ₃ NH ₂	8.97±0.02 See also: 81KIM	201 /KAT, 82BIE	842 E/ASB, 82ELE	-5.5±0.1 3/DIE.	-23.0±0.4	77PED/RYL	74-89-5
CH ₅ NO +					,		
CH ₃ ONH ₂	9.55 IP from 83MOL	(214) /PIK. See als	(895) o: 81KIM/KA'	−6±2 Γ.	-26±8	69BEN/CRU	67-62-9
CH ₃ NHOH	(9.0)	(196)	(818)	-12±2	-50±8	69BEN/CRU	593-77-1
	IP is onset of pho	otoelectron b	and.	· · · · · · · · · · · · · · · · · · ·		•	
CH ₅ N ₃ +							
$(NH_2)_2C = NH$	(9.10±0.05)	(218)	(910)	8	32	82JOS	113-00-8
CH ₅ O +							······································
CH ₃ OH ₂		136	567				
-	From proton affi	inity of CH ₃ (OH (RN 67-56	-1). PA = 181	.9 kcal/mol, 76	61 kJ/mol.	
CH ₅ P ⁺						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·
CH ₃ PH ₂	9.12±0.07	(206)	(862)	-4	-18	*EST	593-54-4
	See also: 82COW	V/KEM, 82EI	LB/DIE.				
CH ₅ S ⁺							
CH ₃ SH ₂		173	723				
	From proton affi	inity of CH ₃ S	SH (RN 74-93-	1). PA = 187.4	4 kcal/mol, 784	4 kJ/mol.	
CH ₆ N ⁺							
CH ₃ NH ₃	(4.3±0.1)	(146)	(611)				
	$\Delta_{ m f} H$ (Ion) from p IP estimated from					cal/mol, 896 kJ/mol. ().	
CH ₆ N ₂ +							
CH ₃ NHNH ₂	7.67±0.02	199	835	22.6±0.1	94.6±0.6	77PED/RYL	60-34-4
	IP from charge to	_			ns		
	(84MAU/NEL) i	s in agreeme	nt. See also: 81	KIM/KAT.			
СН ₆ Р+							
СН ₃ РН ₃		158	658				
	From proton affi	nity of CH ₃ P	'H ₂ (RN 593-5	4-4). $PA = 20$	4.1 kcal/mol, 8	354 kJ/mol.	
CH ₆ Si ⁺							
CH ₃ SiH ₃	10.7	240	1003	-7±1	-29±4	86DON/WAL	992-94-9
CH ₇ N ₂ +							
CH ₃ NH ₂ NH ₂		(174)	(729)				
3 2 2	From proton affi			0-34-4). PA =	(214.1) kcal/n	noi,	
	(896) kJ/mol.	. 3	~ `	·			

76 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (Io		∆ _f H(Ne	utrol)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
CH ₈ BN ⁺			 	·	···		
CH ₃ NH ₂ BH ₃	(9.66±0.01)	(210)	(878)	-13±1	-54±4	80TEL/RAB	1722-33-4
CIN+		<u></u> -					
ICN	10.87±0.02	305	1274	53.9	225.5	82TN270	506-78-5
	23.27.27.2	305	1275	54.0	226.1		
CI ₄ +			*·····		<u> </u>		· · · · · · · · · · · · · · · · · · ·
CI ₄	8.95	142	596	-64	-268	78KUD/KUD	507-25-5
	IP is onset of pho	otoelectron b	and (82JON/	DEL).			
CIr+							
IrC	(9.5±1) 0 K values.	(400)	(1670)	180	753	79HUB/HER	12385-37-4
CKN+							
KCN	(9.3±0.3)	(236)	(988)	22	91	82TN270	151-50-8
		(236)	(987)	21	90		
CN+							
CN	(14.09)	(428.9)	(1794.6)	104.0±2	435.1±10	85JANAF	57-12-5
	$\Delta_{\mathbf{f}}H$ (Ion) from a	(429.3)	<i>(1796.3)</i> Stential measi	104.4±2 trements IP ci	<i>436.8±10</i> ted is <i>∆ ₀H</i> (Ior	a). A cH(Neutral)	
	Δ _f 11(10ii) itoin u						
CNO + NCO	(11.76.0.01)	(200)	(1200)	27.2	154.14	7001Z A	
NCO	(11.76±0.01) IP from 83DYK/	(308) JON.	(1289)	37±3	154±14	700KA	
CN ₂ O ⁺		**************************************					
ONCN	10.93	300.9	1259.0	48.85±0.03	3 204.4±0.1	84NAD/REI	4343-68-4
	IP from 81JON/N	MOO. See als	so: 81KIM/KA	AT.			
CN ₄ +					· · · · · · · · · · · · · · · · · · ·		
N≡CN ₃	(≤10.98±0.02)	(≤361)	(≤1512)	108±5	453±20	690KA/MEL	764-05-6
co+							
CO	14.0139	296.74	1241.59	-26.42	-110.53	82TN270	630-08-0
	0 047777	<u>295.97</u>	<u>1238.32</u>	-27.20	-113.80		
	See also: 81KIM/	KAT.					
cos+	11.1736±0.0015	224	936	-34	-142	77PED/RYL	463 - 58-1
		224	936	-34	-142		463-58-1
	11.1736±0.0015 Cited ionization por COS + $(^2\pi_{1/2})$	224 potential corr	936 responds to fo	-34 rmation of COS	<i>−142</i> S ⁺ (² π _{3/2}). Fo	ormation	463-58-1
	Cited ionization j	224 potential corr	936 responds to fo	-34 rmation of COS	<i>−142</i> S ⁺ (² π _{3/2}). Fo	ormation	463-58-1

Table 1. Positive Ion Table - Continued

Neutral eV kcal/mol kJ/mol kcal/mol kJ/mol CO2 + CO2 + CO2 13.773±0.002 223.6 935.4 -94.05 -393.51 223.7 935.7 -93.96 -393.14 See also: 81KIM/KAT.	Neutral	CAS registry
CO ₂ 13.773±0.002 223.6 35.4 -94.05 -393.51 See also: 81KIM/KAT. CP+ CP (10.5±0.5) (365) (1529) 123 516 CRh+ CRh (8.9±0.5) (370) (1550) 165±1 692±4 0 K values. See also: 81HAQ/GIN. CS+ CS 11.33±0.01 327 1368 64 267 Heat of formation of ion from appearance potentials in CS ₂ of 13.64±0.0 (to give CS + + S) and 15.75±0.02 eV (to give CS + + S). Δ _P H(Neutral) = Δ _P H(Ion) · IP, in good agreement with 79HUB/HER. CS ₂ + CS ₂ 10.6685±0.0020 260 1088 28±0.2 117±1 260 1088 28±0.2 117±1 260 1088 28±0.2 117±1 260 1088 28±0.2 117 See also: 81KIM/KAT. CSe ₂ + CSe ₂ 9.258±0.0002 275 1149 61±5 256±20 CV+ CV (360) (1506) Δ _P H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) C2+ C2 12.11 478 1998 198.8 831.9 19 from 79HUB/HER. C2BrI+ BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98	reference	number
CO ₂ 13.773±0.002 223.6 335.7 -93.96 -393.14 See also: 81KIM/KAT. CP+ CP (10.5±0.5) (365) (1529) 123 516 CRh ⁺ CRh (8.9±0.5) (370) (1550) 165±1 692±4 0 K values. See also: 81HAQ/GIN. CS ⁺ CS 11.33±0.01 327 1368 64 267 324 1356 63 262 Heat of formation of ion from appearance potentials in CS ₂ of 13.64±0.0 (to give CS ⁺ + S [*]) and 15.75±0.02 eV (to give CS ⁺ + S). Δ _P H(Neutral) = Δ _P H(Ion) · IP, in good agreement with 79HUB/HER. CS ₂ 10.0685±0.0020 260 1088 28±0.2 117±1 260 1088 28±0.2 117- See also: 81KIM/KAT. CSe ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ + CS ₂ (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV ⁺ CV (360) (1506) Δ _P H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) C2 ⁺ C2 12.11 478 1998 198.8 831.9 19 from 79HUB/HER.		
See also: 81KIM/KAT.	82TN270	124-38-9
$ \begin{array}{c} \text{CP}^{+} \\ \text{CP} \\ \text{CSh} \\ \text{Sl}_{2}\text{CS} \\ \text{CS}_{2} \\ \text{Sl}_{2}\text{CS} $		
$ \begin{array}{c} \text{CP} & (10.5\pm0.5) & (365) & (1529) & 123 & 516 \\ \\ \text{CRh}^+ & \\ \text{CRh} & (8.9\pm0.5) & (370) & (1559) & 165\pm1 & 692\pm4 \\ \\ \text{O K values. See also: } 81\text{HAQ/GIN.} \\ \\ \text{CS}^+ & \\ \text{CS} & 11.33\pm0.01 & 327 & 1368 & 64 & 267 \\ \\ 324 & 1356 & 63 & 262 \\ \\ \text{Heat of formation of ion from appearance potentials in CS2 of } 13.64\pm0.0 \\ \\ \text{(to give CS}^+ + \text{S'}) \text{ and } 15.75\pm0.02 \text{ eV (to give CS}^+ + \text{S).} \\ \\ \Delta_F H (\text{Neutral}) = \Delta_F H (\text{Ion}) \cdot \text{IP, in good agreement with } 79\text{HUB/HER.} \\ \\ \text{CS2}^+ & \\ \text{CS2} & 10.0685\pm0.0020 & 260 & 1088 & 28\pm0.2 & 117\pm1 \\ \\ 260 & 1088 & 28 & 117 \\ \\ \text{See also: } 81\text{KIM/KAT.} \\ \\ \text{CSe2}^+ & \\ \text{CSe2} & 9.258\pm0.0002 & 275 & 1149 & 61\pm5 & 256\pm20 \\ \\ \text{CSi2}^+ & \\ \text{Si2C} & (9.2\pm0.4) & (344) & (1440) & 132 & 552 \\ \\ \text{(343)} & (1437) & 131 & 549 \\ \\ \text{CV} & \\ & \\ \text{CO}_2 & 12.11 & 478 & 1998 & 198.8 & 831.9 \\ \\ & \\ \text{476} & 1992 & 196.8 & 823.4 \\ \\ \text{IP from } 79\text{HUB/HER.} \\ \\ \text{C2BrI}^+ & \\ \text{BrC=CI} & (9.34) & (276.56) & (1157.15) & 61.18 & 255.98 \\ \\ \end{array}$		
$\begin{array}{c} \text{CRh}^{+} \\ \text{CRh} \\ \text{CRh} \\ \text{O K values. See also: } 81\text{HAQ/GIN.} \\ \\ \text{CS}^{+} \\ \text{CS} \\ & 11.33\pm0.01 \\ & 324 \\ & 1356 \\ & 63 \\ & 262 \\ \text{Heat of formation of ion from appearance potentials in CS2 of } 13.64\pm0.0 \\ \text{(to give CS}^{+} + \text{S') and } 15.75\pm0.02 \text{ eV (to give CS}^{+} + \text{S).} \\ & \Delta_{\Gamma}H(\text{Neutral}) = \Delta_{\Gamma}H(\text{Ion}) \cdot \text{IP, in good agreement with } 79\text{HUB/HER.} \\ \\ \text{CS2}^{+} \\ \text{CS2} \\ & 10.0685\pm0.0020 \\ & 260 \\ & 1088 \\ & 28 \\ & 117 \\ \\ \text{See also: } 81\text{KIM/KAT.} \\ \\ \text{CSe2}^{+} \\ \text{CSe2} \\ & 9.258\pm0.0002 \\ & 275 \\ & 1149 \\ & 61\pm5 \\ & 256\pm20 \\ \\ \text{CSi}_{2}^{+} \\ \text{Si}_{2}\text{C} \\ & (9.2\pm0.4) \\ & (344) \\ & (1440) \\ & 132 \\ & 552 \\ & (343) \\ & (1437) \\ & 131 \\ & 549 \\ \\ \text{CV}^{+} \\ \text{CV} \\ & (360) \\ & (1506) \\ & \Delta_{\Gamma}H(\text{Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E)} \\ \text{C2}^{+} \\ & \text{C2}^{+} \\ & \text{C2} \\ & 12.11 \\ & 478 \\ & 1998 \\ & 198.8 \\ & 831.9 \\ & 476 \\ & 1992 \\ & 196.8 \\ & 823.4 \\ & \text{IP from 79HUB/HER.} \\ \\ \text{C2BrI}^{+} \\ & \text{BrC=CI} \\ & (9.34) \\ & (276.56) \\ & (1157.15) \\ & 61.18 \\ & 255.98 \\ \\ \end{array}$		
CRh (8.9±0.5) (370) (1550) 165±1 692±4 0 K values. See also: 81HAQ/GIN. CS + CS 11.33±0.01 327 1368 64 267 324 1356 63 262 Heat of formation of ion from appearance potentials in CS2 of 13.64±0.0 (to give CS + S') and 15.75±0.02 eV (to give CS + S). $\Delta_f H (\text{Neutral}) = \Delta_f H (\text{Ion}) \cdot \text{IP}$, in good agreement with 79HUB/HER. CS2 + CS2 10.0685±0.0020 260 1088 28±0.2 117±1 260 1088 28 117 See also: 81KIM/KAT. CSe2 9.258±0.0002 275 1149 61±5 256±20 CSi2 + CS2 (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506) $\Delta_f H (\text{Ion})$ from onset energy of endothermic reaction (84ARI/ARM, 85E) C2 + C2 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER.	79HUB/HER	12326-85-1
$ \begin{array}{c} \text{O K values. See also: 81HAQ/GIN.} \\ \text{CS} + \\ \text{CS} & 11.33\pm0.01 & 327 & 1368 & 64 & 267 \\ 324 & 1356 & 63 & 262 \\ \text{Heat of formation of ion from appearance potentials in CS}_2 \text{ of } 13.64\pm0.0 \\ \text{(to give CS}^+ + \text{S}^+\text{) and } 15.75\pm0.02 \text{ eV (to give CS}^+ + \text{S}).} \\ \Delta_f H \text{(Neutral)} & = \Delta_f H \text{(Ion)} \cdot \text{IP, in good agreement with } 79\text{HUB/HER.} \\ \text{CS}_2 + \\ \text{CS}_2 & 10.0685\pm0.0020 & 260 & 1088 & 28\pm0.2 & 117\pm1 \\ 260 & 1088 & 28 & 117 \\ \text{See also: } 81\text{KIM/KAT.} \\ \text{SSe}_2 + \\ \text{CSe}_2 & 9.258\pm0.0002 & 275 & 1149 & 61\pm5 & 256\pm20 \\ \text{CSi}_2 + \\ \text{Si}_2 \text{C} & (9.2\pm0.4) & (344) & (1440) & 132 & 552 \\ (343) & (1437) & 131 & 549 \\ \text{CV} + \\ \text{CV} & (360) & (1506) \\ \Delta_f H \text{(Ion) from onset energy of and othermic reaction (84ARI/ARM, 85E)} \\ \text{C2}^+ \\ \text{C}_2 & 12.11 & 478 & 1998 & 198.8 & 831.9 \\ 476 & 1992 & 196.8 & 823.4 \\ \text{IP from } 79\text{HUB/HER.} \\ \text{C2BrI}^+ \\ \text{BrC=CI} & (9.34) & (276.56) & (1157.15) & 61.18 & 255.98 \\ \end{array}$		
CS + CS 11.33±0.01 327 1368 64 267 324 1356 63 262 Heat of formation of ion from appearance potentials in CS2 of 13.64±0.0 (to give CS + + S') and 15.75±0.02 eV (to give CS + + S). $\Delta_f H(\text{Neutral}) = \Delta_f H(\text{Ion}) \cdot \text{IP}$, in good agreement with 79HUB/HER. CS2 + CS2 10.0685±0.0020 260 1088 28±0.2 117±1 260 1088 28 117 See also: 81KIM/KAT. CSe2 9.258±0.0002 275 1149 61±5 256±20 CSi2 9.258±0.0002 275 1149 61±5 256±20 CSi2 (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506) $\Delta_f H(\text{Ion})$ from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H(\text{Ion})$ from onset energy of endothermic reaction (84ARI/ARM, 85E) 12 12 11 478 1998 198.8 831.9 476 1992 196.8 823.4 19 from 79HUB/HER.	84SHI/GIN	12127-42-3
CS 11.33±0.01 327 1368 64 267 324 1356 63 262 Heat of formation of ion from appearance potentials in CS ₂ of 13.64±0.0 (to give CS $^+$ + S') and 15.75±0.02 eV (to give CS $^+$ + S). $\Delta_f H (\text{Neutral}) = \Delta_f H (\text{Ion}) \cdot \text{IP}, \text{ in good agreement with 79HUB/HER.}$ CS ₂ 10.0685±0.0020 260 1088 28 117 See also: 81KIM/KAT. CSe ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ 9.258±0.0002 375 1149 61±5 256±20 CSi ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ 9.250.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506)		
CS 11.33±0.01 327 1368 64 267 324 1356 63 262 Heat of formation of ion from appearance potentials in CS ₂ of 13.64±0.0 (to give CS $^+$ + S') and 15.75±0.02 eV (to give CS $^+$ + S). $\Delta_f H (\text{Neutral}) = \Delta_f H (\text{Ion}) \cdot \text{IP}, \text{ in good agreement with 79HUB/HER.}$ CS ₂ 10.0685±0.0020 260 1088 28±0.2 117±1 260 1088 28±0.2 117±1 260 1088 28 117 See also: 81KIM/KAT. CSe ₂ 9.258±0.0002 275 1149 61±5 256±20 2512 $^+$ Si ₂ C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 254 254 255 256 256 256 256 256 256 256 256 256		
Heat of formation of ion from appearance potentials in CS ₂ of 13.64±0.0 (to give CS $^+$ + S') and 15.75±0.02 eV (to give CS $^+$ + S). $\Delta_f H$ (Neutral) = $\Delta_f H$ (Ion) - IP, in good agreement with 79HUB/HER. CS ₂ $^+$ CS ₂ 10.0685±0.0020 260 1088 28±0.2 117±1 260 1088 28 117 See also: 81KIM/KAT. CSe ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ $^+$ CSi ₂ 9.258±0.0002 275 1149 61±5 256±20 CSi ₂ $^+$ Si ₂ C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506) $\Delta_f H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H$ (Ion) from 79HUB/HER.		2944-05-0
$ \begin{array}{c} (\text{to give CS}^+ + \text{S}^-) \text{ and } 15.75\pm0.02 \text{ eV (to give CS}^+ + \text{S}).} \\ \Delta_f H (\text{Neutral}) = \Delta_f H (\text{Ion}) \cdot \text{IP, in good agreement with } 79 \text{HUB/HER.} \\ \text{CS}_2 + \\ \text{CS}_2 + \\ \text{CS}_2 + \\ \text{CS}_2 + \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{CSe}_2 + \\ \text{CV} + \\ \text{CSe}_2 + \\ \text{C}_2 + \\ \text{12.11} + \\ \text{478} + \\ \text{1998} + \\ \text{198.8} + \\ \text{831.9} \\ \text{196.8} + \\ \text{823.4} + \\ \text{IP from } 79 \text{HUB/HER.} \\ \\ \text{C2BrI}^+ + \\ \text{BrC=CI} + \\ \text{(9.34)} + \\ \text{(9.34)} + \\ \text{(276.56)} + \\ \text{(1157.15)} + \\ \text{61.18} + \\ \text{255.98} \\ \end{array}$		
$\Delta_{\rm f}H({\rm Neutral}) = \Delta_{\rm f}H({\rm Ion}) \cdot {\rm IP, in good agreement with 79HUB/HER.}$ ${\rm CS}_2 + \\ {\rm CS}_2 = 10.0685\pm0.0020 260 1088 28\pm0.2 117\pm1 \\ 260 1088 28 117 \\ {\rm See also: 81KIM/KAT.}$ ${\rm CSe}_2 + \\ {\rm CSe}_2 = 9.258\pm0.0002 275 1149 61\pm5 256\pm20 \\ {\rm CSi}_2 + \\ {\rm Si}_2{\rm C} = (9.2\pm0.4) (344) (1440) 132 552 \\ (343) (1437) 131 549 \\ {\rm CV} + \\ {\rm CV} = (360) (1506) \\ {\Delta_{\rm f}}H({\rm Ion}) \text{ from onset energy of endothermic reaction (84ARI/ARM, 85E)} \\ {\rm C2} + \\ {\rm C2} = 12.11 478 1998 198.8 831.9 \\ {\rm 476} 1992 196.8 823.4 \\ {\rm IP from 79HUB/HER.}$ ${\rm C2BrI} + \\ {\rm BrC=CI} = (9.34) (276.56) (1157.15) 61.18 255.98$	02 eV	
CS_2^+ CS_2 10.0685 ± 0.0020 260 1088 28 ± 0.2 117 ± 1 260 1088 28 117 260 1088 28 117 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 260 2		
$\begin{array}{c} \text{CS}_2 \\ \text{CS}_2 \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{CSe}_2 \\ \text{CSe}_2 \\ \text{CSi}_2 \\ \text{CSi}_2 \\ \text{Si}_2 \\ \text{CV} \\ \text{CV} \\ \text{CV} \\ \text{CV} \\ \text{CQ}_4 \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C340} \\ \text{C9.2\pm0.4}) \\ \text{C9.2\pm0.4}$		
$\begin{array}{c} \text{CS}_2 \\ \text{CS}_2 \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{See also: } 81 \text{KIM/KAT.} \\ \text{CSe}_2 \\ \text{CSe}_2 \\ \text{CSi}_2 \\ \text{CSi}_2 \\ \text{Si}_2 \text{C} \\ \text{CV} \\ \text{CV} \\ \text{CV} \\ \text{CV} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C2} \\ \text{C340} \\ \text{C9.2\pm0.4}) \\ C9.2\pm0$		
See also: 81KIM/KAT. CSe_2	77PED/RYL	75-15-0
CSe_2 9.258±0.0002 275 1149 61±5 256±20 CSi_2 + CSi_2 (9.2±0.4) (344) (1440) 132 552 CCV (343) (1437) 131 549 CCV + CCV (360) (1506) CCV CCV CCV (360) (1506) CCV		
CSi ₂ + Si ₂ C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506) $\Delta_f H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H$ (Ion) $\Delta_f H$ (
CSi_2 + CSi_2C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV + CV (360) (1506) CV + CV + CV (360) (1506) CV + CV + CV + CV (360) (1506) CV + CV		*****
Si ₂ + Si ₂ C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV+ (360) (1506) $\Delta_f H(\text{Ion})$ from onset energy of endothermic reaction (84ARI/ARM, 85E) $\Delta_f H(\text{Ion})$ from onset energy of 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER.	82PIL/SKI	506-80-9
Si ₂ C (9.2±0.4) (344) (1440) 132 552 (343) (1437) 131 549 CV (360) (1506) Δ _f H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) C2 + C2 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C2BrI + BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98		
(343) (1437) 131 549 CV	0.0000 10.00	100=0.01.1
CV (360) (1506) Δ _f H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) C2 + C2 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C2BrI + BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98	82TN270	12070-04-1
CV (360) (1506) Δ _f H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) C2 + C2 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C2BrI + BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98		
Δ _f H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E) 2 + C ₂ 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. 22BrI + BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98		
C2 + C2 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C2BrI + BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98		
C ₂ 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C ₂ BrI + BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98	ELK/ARM). 0 K val	ie.
C ₂ 12.11 478 1998 198.8 831.9 476 1992 196.8 823.4 IP from 79HUB/HER. C ₂ BrI + BrC=CI (9.34) (276.56) (1157.15) 61.18 255.98		
476 1992 196.8 823.4 IP from 79HUB/HER. C2BrI + BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98	79HUB/HER	12070-15-4
IP from 79HUB/HER. C2BrI + BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98	•=-	
BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98		
BrC≡CI (9.34) (276.56) (1157.15) 61.18 255.98		
	84DEW/HEA	26395-29-9
C ₂ Br ₂ +	04DEW/REA	40373-47-7
BrC≡CBr 9.67 285 1192 61.8 258.6	83DEW/HEA	624-61-3
C ₂ Br ₂ F ₄ +		
-	83KU1 /DVD	124.72.2
$(CF_2Br)_2$ (11.1) (67) (282) -189 ± 1 -789 ± 4 IP is onset of photoelectron band.	83KOL/PAP	124-73-2

Table 1. Positive Ion Table - Continued

ION	Toutestie	A 77/7		A *****	1	NI1	CASmortation
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₂ Br ₂ O ₂ + BrCOCOBr	(10.49±0.1)	(180)	(752)	-62	-260	*EST	15219-34-8
C ₂ Ce ⁺		·····					
C ₂ Ce	(5.6±0.5)	(265) <i>(265)</i>	(1110) <i>(1109)</i>	136 <i>136</i>	570 569	82TN270	12012-32-7
C ₂ CIF ₃ +							
C ₂ F ₃ Cl	9.81±0.03	(89) <i>(90)</i>	(374) <i>(377)</i>	-137±2 <i>-136</i>	−573±8 <i>−570</i>	77PED/RYL	79-38-9
C ₂ ClF ₅ +							
CF ₃ CF ₂ CI	(12.6) IP is onset of photon	(23) toelectron b	(98) and.	−267±1	-1118±4	81BUC/FOR	76-15-3
C ₂ CII +							
CIC≒CI	(9.44)	(271.94)	(1137.79)	54.25	226.98	84DEW/HEA	25604-71-1
C ₂ Cl ₂ + CIC=CCI	10.09	283	1183	50±10	209±42	71JANAF	7572-29-4
	See: 81BOC/RIE,	<i>282</i> 82MAI/TH	1180 O, 83KLA/M	<i>49±10</i> AI.	205±42		
C ₂ Cl ₂ F ₂ +							
$CF_2 = CCI_2$	9.65±0.03	142	593	-81±3	-338±11	83KOL/PAP	79-35-6
CFCl = CFCl	(10.2±0.1)	(157)	(657)	-78	-327	82TN270	598-88-9
C ₂ Cl ₂ F ₄ + (CF ₂ Cl) ₂	12.2	60	252	-221±1	-925±4	83KOL/PAP	76-14-2
C ₂ Cl ₂ O ⁺							· · · · · · · · · · · · · · · · · · ·
$Cl_2C = C = O$	9.0 IP is onset of phot	(191) coelectron be	(799) and (81BOC/F	–16 HIR, 82LEV/L	-69 (A).	*EST	4591-28-0
C ₂ Cl ₂ O ₂ +							
(COCI) ₂	10.91±0.05 See also: 81KIM/F	173 KAT.	724	-79±1	−329±5	77PED/RYL	79-37-8
C ₂ Cl ₃ F ₃ +							
CF ₃ CCl ₃	11.5 IP is onset of phot	92 oelectron ba	385 and (81DUM/	-173±2 DUP). See als	-725±10 o: 77ROS/DRA	83KOL/PAP A.	354-58-5
CFCI ₂ CF ₂ CI	11.99±0.02	103	430	-174±0.7	-727±3	83KOL/PAP	76-13-1
C ₂ Cl ₃ N ⁺							***
CCI ₃ CN	11.89 IP from 83MOL/P	(294) YIK2.	(1229)	20	82	*EST	545-06-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_f H(Ic$	on)	$\Delta_{\rm f} H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₂ Cl ₄ ⁺							
C ₂ Cl ₄	9.32	212	888	-3±0.5	-11±2	83KOL/PAP	127-18-4
	See also: 82VON	<i>212</i> /ASB 81KIN	<i>889</i> M/K AT	-2	-10		
	000 4100. 02 7 01 1				·····		
C ₂ Cl ₄ F ₂ +						CAVIOV TO A V	mr. 10.0
CFCl ₂ CFCl ₂	11.3 IP is onset of pho	135 stoelectron b	563 and (81DLIM	-126±2 1/DLJP)	−527±10	83KOL/PAP	76-12-0
	The onset of pile						······································
C ₂ Cl ₄ O +			(2.2)				
CCI3COCI	(11.0) IP is onset of pho	(198) toelectron b	(828) and (81KIM/	−56±2 KAT)	-236±9	77PED/RYL	76-02-8
	This disset of pilo						· · · , . · · · · · · · · · · · · · · · · · ·
C ₂ Cl ₆ ⁺							-
CCI ₃ CCI ₃	11.1 IP is onset of pho	220 toelectron b	921 and (81KIM/	~36±1 KAT) See also	-150±5 • 821 EV/LIA	83KOL/PAP	67-72-1
$C_2F_2^+$							
FC≖CF	11.18 See also: 81BIE/A	(263)	(1100)	5±5	21±21	71JANAF	689-99-6
	See also, of Dilly?						
$C_2F_2O_2^+$							
FCOCOF	(12.20±0.02)	(107)	(449)	-174	-728	*EST	359-40-0
C ₂ F ₃ +							
C_2F_3	(10.2)	(189)	(791)	-45.9±2.0	-192.0±8.4	83SPY/SAU	
	From appearance			eV in C ₂ F ₄ and	15.4±0.1 eV in	C ₂ F ₃ Cl.	
	IP is $\Delta_f H(Ion) - D$	7 ^t H(Nentral). 				
C ₂ F ₃ N ⁺							
CF ₃ CN	13.86	200	837		-499.8±1.2	77PED/RYL	353-85-5
	IP from 81ASB/S	VE. See also	: 83MOL/PII	ζ2.			
C ₂ F ₄ +							
C ₂ F ₄	10.12±0.02	75	316	-158±0.7	-659±3	83KOL/PAP	116-14-3
	Can also: 91 DIGA	76 70N 91DIR	319	-157	-657		
	See also: 81BIE/V	ON, SIBIE	ASD.				
C ₂ F ₅ + C ₂ F ₅							
C_2F_5		(0)	(0)	-213±1	-893±4	82MCM/GOL	3369-48-0
	Appearance poter C_3F_8 (13.32 eV),						
	heat of formation						
	respectively. See:			•	,		
CaFaI+							····
C ₂ F ₅ I + C ₂ F ₅ I	(10.66±0.1)	(6)	(25)	-240±1	-1004±4	81BUC/FOR	354-64-3
- 4 - 3 -	(\-/ 					

80 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	-	(Ion)	-	Neutral)	Neutral	CAS registry
Neutral	eV	kcai/m	ol kJ/mol	kcal/mc	ol kJ/mol	reference	number
C ₂ F ₆ +							
C_2F_6	(13.4)	(-12)	(-50)	-321	-1343	75CHE/ROD	76-16-4
		(-10)	(-41)	-319	-1334		
	IP is onset of pho	toelectron	n band. (80ING/	HAN).			
C ₂ F ₇ N ⁺					. U.V.		
(CF ₃) ₂ NF	(11.6)	(-10)	(-44)	-278	-1163	*EST	359-62-6
. <i>5-2</i>	IP from 82BUR/P		` '				
0 vr +							
C ₂ H ⁺	(11.7)	(405)	(1(00)	105.1	505.4	00146144604	2122 10 7
C ₂ H	(11.7)	(405) <i>(404)</i>	(1693) <i>(1689)</i>	135±1 <i>134</i>	565±4 <i>560</i>	82MCM/GOL	2122-48-7
	Heat of formation					iven is	
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ - $\Delta_{\mathbf{f}}H(\mathrm{Ion})$		· ··· ··· ··· ··· ··· ··· ··· ·· · · · ·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
C Up. +							
C ₂ HBr ⁺ HC≡CBr	10.31±0.02	297.0	1242.4	59.2	247.7	750KA	593-61-3
110-001	IP from 77ALL/K				241.1	JORA	232-01-3
							
C ₂ HBrClF ₃ +							
CF ₃ CHClBr	11.0	86	361	~167±1	-700±4	83KOL/PAP	151-67-7
	IP is onset of phot	toelectron	band (81DUM	/DUP).			
C ₂ HBrO ⁺							
CHBr = C = O	(≤9.10)	(≤207)	(≤868)	-2	-10	*EST	78957-22-9
	IP from 81BOC/H	IIR.					
c nci+							
C ₂ HCl ⁺ HC≡CCl	10.58±0.02	305	1276	41	255	TOKI O DAG	502 (2.5
nc=cci	IP from 77ALL/K			61 O	255	70KLO/PAS	593-63-5
							
C ₂ HClF ₂ +							
$CF_2 = CHCI$	9.80±0.04	150	629	-76	-316	82TN270	359-10-4
C ₂ HCIF ₃ O ⁺		***					
CF ₃ C(OH)Cl		4	14				
0.30(0.1)01	From proton affin			32-5)(85MCN	1/KEB, 85MCN	M/KEB2).	
	PA = 161.2 kcal/m	_		= /(301.101	-,,		
~ xx ~							
C ₂ HClO ⁺	(0.5)	/ * 0	(0.10)				
CHCI = C = O		(≤201)	(≤840)	-14	-57	*EST	29804-89-5
	See also: 81BOC/F	HR.					
C ₂ HCl ₂ F ₃ +							
CF ₃ CHCl ₂	11.5	88	370	-177±2	-740±10	83KOL/PAP	306-83-2
J 2	IP is onset of photo						
CF ₂ CICHFCI	≤12.00	≤104	≤434	-173±2	-724 ± 10	83KOL/PAP	354-23-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$ (Ic	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₂ HCl ₃ +							
C ₂ HCl ₃	9.47±0.01	214	895	-4.5±0.7	-19±3	85PAP/KOL	79-01-6
		215	898	-4	-16		
	See also: 82VON	/ASB, 81KIN	M/KAT.				
C ₂ HCl ₃ N ⁺							
CCl ₃ CNH		209	876				
	From proton affin	nity of CCl ₃ 0	CN (RN 545-0	16-2). PA = 17	5.8 kcal/mol, 7	35.5 kJ/mol.	
C ₂ HCl ₃ O ⁺							
CCI ₃ CHO	(10.5)	(195)	(816)	-47	-197	82TN270	75-87-6
	IP is onset of pho	toelectron b	and (81KIM/	KAT). See also	85GUI/PFI2.		
CHCl ₂ COCl	(11.0)	(196)	(820)	-58±2	-241±9	77PED/RYL	79-36-7
2	IP is onset of pho						
C ₂ HCl ₅ +					, , , , , , , , , , , , , , , , , , , ,		
CHCl ₂ CCl ₃	(11.0)	(220)	(919)	-34±2	-143±7	78GUN/HEA	76-01-7
2 3	IP is onset of pho	toelectron b		КАТ).			
C ₂ HF ⁺			<u>, , , , , , , , , , , , , , , , , , , </u>				——————————————————————————————————————
HC≡CF	11.26	285	1193	26	107	80STA/VOG	2713-09-9
	See also: 81BIE/A	ASB.					
C ₂ HF ₃ +							
C_2HF_3	10.14	117	487	-117±2	-491±8	77PED/RYL	359-11-5
	See also: 81BIE/V	/ON, 81BIE/	ASB.				
C ₂ HF ₃ N ⁺			····		 		
CF ₃ CNH		82	343				
J	From proton affir	nity of CF ₃ C	N (RN 353-85	-5) (85MCM/K	EB, 85MCM/I	KEB2).	
	PA = 164.3 kcal/i	mol, 687. kJ/:	mol.				
C ₂ HF ₃ O ₂ +							,
CF₃COOH	11.46	18	75	-246.3±0.3	-1030.7±1	77PED/RYL	76-05-1
	See also: 81ASB/S	SVE.					
C ₂ HF ₄ O +						····	
CF ₃ C(OH)F		-44	-182				
	From proton affin	nity of CF ₃ C	OF (RN 354-3	34-7). PA = 16	0.2 kcal/mol, 6	70 kJ/mol.	
C ₂ HN ⁺	· · · · · · · · · · · · · · · · · · ·						·
HCCN		(366)	(1531)				
	$\Delta_{\mathrm{f}}H$ (Ion) from ap	opearance po	tential deterr	ninations. See a	iso: 85HAR/M	ICI. 0 K values.	
C ₂ HN ₂ +							
NCCNH		277	1161				
	From proton affin			5) (87DEA/MA	ΔU).		
	PA = 162 kcal/mo	-					

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	l Δ _f H(Io	Ionization potential $\Delta_{\mathbf{f}}H(\mathrm{Ion})$		utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₂ HO ⁺			· - · · · ·				
HCCO	(9.5)	(262)	(1096)	42.4±2.1	177.4±8.8	*EST	51095-15-9
	Heat of formation	on from appea	arance potent	ial determinati	on (84LOS/HOL	<i>ـ</i>).	
	IP is $\Delta_{\mathbf{f}}H(Ion)$ -	$\Delta_{\mathrm{f}}H$ (Neutral).				
C ₂ HV ⁺			***************************************				
VC ₂ H		(303)	(1268)				
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from	onset energy o	of endotherm	c reaction (84.	ARI/ARM, 85EL	K/ARM). 0 K va	lue.
C ₂ H ₂ +							
C ₂ H ₂	11.400±0.002	<u>317.4</u>	1327.9	54.5±0.25	228.0±1	77PED/RYL	74-86-2
		<u>317.5</u>	1328.5	54.7	228.6		
	See also: 81KIM	/KAT, 82HA`	Y/IWA.				
C ₂ H ₂ Br ₂ +				·	——————————————————————————————————————		· · · · · · · · · · · · · · · · · · ·
(E)-CHBr = CHBr	9.51±0.04	(245)	(1024)	25	106	*EST	590-12-5
	An IP of 9.30±0.						
(Z)-BrCH = CHBr	9.63±0.01	247	1035	25	106	*EST	590-11-4
, y	An IP of 9.32±0.						1
$CBr_2 = CH_2$	9.78±0.01	(247)	(1034)	21	90	*EST	593-92-0
	See also: 82VON	VASB.					
C ₂ H ₂ Br ₂ F ₂ +							
CF ₂ BrCH ₂ Br	10.83±0.01	147	614	-103±5	~431±20	83KOL/PAP	75-82-1
C ₂ H ₂ CIN ⁺							
CH ₂ CICN	11.95±0.01	(296)	(1239)	21	86	*EST	107-14-2
	111,752,0101		(1207)				107-17-2
C ₂ H ₂ Cl ₂ +							
$CH_2 = CCl_2$	9.79±0.04	226	947	0.5±0.2	2.3±0.7	77PED/RYL	75-35-4
	Con along 93Y/ON	228	953	2.0	8.4		
	See also: 82VON	IASD, SINIV	AWI.				
(Z)-CHCl = CHCl	9.66±0.01	224	936	1±0.2	4±1	83KOL/PAP	156-59-2
		225	942	2	10	•	
	See also: 82VON	/ASB, 81KIM	KAT.				
(E)-CHCl = CHCl	9.65±0.02	224	937	1±0.2	6±1	83KOL/PAP	156-60-5
. ,		225	942	3	11		-
	See also: 82VON	/ASB, 81KIM	/KAT.				
C ₂ H ₂ Cl ₂ F ₂ +							
CF ₂ ClCH ₂ Cl	≤11.8	≤142	≤596	-130±2	~543±10	83KOL/PAP	1649-08-7
0. 20.01.20.	IP from 81DUM,		- 2770	LJUIL	J7J110	UJKOL/I MI	10-12-00-1
0 H 0 0 +							
C ₂ H ₂ Cl ₂ O ⁺ CHCl ₂ CHO	10.5	(199)	(833)	-43±5	~180±20	*EST	79-02-7
0110120110	IP is onset of pho				-100±20	1231	17-04-1

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	1 A-11/1	$\Delta_{\mathbf{f}}H(\mathbf{Ion})$		outral)	Neutral	CAS registry
Neutral	eV	-	kJ/mol	Δ _f H(Ne kcal/mol		reference	number
C ₂ H ₂ Cl ₂ O +							
CH ₂ CICOCI	(11.0)	(195)	(815)	-59±2	-246±9	77PED/RYL	79-04-9
	IP is onset of ph	notoelectron b	oand.				
C ₂ H ₂ Cl ₃ O ₂ +							
CCl ₃ C(OH) ₂		76	318				
	From proton af	finity of CCl ₃	COOH (RN	76-03-9)(PA =	183.5 kcal/mo	l, 768 kJ/mol).	
C ₂ H ₂ Cl ₄ ⁺							
CH ₂ CICCI ₃	(11.1)	(220)	(919)	-36±0.2	-152±1	83KOL/PAP	630-20-6
2 5	IP is onset of ph	notoelectron b		KAT).			
(CHCl ₂) ₂	(≤11.62)	(≤232)	(≤971)	-36±1	-150±5	77PED/RYL	79-34-5
(====2)2	IP from 81KIM/		(=> 1=)	552-1		22,2	., ., .
C ₂ H ₂ F +							
CH ₂ CF		227	951				
2	From appearance			C ₂ H ₂ F in agree	ment with val	ue from	
						HEI/BAR, 84BEA/E	YE.
C ₂ H ₂ F ₂ +							
$CH_2 = CF_2$	10.29±0.01	155	648	-82±2	-345±10	76WIL/LEB	75-38-7
Z		157	655	-81	-338		
	See also: 81BIE	/VON, 81BIE	Z/ASB.				
(Z)-CHF=CHF	10.23	165	690	-71	-297	80STA/VOG	1630-77-9
• •	See also: 81BIE						
(E)-CHF=CHF	10.21	165	692	- 70	-293	80STA/VOG	1630-78-0
(b) on – on	See also: 81BIE,				275	000174 7 0 0	1050-76-0
C. H. E. +							
C ₂ H ₂ F ₃ +		(79)	(332)				
CHF ₂ CHF	From proton aff	` '	` '	9-11-5). PA =	~169 kcal/mo	l, ~707 kJ/mol.	
	•	, ,	•	,		•	
CF ₃ CH ₂	(10.6±0.1)	(120)	(506)	-124±2	-517±8	82MCM/GOL	3248-58-6
C ₂ H ₂ F ₃ I +							-
CF ₃ CH ₂ I	9.998	75	316	-155±1	-649±4	83KOL/PAP	353-83-3
C ₂ H ₂ F ₃ NO ⁺					·		
CF ₃ CONH ₂	(10.8)	(49)	(206)	-200	-836	*EST	354-38-1
, <u>,</u>	IP from 81ASB/						
C ₂ H ₂ F ₃ O +		······································					
CF ₃ CHOH		12	49				
J	From proton aff			0-1). PA = 165	5.1 kcal/mol, 6	91 kJ/mol.	
C ₂ H ₂ F ₃ O ₂ +							
CF ₃ C(OH) ₂		-50	-208				
0.30(0.11)2	From proton aff			-05-1). PA = 1	69.0 kcal/mot	.707 kJ/mol.	

84 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H(10)$	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
C ₂ H ₂ I ₂ +	44.44.4					1	
(Z)-CHI = CHI	(8.6)	(248)	(1037)	49.5±0.3	207.2±1.1	77PED/RYL	590-26-1
, ,	IP is onset of pho		•				
(E)-CHI = CHI	(8.6)	(248)	(1037)	49.5±0.3	207.2±1.1	77PED/RYL	590-27-2
(=)	IP is onset of pho	* *		(),,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	40,144	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0,00,0
C ₂ H ₂ N ⁺							
CH ₂ CN	(10.0)	(290)	(1214)	59±2	245±10	82MCM/GOL	2932-82-3
2	$\Delta_{\mathbf{f}}H(Ion)$ from a	ppearance p	otential meas		OS/DRA, 85H		
	IP cited is $\Delta_f H(I_0)$	on)-∆ _f H(Ne	utral). See als	so: 82ALL/MIG	i.		
C ₂ H ₂ N ₂ Se ⁺							
ı—ν	(8.9)	(290)	(1212)	84	353	*EST	26223-16-5
₹ N	IP from 80BOC/						
`Se´							
C ₂ H ₂ N ₄ +						· · · · · · · · · · · · · · · · · · ·	
02112114							
h h	(9.14)	(322)	(1346)	111	464	82JOS	290-96-0
n' Un							
c n o+			March 1994		<u>.</u>		
C ₂ H ₂ O ⁺ HC≡COH		247	1033				
110-0011	$\Delta_{\mathbf{f}}H$ (Ion) from a			mination (86BA	A/WEI).		
CIT CO	0.61.0.00	210.2	070.4	44.02	477.05	74 N IV IOC/V A I I	4/2 51 4
CH ₂ CO	9.61±0.02	210.2 <i>210.9</i>	879.6 <i>882</i> .7	-11.4±0.6 -10.7	-47.7±2.5 -44.6	71NUT/LAU	463-51-4
	See also: 81BOC		002.7	10.7			
C ₂ H ₂ O ₂ +							
(CHO) ₂	10.1	182	763	-50.6±0.2	-211.9±0.8	77PED/RYL	107-22-2
	IP is onset of pho					. —	
C ₂ H ₂ O ₄ +							
нооссоон	(10.8)	(74)	(310)	-175±0.7	-732±3	77PED/RYL	144-62-7
	IP is onset of pho				,		_,,,
C ₂ H ₂ S +		<u>-</u>					
C_2H_2S $CH_2=C=S$	(8.77)	(242)	(1011)	39	165	*EST	18282-77-4
2 0 0	(5/)	(234)	(979)	-			
	Cited IP is onset			ROS/SOL). He	at of formatio	on of ion	
	from appearance	potential in	CH ₃ SSCH ₃ (83BUT/BAE). <i>(</i>	$\Delta_{\mathrm{f}}H$ (Neutral)	is $(\Delta_f H(Ion) - IP)$.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
$C_2H_2S_2^+$							
г ș	(8.5)	(258)	(1080)	62	260	*EST	7092-01-5
	IP is onset of pho	toelectron b		SCH).			
3							
C ₂ H ₂ Se ⁺		·	, , ==				
$CH_2 = C = Se$	8.7	(256)	(1071)	55	232	*EST	61134-37-0
	IP is onset of pho	toelectron b	and (80BOC/	AYG).			
C ₂ H ₃ +		······································		**************************************			
C ₂ H ₃	8.9	265.9	1112	63.4±1	265.3±4	85KIE/WEI	2669-89-8
		267.9	1120.9	62.7	262.2		
	Heat of formation				rement;		
	IP from J.L. Beau	cnamp, pers	ional commu	nication.			
C ₂ H ₃ Br ⁺							
C ₂ H ₃ Br	9.80±0.02	244.9	1024.8	18.9±0.5	79.3±1.9	77PED/RYL	593-60-2
		248.5	1039.7	22.5	94.2		
	See also: 82VON/	ASB, 83CA	M/CIU, 84M1	L/BAE.			
C ₂ H ₃ BrHg ⁺							· · · · · · · · · · · · · · · · · · ·
CH ₂ = CHHgBr	(9.8)	(256)	(1072)	30	126	*EST	16188-37-7
-	IP is onset of phot	oelectron b		CHI).			
C ₂ H ₃ BrO ⁺							
CH ₃ COBr	10.4±0.1	194	813	-45 5+0 1	-190.4±0.5	77PED/RYL	506-96-7
3	IP is onset of phot					//125/RTS	300 70 1
L		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
C ₂ H ₃ BrO ₂ ⁺							
CH ₂ BrCOOH	(10.4)	(145)	(808)	-94.4±1.5	-395±6	*EST	79-08-3
	IP is onset of phot		anu.			·	
C ₂ H ₃ Cl ⁺							
C ₂ H ₃ Cl	9.99±0.02	236	987	5±0.5	23±2	83KOL/PAP	75-01-4
	See also: 83CAM/	<i>238</i> CILL 82VO	995 NASB 81KII	7 M/KAT	31		
	500 also: 0502 liviy			·// 12/ 11 ·			·····
C ₂ H ₃ CIF ₂ +							
CH ₃ CF ₂ Cl	11.98±0.01	149.7	626.2	-126.6±1.2	-529.7±5.0	78PAP/KOL	75-68-3
C ₂ H ₃ CIN ⁺							
CICH ₂ CNH		207	865				
- Z 3	From proton affin			14-2). PA = 1°	79.5 kcal/mol,	751 kJ/mol.	
C H 000 ±							
C ₂ H ₃ ClO ⁺	10.05.005	100	004	£0.00	242 - 1	adder was	75.07.5
CH ₃ COCI	10.85±0.05	192 <i>194</i>	804 813		-243±1 -234	77PED/RYL	75-36-5
	See: 81KIM/KAT	174	813	-5 6	-234		
	Jee. OIKIIVI/KAI						

Table 1. Positive Ion Table - Continued

		. rusitiv		e - Contin			
ION Neutral	Ionization potential eV	∆ _f H(Id kcal/mol		Δ _f H(Ne kcal/mol	eutral) kJ/moi	Neutral reference	CAS registry number
C ₂ H ₃ ClO ⁺ CH ₂ ClCHO	10.48±0.03 See: 81KIM/KAT.	(195)	(816)	-47±4	~195±15	*EST	107-20-0
C ₂ H ₃ ClO ₂ + CH ₂ ClCOOH	(10.7) IP is onset of photo	(143) oelectron b	(597) and.	-104±2	~435±9	77PED/RYL	79-11-8
C ₂ H ₃ Cl ₃ + CHCl ₂ CH ₂ Cl	11.0 IP is onset of photo	218 oelectron b	912 and (81KIM/	−36±0.5 KAT).	~149±2	77PED/RYL	79-00-5
CH ₃ CCl ₃	(11.0) IP is onset of photo	(219) oelectron b	(916) and (81 KIM /		~144.9±0.6	83KOL/PAP	71-55-6
С ₂ H ₃ Cl ₃ O ⁺ ССl ₃ CH ₂ OH	(10.94) IP from 83KOP/M	(182) OL.	(763)	(-70)	(-293)	*EST	115-20-8
C ₂ H ₃ Cl ₃ Si ⁺ CH ₂ =CHSiCl ₃	(≤11.0) IP from 81KHV/Z	(≤144) YK.	(≤603)	-109	-458	*EST	75-94-5
C ₂ H ₃ F + C ₂ H ₃ F	10.363±0.015 See also: 81BIE/V	205.8 ON, 81BIE,	861.1 /ASB.	-33.2±0.4	~138.8±1.7	76WIL/LEB	75-02-5
C ₂ H ₃ FO ⁺ CH ₃ COF	11.51±0.02 See: 81KIM/KAT.	159	667	-106±0.7	-444±3	77PED/RYL	557-99-3
С ₂ Н ₃ F ₂ + СН ₂ FСНF	From proton affini	130 ty of (E)-C	543 HF = CHF (F	N 1630-78-0).	PA = 166 kcal	/mol, 694 kJ/mol.	
CH ₃ CF ₂	(7.92) Value of $\Delta_f H(\text{Ion})$ value from proton a PA = 176 kcal/mol	affinity of C	$CH_2 = CF_2 (R$				40640-67-3
С ₂ Н ₃ F ₃ + СН ₃ СF ₃	12.9±0.1 IP from 73GOL/K0	118 <i>122</i> OR.	496 <i>509</i>	-179±0.7 -176	-749±3 -736	83KOL/PAP	420-46-2
С ₂ Н ₃ F ₃ O ⁺ СF ₃ CH ₂ OH	11.49 IP from 83KOP/M	53 OL.	221	-212±1	-888±5	77PED/RYL	75-89-8
С ₂ Н ₃ I ⁺ СН ₂ =СНІ	9.30	(246)	(1027)	31	130	*EST	593-66-8

Table 1. Positive Ion Table - Continued

	Tuste		e ion lable				
ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_{\mathbf{f}}H(Ne)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₂ H ₃ N ⁺							
CH ₃ CN	12.194±0.005	299	1251	18±0.2	74±1	83AN/MAN	75-05-8
		300	1258	19	81		
	IP from 81RID/R	AY. See als	o: 82CHE/LA	P, 840HN/M <i>A</i>	T,82ALL/M	IG, 81KIM/KAT, 851	HAR/MCI.
CH ₂ CNH		(240)	(1004)				
-		(242)	(1011)				
	From appearance	potential d	eterminations.				
CH ₃ NC	11.24	300	1257	41±0.2	173±1	83AN/MAN	593-75-9
-		302	1262	43	178		
	See also: 82CHE/I	LAP, 81BE	V/SAN, 85HA	R/MCI.			
C ₂ H ₃ NO ⁺							
CH ₃ NCO	(10.67±0.02)	(215)	(899)	-31	-130	75COM/DES	624-83-9
C ₂ H ₃ NS ⁺							
CH ₃ SCN	(9.96±0.05)	(268)	(1121)	38	160	82TN270	556-64-9

CH ₃ NCS	(9.25±0.03)	(245)	(1023)	31	131	82TN270	556-61-6
		(247)	(1032)	33	140		
C ₂ H ₃ N ₃ +							
N							
[10.06	291	1218	59	247	82JOS	288-36-8
N N	See: 81PAL/SIM.						
Н							
۸۱							
jj N	(9.8)	(272)	(1140)	46±0.5	194±2	85FAO/AKA	288-88-0
Ŋ.	IP is onset of photo	belection b	and (81PAL/S	IM).			
n							
C ₂ H ₃ O ⁺							
CH ₃ CO	7.0	156	653	-6±0.5	-24±2	82MCM/GOL	15762-07-9
J						also: 84LOS/HOL,	
	83LIF/BER. Value						
	PA = 198.0 kcal/m						
	determined IP of the	nis radical is	s 8.05±0.17 eV.	See also: 82B	UR/HOL2.		
CH ₂ =COH		(192)	(803)				
_	$\Delta_{\mathbf{f}}H$ (Ion) from app		• •	inations (82H0	OL/LOS,		
	82HOL/LOS2, 83E			•			
\wedge		(201)	(841)				31586-84-2
∠	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from app	earance po	tential measur	ements. See a	lso: 83BUR/F	HOL2.	
-							
 ,	—[/-an/am aki				3. 002 0141	- ~ 	

Table 1. Positive Ion Table - Continued

	eV	-	(Ion) ol kJ/mol	∆ _f H(Ne kcal/mol	kJ/mol	Neutral reference	CAS registry number
С ₂ H ₃ O ₂ I ⁺ Сн ₂ IСООН	(9.6) IP is onset of pho	(327) toelectron	(1367) band.	105	441	*EST	64-69-7
C ₂ H ₃ S ⁺							
CH ₃ CS	From proton affir 842 kJ/mol. Origi Δ _f H(CH ₂ =C=S	nal author	rs recommend v	alue of 210 kca	ıl/mol, 879 kJ/ı	=	
С ₂ H ₃ V ⁺ VС ₂ H ₃	$\Delta_{ extsf{f}} extsf{H}$ (Ion) from or	<i>(266)</i> aset energ	(1115) y of endotherm	ic reaction (84A	ARI/ARM, 851	ELK/ARM). 0 K val	ue.
С ₂ H ₄ + С ₂ H ₄	10.507±0.004 See also: 81KIM/I	<u>254.8</u> <u>256.8</u> KAT, 84P0	<u>1066</u> <u>1074</u> OL/TRE.	12.5±0.2 14.5	52.2±1 60.7	77PED/RYL	74-85-1
C ₂ H ₄ BrCl ⁺ CH ₂ BrCH ₂ Cl	10.67±0.03 See: 81KIM/KAT	225	942	-21±1	-87±5	83KOL/PAP	107-04-0
CH ₃ CHClBr	10.37	219±1	918±5	-20±1	-83±5	83KOL/PAP	593-96-4
C ₂ H ₄ BrF ⁺ CH ₂ FCH ₂ Br	≤10.57	(≤184)	(≤769)	-60±5	-251±20	83KOL/PAP	762-49-2
C ₂ H ₄ Br ₂ + CH ₂ BrCH ₂ Br	10.37 See: 78GAN/PEE	230 , 81KIM/K	962 KAT, 77STA/W	−9±0.2 IE.	-39±1	83KOL/PAP	106-93-4
CH ₃ CHBr ₂	10.17	226	944	-9±1	-37±6	83KOL/PAP	557-91-5
C ₂ H ₄ Cl ⁺ CH ₃ CHCl	From appearance	(199) potential ((832) (11.20 eV) in Cl	H ₃ CHCl ₂ .			
CH ₂ CICH ₂	From appearance	(204) potential ((855) (11.47 eV) in Cl	H ₂ CICH ₂ CI.			
C ₂ H ₄ ClO ₂ + CH ₂ ClC(OH) ₂	From proton affin	79 ity of CH ₂	332 CICOOH (RN	79-11 - 8). PA :	= 182.4 kcal/m	ol, 763 kJ/mol.	
С ₂ H ₄ Cl ₂ ⁺ CH ₃ CHCl ₂	11.06	224 229	936 <i>959</i>	-31±0.7 -26	-131±3 -108	83KOL/PAP	75-34-3
	See also: 81KIM/K						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Ic	n)	∆ _f <i>H</i> (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number
C ₂ H ₄ Cl ₂ +							
CH ₂ CICH ₂ CI	11.04	222	931	-32±0.2	-134±1	83KOL/PAP	107-06-2
	0 4 047577.47	225	942	-29	-123		
	See also: 81KIM/I	KAT.					
C ₂ H ₄ Cl ₂ O ⁺							
CH ₃ OCHCl ₂	(10.6)	(191)	(800)	-53	-222	*EST	4885-02-3
	IP is onset of photo-	toelectron b	and (80VER/ 	SAL).			
C ₂ H ₄ Cl ₃ O +							
CCI ₃ CH ₂ OH ₂		118	495				
	From proton affin	ity of CCl ₃ 0	CH ₂ OH (RN	115-20-8). PA =	= 177.4 kcal/r	nol, 742 kJ/mol.	
C ₂ H ₄ F ⁺							
CH ₃ CHF	7.93	157	659	-26	-106		
-	$\Delta_{\mathrm{f}}H$ (Ion) from pr			RN 75-02-5). PA	= 175 kcal/s	mol, 732 kJ/mol.	
	$\Delta_{\rm f} H({\rm Neutral}) = 1$	IP - ∆ _f H(Io	1).				
C ₂ H ₄ FO ₂ +							
CH ₂ FC(OH) ₂		42	176				
	From proton affin	ity of CH ₂ F	COOH (RN	144-49-0). PA	= 183.5 kcal/1	mol, 768. kJ/mol.	
C ₂ H ₄ F ₂ +							
CH ₃ CHF ₂	11.87±0.03	154	644	-120±1	-501±6	75CHE/ROD	75-37-6
~ .	IP from 84HEI/BA	AR, 85HEI/	BAR.				
C ₂ H ₄ F ₃ N ⁺			····			<u> </u>	
CF ₃ CH ₂ NH ₂	(9.8±0.1)	(58)	(244)	(-167)	(-701)	*EST	753-90-2
3 2*2	IP is average of va				· · · - · ·		
C.H.E.O.							
C ₂ H ₄ F ₃ O ⁺ CF ₃ CH ₂ OH ₂		-16	-65				
C13C112C112	From proton affin			5-89-8). See alse	o: 85MCM/K	EB.	
	PA = 169.0 kcal/n			,			
C ₂ H ₄ Fe ⁺				· · · =	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		· · · · · · · · · · · · · · · · · · ·
FA							
/\		(256)	(1071)				
H ₂ C —— CH-	$\Delta_{\mathbf{f}}H(\text{Ion})$ from 84.		•				
- 0.12							
		·					
C ₂ H ₄ I ₂ +							
CH ₂ ICH ₂ I	(9.4)	(233)	(973)	15.8±0.3	66.3±1.4	77PED/RYL	624-73-7
	IP is onset of phot	oelectron ba	and.				
C ₂ H ₄ N ⁺							
CH ₃ CNH		195	817				
5	From proton affin	ity of CH ₂ C	N (RN 75-05-	8). PA = 188.2	kcal/mol. 78	7 k I/mol	

90

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Ic	on)	$\Delta_{\mathbf{f}}H(\mathbf{N})$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₂ H ₄ N ⁺			-				
CH ₃ NCH		205	860				
	From proton affi	nity of CH ₃ N	NC (RN 593-7	5-9) (86KNI/F	RE, 86MAU/I	ζAR).	
	PA = 201.4 kcal/	mol, 843 kJ/	mol.				
C ₂ H ₄ NO ⁺							
CH ₃ NHCO		150	628				
	From proton affin	nity of CH ₃ N	ICO (RN 624-	·83-9)(85KAR,	/STE). PA =	184.5 kcal/mol,	
C ₂ H ₄ NS ⁺							, , , , , , , , , , , , , , , , , , ,
CH ₃ SCNH		212	886				
	From proton affir 804. kJ/mol.	nity of CH ₃ S	CN (RN 556-	64-9) (85KAR/	STE). PA =	192. kcal/mol,	
CH ₃ NCSH		204	853				
•	From proton affir 807.5 kJ/mol.	nity of CH ₃ N	ICS (RN 556-0	51-6) (85KAR/	STE). PA =	193.0 kcal/mol,	
C ₂ H ₄ N ₂ +							
$CH_2 = NN = CH_2$	(8.95)	(264)	(1104)	58	241	82JOS	503-27-5
	See also: 84KIR/I	POP.					
C ₂ H ₄ N ₂ O ₂ +					. ,		
NH2COCONH2	(9.41)	(121)	(505)	-96±1	-403±5	77PED/RYL	471-46-5
C ₂ H ₄ N ₃ +				·			
H		199	835				
, / N	From proton affir			N 288-88-0) (8	86MAU/LIE).		
N .	PA = 212.4 kcal/s			, ,	,		
Н							
C ₂ H ₄ N ₄ +							
$NCN = C(NH_2)_2$	(8.4)	(230)	(963)	36	153	77PED/RYL	10191-60-3
	IP is onset of pho	toelectron ba	and (80KLA/E	BUT).			
C ₂ H ₄ O +							
CH ₃ CHO	10.229±0.0007	196.3	<u>821.1</u>	−39.6±0.1	-165.8±0.4	77PED/RYL	75-07-0
-		198.9	<u>831.9</u>	-37.0	-155.0		
	See also: 82JOH/	POW, 72PO	r/sor, 81el	S/ALL, 81KIM	/KAT, 77STA	/WIE.	
CH ₂ =CHOH	9.14	181	757	-30	-125	82HOL/LOS3	557.75.5
	From 82HOL/LO			-3 u	14.5	62HOL/LO33	331-13 - 3
	, -	,					
СН ₃ СОН		(207)	(865)				
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from ap	pearance po	tential determ	ninations (83T)	ER/WEZ).		

Table 1. Positive Ion Table - Continued

	Table 1	l. Positi	ve Ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(I	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₂ H ₄ O +							
, N	10.566±0.01	231.0 234.1	966.8 <i>979.4</i>	-9.6	-52.6±0.6 -40.1	77PED/RYL	75-21-8
د ــــــــــــــــــــــــــــــــــــ	See also: 82JOH/F	Ow, olk	IW/KA1, 62DI	e/Asb.			
C ₂ H ₄ OS ⁺	40.00.000	400			477		
CH ₃ COSH	10.00±0.02	189	790	-42±2	-175±8	77PED/RYL	507-09-5
S= 0	9.2 IP is onset of phot	(205) oelectron	(858) band.	- 7	-30	*EST	7117-41-1
C ₂ H ₄ OS ₂ ⁺		<u> </u>					
H ₂ C S CH ₂	(8.8) IP is onset of phot	(199) oelectron	(831) band (82BLO/	4 COR).	-18	*EST	58816-63-0
С ₂ H ₄ O ₂ + нсоосн ₃	10.815±0.005 See also: 81KIM/K	164.4 (AT, 85CA	688.0 N/HAM.	-85.0±0.2	−355.5±0.7	77PED/RYL	107-31-3
СН ₃ СООН	10.66±0.02	142.5	596.4		-432.1±0.4	78CHA/ZWO	64-19-7
	See also: 81HOL/I	<i>145.9</i> FIN, 80VO	610.4 N/BIE, 81KIM		−418.1±0.4		
CH ₂ C(OH) ₂	$\Delta_f H$ (Ion) from ap	120 pearance p	503 ootential deterr	ninations.			
НОСН = СНОН	(9.62±0.10) IP from 86TUR/H	(146) AV3.	(612)	-76	-316	*EST	
сн ₃ осон	$\Delta_f H$ (Ion) from ap	158 pearance p	661 ootential of me	astable ion (83	ΓER/WEZ).		
CH ₂ CO(H ₂ O)	Δ _f H(Ion) from ap _j	(138) pearance p	(579) otential determ	ninations (86PC	OS/RUT).		
C ₂ H ₄ O ₂ S +				· · · · · · · · · · · · · · · · · · ·			
	(10.3) IP is onset of photo	(177) Delectron t	(741) pand.	-60	-253	*EST	1782-89-4

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	al $\Delta_{\mathrm{f}}H$ (Io	on)	$\Delta_f H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
С ₂ н ₄ S ₃ +	the state of the s	1 1 - F	***************************************		- towns	Annual superior of the superio	
s-s (_s)	(≤8.72)	(≤196)	(≤818)	5	-23	*EST	289-16-7
C ₂ H ₄ Sc ⁺			 			1,000 4 1,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000 4,000	
Sc			4000				
H ₂ C CH ₂	$\Delta_{ extsf{f}} extsf{H} extsf{(Ion)}$ from	(215) conset of endo	(899) thermic reacti	ion (84TOL/BE	BA). See also:	86ELK/ARI.	
C ₂ H ₄ Se ⁺							
CH ₃ CH = Se	(8.3) IP is onset of p	(219) hotoelectron b	(915) and (84BOC/	27 AYG).	114	*EST	67281-48-5
C ₂ H ₅ +				,			
C ₂ H ₅	8.13	215.6±1.0 <u>218.5±1.0</u>		28 <i>31</i>	118 <i>130</i>	84CAO/BAC	14936-94-8
	Heat of format 81TRA/MCL, δ Δ _f H(Neutral) t Experimental I	80BAE, 82DY pased on D[C-1	K/JON2, 82R0 H] = 100.5 kc	OS/BUF). IP gi al/mol.		n) - Δ _f H(Neutral).	
C ₂ H ₅ Br ⁺							
C₂H₅Br	10.28 See also: 81KIN	222.2 <i>227.4</i> M/KAT. 85OH	929.6 <i>951.5</i> N/IMA.	-14.9±0.2 -9.6±0.2	-62.3±1.0 -40.4±1.0	77PED/RYL	74-96-4
C ₂ H ₅ BrO ⁺				·····			· · · · · · · · · · · · · · · · · · ·
CH ₂ BrCH ₂ OH(gauche)	(≤10.75) See also: 84KO	(≤196) B, 81KIM/KA'	(≤820) Г, 85OHN/IM		(-217)	*EST	540-51-2
CH PaCH OH(tagang)							
CH ₂ BrCH ₂ OH(trans)	(≤10.65) See also: 84KO		(≤811) Γ, 85OHN/IM		(-217)	*EST	540-51-2
C ₂ H ₅ Cl ⁺							
C ₂ H ₅ Cl	10.97±0.02	226	946		-112.1±0.5	77PED/RYL	75-00-3
	See also: 83OH	<i>230</i> N/IMA, 81KIN	<i>961</i> A/KAT.	-23.3	-97.6		
Ch ChCin	A TWI NO	227 appearance po	951 otential detern	nination (83HO	L/BUR).		
CH ₃ CHClH	$\Delta_{\mathbf{f}}H(10\mathbf{n})$ from	TI					
C ₂ H ₅ ClH _g ⁺	Δ _f H(Ion) from						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry			
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number			
C ₂ H ₅ IO ⁺		,								
gauche-ICH ₂ CH ₂ OH										
	9.73	(186)	(778)	-38	-161	*EST	624-76-0			
trans-ICH2CH2OH										
	9.60	(183)	(765)	-38	-161	*EST	624-76-0			
C ₂ H ₅ N ⁺										
$CH_2 = NCH_3$	(9.4)	(234)	(979)	17	72	69BEN/CRU	1761-67-7			
	IP is onset of pho	IP is onset of photoelectron band. See also: 86WER.								
CH ₃ CH = NH	(9.6)	(222)	(930)	2±4	8±17	79ELL/EAD	20729-41-3			
,		IP is onset of photoelectron band (86LAF/GON).								
CH ₂ =CHNH ₂	(8.20)	(196)	(820)	7	29	81ELL/DIX	593-67-9			
<u>.</u>	IP from 84ALB/A		. ,							
u										
7- H	9.2±0.1	242	1014	30.2±0.2	126.5±0.9	77PED/RYL	151-56-4			
	See also: 82BIE/A	ASB.								
<u>-</u>										
C ₂ H ₅ NO ⁺				···	,					
CH ₃ CONH ₂	9.65±0.03	165	693	-57.0±0.2	-238.3±0.8	77PED/RYL	60-35-5			
	See also: 81ASB/S	SVE.								
(E)-CH ₃ CH = NOH	(10.0)	(226)	(945)	-4.7±2	-20±8	69BEN/CRU	107-29-9			
` ' ' 3	IP is onset of pho					,				
HCONHCH ₃	9.79	(181)	(758)	-45±0.7	-187±3	*EST	123-39-7			
3	See also: 81KIM/		()		10.00		120 07 1			
C ₂ H ₅ NO ₂ +										
NH ₂ CH ₂ COOH	8.8	109	458	-93±1	-391±5	77NGA/SAB	56-40-6			
	See also: 83CAN/									
C ₂ H ₅ NO ₂	10.88±0.05	226.5	947.5	-24.4±0.1	-102.2±0.6	77PED/RYL	79-24-3			
-2-32	See also: 81KIM/					,				
C ₂ H ₅ ONO	(10.53±0.01)	(218)	(913)	-25	-103	74BAT/CHR	109-95-5			
		()								
C ₂ H ₅ NO ₃ +	(11 22)	(222)	(028)	_260.02	_15/1.10	77pin /nvi	625 50 1			
C ₂ H ₅ ONO ₂	(11.22)	(222)	(928)	-30.8±U.2	-154.1±1.0	77PED/RYL	625-58-1			
C ₂ H ₅ NS ⁺										
CH ₃ CSNH ₂	8.33	194	814	2±0.2	10±1	82TOR/SAB2	62-55-5			
C ₂ H ₅ N ₂ +		-								
NCCH ₂ NH ₃	_	194	812							
	From proton affir	nity of NCCI	1 ₂ NH ₂ (RN 5	40-61-4). PA =	= 197.4 kcal/mo	ol, 826 kJ/mol.				

96

Table 1. Positive Ion Table - Continued

Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne- kcal/mol		Neutral reference	CAS registry
C-H-O+							
С ₂ H ₅ O ⁺ Сн ₃ Снон	6.7	139	583	-16±1	-66±4	82MCM/GOL	17104-36-8
3	$\Delta_f H(Ion)$ from pr						1,10,00
	781 kJ/mol. The I						
CH ₃ OCH ₂	6.94	(157)	(657)	-3±1	-13±4	82MCM/GOL	16520-04-0
	$\Delta_f H(\text{Ion})$ at 0 K f. See also: 84BOW		(690) ance potential	l determination	(82MAC, 84E	BUT/HOL).	
$CH_2 = CHOH_2$		148	619				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from ap	pearance po	otential deter	mination (82BL	JR/TER2).		
/ o \		165	691				
(<u> </u>	From proton affin	ity of oxiran	e (RN 75-21-	8). PA = 187.9	kcal/mol, 786	kJ/mol.	
C ₂ H ₅ O ₂ +							
$CH_3C(OH)_2$		72	302				
	From proton affin $PA = 190.2 \text{ kcal/r}$	_		1-19-7). See also	o: 84HOL/LC	S. 85AUD/MIL.	
нс(он)осн ₃		92	386				
		: ~ CTTCO	OCU (DNI 10				
	From proton affin (86KNI/FRE, 84L		ocn ₃ (KN II	07-31-3). PA =	188.4 kcal/mo	ol, 788. kJ/mol.	
C ₂ H ₅ P ⁺			OCH3 (KN II	07-31-3). PA =	188.4 kcal/mo	ol, 788. kJ/mol.	
-	(86KNI/FRE, 84L	IA/LIE).					6569-82-0
C ₂ H ₅ P ⁺			(838)	-16±0.5	188.4 kcal/mo	*EST	6569-82-0
-	(86KNI/FRE, 84L	IA/LIE).					6569-82-0
∠ ^H	(86KNI/FRE, 84L	IA/LIE).					6569-82-0
∠ ^H	(86KNI/FRE, 84L	IA/LIE).					6569-82-0 58794-14-2
H P 2H ₅ S+	(86KNI/FRE, 84L	(200) 197 200	(838) 823 836	−16±0.5	−69±2		
∠H ∠2H ₅ S+	(86KNI/FRE, 84L	(200) 197 200	(838) 823 836	−16±0.5	−69±2		
∠H ∠2H ₅ S+	(86KNI/FRE, 84L	(200) 197 200	(838) 823 836	−16±0.5	−69±2		
C2H5S+ CH3CHSH	(86KNI/FRE, 84L	(200) 197 200 pearance po	(838) 823 836 Stential determ	−16±0.5	−69±2 JT/BAE).	*EST	58794-14-2
C ₂ H ₅ S + CH ₃ CHSH	(86KNI/FRE, 84L (9.4±0.1) Δ _f H(Ion) from ap	(200) 197 200 pearance po	(838) 823 836 Stential determ	−16±0.5	−69±2 JT/BAE).	*EST	58794-14-2

Table 1. Positive Ion Table - Continued

mol reference .0±0.2 77PED/RYL .4	number 74-84-0
	74-84-0
	74-84-0
5 82HOL/SMI	5158-50-9
9 82HOL/SMI	1803-36-7
1±4 77DDDDDDVI	1112 21 1
//red/RIL	1113-31-1
	00/07/7= 7
9±12.1 85GAL/TAM	20693-67-8
l/mol. ~715 kJ/mol.	
AE).	
·	
0.44	TO (OO 1
.8±1.3 7/PED/RYL	506-82-1
nol, 707 kJ/mol.	
	24400-15-5
	£ 111 00-13-3
*EST	1585-74-6
***************************************	***************************************
*EST	811-62-1
_	-
······	
********	(77.40.0
*EST	677-43-0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	######################################

Table 1. Positive Ion Table - Continued

				e - Contin			
ION Neutral	Ionization potential	•	Ion) I kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂ H ₆ Cl ₂ NP ⁺ (CH ₃) ₂ NPCl ₂	(8.9) IP is onset of p	(171) hotoelectron	(716) band.	-34	-143	*EST	683-85-2
C ₂ H ₆ Cl ₂ Si ⁺ (CH ₃) ₂ SiCl ₂	(10.7) IP is onset of p	(137) hotoelectron	(574) band.	-109	-458	81BEL/PER	75-78-5
C ₂ H ₆ Cl ₂ Sn ⁺ (CH ₃) ₂ SnCl ₂	(10.43)	(174)	(727)	67	-279	*EST	753-73-1
С ₂ Н ₆ F ⁺ СН ₃ FСН ₃	Δ _f H(Ion) deriv	(147) red from resu	(614) Its of 86HOV/I	мсм.			
C₂H₅FH	From proton at	138 ffinity of C ₂ H	577 5F (RN 75-02-	5). PA = 165 I	ccal/mol, 690	kJ/mol.	
C ₂ H ₆ FN ⁺ CH ₂ FCH ₂ NH ₂	(9.1) IP from 79AUI	(155) E/BOW.	(650)	-55	-229	*EST	406-34-8
C ₂ H ₆ FP ⁺ (CH ₃) ₂ PF	(8.8) IP is onset of pl	(112) hotoelectron	(468) band.	-91	-381	*EST	507-15-3
C ₂ H ₆ FSi ⁺ (CH ₃) ₂ SiF	From appearan	86 ce potential (359 10.70±0.04 eV)	of ion in (CH ₃	,) ₃ SiF.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
C ₂ H ₆ F ₂ N ⁺ CF ₂ HCH ₂ NH ₃	From proton af	269 finity of CF ₂ I	1124 HCH ₂ NH ₂ (RI	N 430-67-1). PA	A = 207.5 kca	l/mol, 868 kJ/mol.	
C ₂ H ₆ F ₂ Si ⁺ (CH ₃) ₂ SiF ₂	11.03±0.03	42	177	-212	-887	77MUR/BEA	353-66-2
C ₂ H ₆ H _g + (CH ₃) ₂ H _g	(9.10±0.05)	(232) (237)	(972) (991)	22.5±0.2 27.0	94.0±1.0 113.3	77PED/RYL	593-74-8
С ₂ H₆I ⁺ С ₂ H ₅ IH	From proton af	(188) finity of C ₂ H ₂	(785) ₅ I (RN 75-03-6)). PA = ~176 l	ccal/mol, ~736	i kJ/mol.	
C ₂ H ₆ N ⁺ CH ₂ NHCH ₃	5.9 Δ _f H(Ion) from (81GRI/LOS, 8:		695 otential detern	30 nination(81LO	126 S/LAM); IP d	83BUR/CAS erived	31277-24-4
CH ₃ CHNH ₂	5.7 Δ _f H(Ion) from	157 appearance p	657 otential determ	26 nination(81LOS	109 S/LAM); IP d	83BUR/CAS erived(83BUR/CAS)	30208-36-7).

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/moi	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂ H ₆ N ⁺ (CH ₃) ₂ N	(5.17) $\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a	(154) opearance p	(644) potential meas	35±2 urement. IP ci	145±8 ted is ∆ _f H(Ion	82MCM/GOL) - $\Delta_f H$ (Neutral).	15337-44-7
Ht	From proton affir	180 nity of azirio	755 line (RN 151-	56-4). PA = 21	15.7 kcal/mol, 9	02 kJ/mol.	
C ₂ H ₆ NO ⁺ CH ₃ C(OH)NH ₂	From proton affir	103 hity of CH ₃	429 CONH ₂ (RN	60-35-5). PA =	= 206.2 kcal/mc	ıl, 863 kJ/mol.	
HC(OH)NHCH ₃	From proton affir	115 hity of HCC	481 NHCH ₃ (RN	123-39-7). PA	= 205.8 kcal/n	nol, 861 kJ/mol.	
C ₂ H ₆ NO ₂ + NH ₃ CH ₂ СООН	From proton affir	61 hity of NH ₂	254 CH ₂ COOH (I	RN 56-40-6). P.	A = 211.6 kcal	/mol, 885 kJ/mol.	
С ₂ Н ₅ ОNНО	From proton affir	144 hity of C ₂ H ₂	602 50NO (RN 10	9-95-5). PA =	197.3 kcal/mol	, 825.5 kJ/mol.	
C ₂ H ₅ NOOH	From proton affin	157 tity of C ₂ H ₅	655 5NO ₂ (RN 79-	24-3). PA = 1	84.8 kcal/mol, 7	773 kJ/mol.	
$C_2H_6N_2^+$ (E)-CH ₃ N = NCH ₃	8.45±0.05	231	964	36	149	82PAM/ROG	4143-41-3
C ₂ H ₆ N ₂ O ⁺ (E)-CH ₃ NN(O)CH ₃	(9.7) IP is onset of phot	(238)	(997) eand.	15	61	*EST	54168-20-6
CH ₃ NHCONH ₂	(≤9.66)	(≤164)	(≤688)	-58	-244	*EST	598-50-5
(CH ₃) ₂ NNO	8.69	200	835	~0.7±2	-3±8	67KOR/PEP	62-75-9
C ₂ H ₆ N ₂ O ₂ + (CH ₃) ₂ NNO ₂	(9.53)	(219)	(914)	~1±0.8	-5±3	77PED/RYL	4164-28-7
(E)-(CH ₃ NO) ₂	(≤8.68)	(≤217)	(≤908)	17±0.2	71±1	73BAT/MIL	37765-15-4
С ₂ H ₆ O ⁺ С ₂ H ₅ OH	10.47±0.02 See also: 82MIS/P 81KIM/KAT, 80B			-51.9	-234.8±0.2 -217.1 /MAC, 83OHN	77PED/RYL V/IMA,	64-17-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (Ic	n)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number
C ₂ H ₆ O +							
(CH ₃) ₂ O	10.025±0.025	187.2	783.3	-44.0±0.1	-184.0±0.5	77PED/RYL	115-10-6
Ÿ 2		191.5	801.0	-39.7	-166.3		
	IP from 84BUT/	HOL. See als	o: 84BOW/M	IAC, 81KIM/K	AT, 80BAC/M	OU, 82BIE/ASB.	
C ₂ H ₄ OH ₂		175	732				60786-90-5
2 , 2	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a	ppearance po	otential measi	arements (85BU	JR/HOL).		
	See also: 82HOI				se the structu	re	
	С ₂ H ₃ Н ⁺ ОН	or the ion.	See also: 81T	ER/HEE.			
C ₂ H ₆ OS ⁺				7.75			
(CH ₃) ₂ SO	(9.01)	(172)	(718)	-36.2±0.2	-151.3±0.8	77PED/RYL	67-68-5
3.2		(176)	(738)	-31.4	-131.5		
	See: 81KIM/KA	Γ.					
C ₂ H ₆ O ₂ +				J-90 00 AL AL AL			
HOCH ₂ CH ₂ OH	10.16	142	593	-92.6±0.4	-387.6±1.7	77PED/RYL	107-21-1
~ -	IP from 82HOL/	LOS2. See a	lso: 80VON/E	BIE, 81KIM/KA	T.		
(CH _c O)-	9.1	180	752	_30.0.03	-125.7±1.3	77PED/RYL	600 02 9
(CH ₃ O) ₂	IP is onset of pho					//PED/RYL	690-02-8
С ₂ Н ₆ О ₂ S +							
(CH ₃) ₂ SO ₂	(10.3)	(148)	(621)	-89±0.7	-373±3	77PED/RYL	67-71-0
	773	(154)	(644)	-84	-350		
	IP is onset of pho	toelectron ba	and.				
C ₂ H ₆ O ₃ S +							
(CH ₃ O) ₂ SO	(9.9)	(113)	(472)	-115±0.5	-483±2	77PED/RYL	616-42-2
	IP is onset of pho	otoelectron ba	and.				
C ₂ H ₆ P+							
		150					
H2 P2	From proton affi	158	660	. AC (20 02 0)	- 101 4 Irani/	ol 901 hT/mol	
/`\	From proton and	nity of phosp.	nirane (Riv o.	009-02-0 <i>)</i> . FA =	= 191.4 Kcai/m	oi, sui kj/moi.	
<u> </u>							
C-H-S+							
С 2H₆S ⁺ С ₂ H ₅ SH	9.285±0.005	203	850	-11.1±0.1	-46 3+0 6	77PED/RYL	75-08-1
~2115011	7.20J±0.00J	203 207	867	-7.0	-40.5±0.0	III ED/KIL	/3-00-1
	See also: 830HN				27.00		
(CH ₃) ₂ S	8.69±0.01	191	801		-37.5±0.5	77PED/RYL	75-18-3
	See also: 81KIM/	<i>195</i> KAT.	817	-5.1	-21.3		
	COURSE OTHER						····
C ₂ H ₆ SSi ⁺							
$(CH_3)_2Si = S$		(203)	(848)				1111-83-7
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from a	ppearance po	tential detern	nination (81GU	S/VOL).		

Table 1. Positive Ion Table - Continued

Neutral C ₂ H ₆ S ₂ + (CH ₃ S) ₂ C ₂ H ₆ S ₃ + CH ₃ SSSCH ₃	eV (7.4±0.3) Adiabatic ionizati rates; experiment because of change (83BUT/BAE). S	ally observed e in the CSSO See also: 81K	(690±15) (707) I determined find onset of ionist C bond angle w	zation, 8.33 eV	kJ/mol -24.2±1.0 -6.8 cion of dissocia		number 624-92-0
(CH ₃ S) ₂ C ₂ H ₆ S ₃ +	Adiabatic ionizati rates; experiment because of change (83BUT/BAE). S	(169) ion potential ally observed in the CSSG See also: 81K	(707) determined fidence of ionic Conduction	-1.6 rom considerate zation, 8.33 eV	-6.8 tion of dissocia , is much highe	tion	624-92-0
(CH ₃ S) ₂ C ₂ H ₆ S ₃ +	Adiabatic ionizati rates; experiment because of change (83BUT/BAE). S	(169) ion potential ally observed in the CSSG See also: 81K	(707) determined fidence of ionic Conduction	-1.6 rom considerate zation, 8.33 eV	-6.8 tion of dissocia , is much highe	tion	624-92-0
	rates; experiment because of change (83BUT/BAE).	ion potential ally observed in the CSSO See also: 81K	determined for donset of ioning Coond angle u	rom considerat zation, 8.33 eV	tion of dissocia , is much highe		
	because of change (83BUT/BAE). S	e in the CSS6 See also: 81K	C bond angle i		_		
	(83BUT/BAE). S	See also: 81K	_	pon ionization	from 90° to 1		
			IM/KAT.			80°.	
	(8.73±0.03)	(100)					
CH ₃ SSSCH ₃	(8.73±0.03)	(100)					
		(199)	(831)	-3	-11	*EST	3658-80-8
C ₂ H ₆ Sc ⁺					· · · · · · · · · · · · · · · · · · ·	······································	
C ₂ H ₅ ScH		(205)	(858)				
 3	$\Delta_{\mathbf{f}}H$ (Ion) from or			on (84TOL/BE	EA).		
(CH ₃) ₂ Sc		189	791				
(01.3/200	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from o			on (84TOL/BE	(A). See also:	86ELK/ARI.	
				•	,		
C ₂ H ₄ ScH ₂		(218)	(912)				
	$\Delta_{\mathbf{f}}H(\operatorname{Ion})$ from or	nset of endo	thermic reaction	on (84TOL/BE	EA).		
C ₂ H ₆ Se ⁺							
(CH ₃) ₂ Se	8.40±0.01	(198)	(827)	4	17	*EST	593-79-3
	IP from 84BOC/A	AYG, 82LEV	//LIA.				
C ₂ H ₆ Se ₂ +							
(CH ₃ Se) ₂	(8.1)	(197)	(826)	11	44	*EST	7101-31-7
	IP is onset of pho	toelectron b	and (84BOC/A	AYG).			
C ₂ H ₆ Si ⁺		-			**,		
$CH_2 = CHSiH_3$	10.1	234	978	1±3	4±13	80TEL/RAB	7291-09-0
2 J	IP is onset of pho				•		-
O 17 7 +							
$C_2H_6Zn^+$	(0.00 - 0.02)	(220)	(010)	10.1 - 0.0	50 6 . 1 2	77DEN /03/1	544 07 0
(CH ₃) ₂ Zn	(9.00±0.02)	(220)	(919)	12.1±0.3	50.6±1.3	77PED/RYL	544-97-8
C ₂ H ₇ +							
C ₂ H ₇		202	845				
	From proton affin			See also: 85M	CM/KEB.		
	PA = 143.6 kcal/r	nol, 601 kJ/n	nol.				
C ₂ H ₇ As ⁺							
(CH ₃) ₂ AsH	(8.1)	(194)	(813)	7	31	*EST	593-57-7
-	IP is onset of photo			IE).			
C ₂ H ₇ BO ₂ +							
С 2П7ВО2 ((CH ₃ O) ₂ ВН	(9.7±1.0)	(85)	(355)	-138.8±0.4	-580.7+1.7	77PED/RYL	4542-61-4
(01130)2011	(2.721.0)			130.0±0.4	JUV./II./	//LED/KIL	1212-01 -1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₂ H ₇ B ₄ +	****						
H-B-H H-B-H H-B-H	From proton affii PA = 207. kcal/n			ane(6) (RN 200	593-67-8).		
С ₂ H ₇ B ₅ + н							
H-C-H H-C-H	10.54	240.5	1006.3	-2.5±2.6	-10.6±10.9	85GAL/TAM	20693-69-0
C ₂ H ₇ ClO ⁺	111	•					
(CH ₃) ₂ OHCI	(10.4) IP is onset of pho	(167) toelectron ba	(698) and.	-73	-305	82TN270	24521-77-5
C ₂ H ₇ FN ⁺						* * ** ** ** ** ** ** ** ** ** ** ** **	
CH ₂ FCH ₂ NH ₃	From proton affii	99 nity of CH ₂ F	413 CH ₂ NH ₂ (R)	N 406-34-8). Pa	A = 212.3 kcal	/mol, 888 kJ/mol.	
C ₂ H ₇ Hg ⁺							
(CH ₃) ₂ HgH	From proton affir	(202) nity of CH ₃ H	(846) IgCH ₃ (RN 59	93-74-8). PA =	- ~186 kcal/mo	ıl, ~778 kJ/mol.	
C ₂ H ₇ N ⁺							
C ₂ H ₅ NH ₂	8.86±0.02 See also: 83OHN,	193 IMA, 81KIN	807 1/KAT.	-11.3±0.2	-47.5±0.7	77PED/RYL	75-04-7
(CH ₃) ₂ NH	8.23±0.08 See also: 81KIM/I	185 KAT.	776	-4.4±0.1	-18.5±0.4	77PED/RYL	124-40-3
C ₂ H ₇ NO ⁺							
NH ₂ CH ₂ CH ₂ OH	8.96 IP from 83KOP/N photoelectron bar			-48 reement with or	−202 aset of	77REI/PRA	141-43-5
CH ₃ NHOCH ₃	8.92 IP from 83MOL/I	(197) PIK.	(824)	- 9	-37	*EST	1117-97-1
C ₂ H ₇ N ₂ +							
CH ₃ NNHCH ₃	From proton affin	194 hity of (E)-CI	813 H ₃ N=NCH ₃	(RN 4143-41-3). PA = 206.9	kcal/mol, 866 kJ/mo	ol.
С ₂ H ₇ O ⁺							
C ₂ H ₅ OH ₂	From proton affin	121 ity of C ₂ H ₅ C	507 DH (RN 64-17	7-5). PA = 188	.3 kcal/mol, 78	8 kJ/mol.	
(СН ₃) ₂ ОН	From proton affin 804 kJ/mol.	130 ity of (CH ₃)	542 ₂ O (RN 115-1	0-6). PA = 19	2.1 kcal/mol,		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{Io})$		$\Delta_{\mathbf{f}}H(\mathbf{N})$		Neutral	CAS registry
Neutral	eV	kcal/mol	KJ/moi	kcal/mol	KJ/moi	reference	number
C ₂ H ₇ OS +							
(CH ₃) ₂ SOH	From proton affii	118	495) ₂ SO (RN 63	7-68-5) PA = 3	211 3 kcal/mo	1 834 kT/mol	
						1, 004 RB/IIIOI.	
C ₂ H ₇ O ₃ P ⁺	4						
(CH ₃ O) ₂ PHO	(10.53) IP from 80ZVE/V	(43) /IL.	(179)	(-200)	(-837)	*EST	868-85-9
C ₂ H ₇ P ⁺							
(CH ₃) ₂ PH	8.47±0.07 See also: 82COW	(181) /KEM.	(757)	-14	-60	*EST	676-59-5
С ₂ н ₇ s +				to the first or any or a state of the state of	Y		
C ₂ H ₅ SH ₂		164	686				
	From proton affir	nity of C_2H_5	SH (RN 75-0	98-1). PA = 190	0.8 kcal/mol, '	798 kJ/mol.	
(CH ₃) ₂ SH		156	653				
(0113)2011	From proton affir			.8-3). PA = 200	0.6 kcal/mol, 8	339 kJ/mol.	
							
С ₂ H ₇ S ₂ + Сн ₃ SSHCH ₃		(164)	(686)				
CH3SSHCH3	From proton affir			24-92-0). PA =	- 196 kcal/m	ol, ~820 kJ/mol.	
C ₂ H ₈ B ₅ +	From proton affir PA = 168. kcal/m			ornane(7) (RN 2	20693-69-0).		
C ₂ H ₈ N ⁺							
C ₂ H ₅ NH ₃		137	574				
	From proton affin	ity of C ₂ H ₅ l	NH ₂ (RN 75	-04-7). PA = 2	17.0 kcal/mol	, 908. kJ/mol.	
(CH ₃) ₂ NH ₂		141	588				
(5113)21112	From proton affin			24-40-3). PA =	220.6 kcal/m	ol, 923. kJ/mol.	
C II NO +			·				
C ₂ H ₈ NO ⁺		96	402				
H ₃ N(CH ₂) ₂ OH	From proton affin			RN 141-43-5). P	A = 221.3 kg	al/mol, 926. kJ/mol.	
<u>ــــــــــــــــــــــــــــــــــــ</u>					,		
C ₂ H ₈ N ₂ +	(8.6)	(104)	(812)	_4 3±0 5	_17.82.1	77PEN/DVI	107.15.3
H ₂ NCH ₂ CH ₂ NH ₂	(8.6) IP is onset of photon	(194) toelectron ba	(812) and (81KIM/	−4.3±0.5 KAT).	-17.8±2.1	77PED/RYL	107-15-3
	22 22 Oncor of photo		(522274)	 			
$(CH_3)_2NNH_2$	7.28±0.04	188	786	20±0.5	84±2	77PED/RYL	57-14-7
	IP from charge tra					standard:	
	$IP (C_6H_5N(CH_3)$	2) = 1.12 eV	(ö4MAU/NI	ュレ). See also: 8	IKIM/KAT.		

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	l Δ _f H(Io	on)	$\Delta_{\mathbf{f}}H(\mathbf{N})$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₂ H ₈ N ₂ +			,,,,,		·		- /
C ₂ H ₅ NHNH ₂				16±0.2	69±1	*EST	624-80-6
	A value of 8.12		_		=		
	Values of IP's o	-	-			•	
	significantly high		idiabatic value	because of the	large geome	try change	
(CH ₃ NH) ₂				22±1	92±4	77PED/RYL	540-73-8
	Values of 7.75 a	nd 8.22 eV ha	we been repor	ted for the adia	abatic IP of th	is compound.	
				-		ments are usually	
	significantly high				large geomet	ry change	
	associated with	onization. Se	ee also: 81KIM	I/KAT.			
C ₂ H ₈ P ⁺			550				
(CH ₃) ₂ PH ₂	From proton aff	134 inity of (CH ₂	559 Japh (RN 676	5-59-5) PA =	216 3 kcal/mc	ol 905 kT/mol	
	- Tom proton an					., , , , , , , , , , , , , , , , , , ,	
C ₂ H ₈ Si ⁺	(40.40.005)	(0.65)	(400#)				
C ₂ H ₅ SiH ₃	(10.18±0.05)	(262)	(1095)	27±3	113±13	80TEL/RAB	2814-79-1
$(CH_3)_2SiH_2$	10.3	215	899	-23±1	-95±4	86DON/WAL	1111-74-6
C ₂ H ₉ N ₂ +							
H ₂ NCH ₂ CH ₂ NH ₃		135	567				
	From proton aff 945 kJ/mol.	inity of H ₂ N0	CH ₂ CH ₂ NH ₂	(RN 107-15-3).	PA = 225.9	kcal/mol,	
(CH ₃) ₂ NHNH ₂		166	694				
	From proton aff 920 kJ/mol (84M) ₂ NNH ₂ (RN	57-14-7). PA =	= 219.9 kcal/n	nol,	
C ₂ H ₁₀ BN +							
((CH ₃) ₂ NH)(BH ₃)							
_	(9.39±0.01)	(202)	(847)	-14±1	-59±4	80TEL/RAB	74-94-2
C ₂ H ₁₂ B ₁₀ +							
- 1- 10							
HB H H BH	(10.19)	(191)	(800)	-44±2	-183±8	82PIL/SKI	16986-24-6
HH CH							
, B,							
HB	(10.2)	(175)	(733)	-60±2	-251±8	82PIL/SKI	20644-12-6
HE CHANGE	IP is onset of pho	otoelectron ba	and.				
й С ₂ I ₂ +							
C212 · IC≡CI	(9.03)	(269.57)	(1127.90)	61.34	256.64	84DEW/HEA	624-74-8
	(7,00)	1407.071	(114/1.70)	U1.57	400.07	091715 YY / E115/A	U4777/7770

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry	
Neutral	eV	kcal/mol		kcal/mol		reference	number	
C ₂ La +								
LaC ₂	(5.4±0.3)	(266)	(1113)	141±2	592±6	81GIN/PEL	12071-15-7	
		(266)	(1112)	141	591			
C ₂ N ⁺								
CCN	12.0	(410)	(1715)	133	556	85JANAF	12327-12-7	
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from a IP cited is $\Delta_{\mathbf{f}}H(\text{Io})$	_		urements (83SN	MI, 85HAR/M	CI).		
CNC		(387)	(1620)					
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a	` '		arements (85H.	AR/MCI).			
C ₂ N ₂ +								
NCCN	13.37±0.01	381.6	1596.7	73.3±0.2	306.7±0.7	77PED/RYL	460-19-5	
		381.1	1594.8	72.8	304.8			
	See also: 83SMI.							
C ₂ N ₂ O +			·····					
NCNCO	(11.49±0.02)	(296)	(1238)	31	129	*EST	22430-66-6	
C ₂ N ₂ S ₂ +								
(SCN) ₂	(10.5)	(326)	(1363)	84±1	350±6	77PED/RYL	505-14-6	
	IP is onset of pho	toelectron b	and.					
C ₂ Se ⁺								
C ₂ Sc	7.7±0.2	325	1360	147±3	617±12	81HAQ/GIN	12175-91-6	
		324	1357	147	614			
	See also: 81HAQ	/GIN. 				_		
C ₂ Si ⁺								
c≡c	(10.2±0.5)	(382)	(1599)	147 146	615	82TN270	12071-27-1	
\ Si		(381)	(1594)	146	610			
51								
C ₂ Th ⁺	***************************************							
C ₂ Th ⁺ C ₂ Th	(6.4±0.5)	(321)	(1341)	173	724	82TN270	12071-31-7	
C ₂ v+								
C_2V		(335)	(1401)					
~	$\Delta_{ m f} H$ (Ion) from onset energy of endothermic reaction (84ARI/ARM, 85ELK/ARM). 0 K value.							
~v+					-			
C 2 Y + C ₂ Y	6.7±0.3	297	1243	143	597	82TN270	12071-35-1	
- 2 -		296	1240	142	594			
C ₃ +								
~3 C3	(12.1±0.3)	(479)	(2004)	200±4	837±17	83RAK/BOH	12075-35-3	

Table 1. Positive Ion Table - Continued

· · · · · · · · · · · · · · · · · · ·	Table	1. Posi	tive Ion Tabl	e - Contin	ued		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₃ BrN ⁺ BrC≡CCN	(10.71±0.02) See also: 84KUH/	(350) MAI.	(1466)	103±5	433±20	79BUC/VOG	3114-46-3
C ₃ CIN + CIC≡CCN	10.95±0.02	334	1396	81±5	339±20	79BUC/VOG	2003-31-8
C ₃ FN ⁺ CF≡CCN	(11.51±0.02)	(305)	(1278)	40±12	167±50	79BUC/VOG	32038-83-8
C ₃ F ₃ N ⁺ CF ₂ =CFCN	(10.6±0.1)	(139)	(584)	-105±0.7	-439±3	71JANAF	433-43-2
C ₃ F ₃ N ₃ +	(11.3) IP is onset of phot	(131) oelectron	(548) 1 band (81ASB/	-129 SVE).	-542	*EST	675-14-9
$C_3F_4^+$ $CF_2 = C = CF_2$	(10.88)	(109)	(456)	-142	-594	86SMA	461-68-7
$C_3F_6^+$ $CF_3CF=CF_2$	10.60±0.03 IP from 81BER/B	-24 OM.	-102	-269	-1125	75CHE/ROD	116-15-4
$F_2 \stackrel{F_2}{ }_{F_2}$	11.18±0.03 IP from 81BER/B	24 OM.	101	-234	-978	81BOM/BER	931-91-9
C ₃ F ₆ O + (CF ₃) ₂ CO	(11.44)	(-70)	(-293)	-334	-1397	72GOR	684-16-2
C ₃ F ₈ + C ₃ F ₈	13.38	-118	-492	-426±2	−1783±7	77PED/RYL	76-19-7
C ₃ F ₉ N ⁺ (CF ₃) ₃ N	11.7 IP is onset of photo	(-168) belectron	(-703) band (82ELB/I	-438 DIE, 82BUR/PA	-1832 AW).	*EST	432-03-1
С ₃ н+ нссс	From proton affini	(381) ty of C ₃ ((1593) (RN 12075-35-3)). PA = ~185 k	cal/mol, ~774	kJ/mol.	
C ₃ HF ₃ + CF ₃ C≡CH	(11.96±0.02) See also: 81BIE/AS	(177) SB.	(741)	-99	-413	86SMA	661-54-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential		m)	$\Delta_f H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₃ HF ₅ N ⁺							
C ₂ F ₅ CNH		-21	-86				
	From proton affi	inity of C ₂ F ₅	CN (RN 422-	04-8). PA = 16	67.1 kcal/mol,	699 kJ/mol.	
C ₃ HF ₆ O +					· · · · · · · · · · · · · · · · · · ·		
(CF ₃) ₂ COH		-118	-495				
	From proton affi	_	_				
	re-evaluated rela	tive to CO st	andard (84LI	A/LIE). PA =	150.0 kcal/m	ol,	
	628. kJ/mol.						
C ₃ HF ₈ N ⁺							
(CF ₃) ₂ NCHF ₂	(11.7)	(-110)	(-461)	-380	-1590	*EST	73563-15-2
	IP from 82BUR/	PAW.					
C ₃ HN ⁺							
HC≡CCN	11.64±0.01	352	1474	84	351	85HAR	1070-71-9
C ₃ HNO ⁺							
NCCH = C = O	(≤10.07)	(≤256)	(≤1073)	24	101	*EST	
	IP from 81BOC/	HIR.					
C ₃ HO ⁺							
HC≡C-C=O		232	971				
	From appearance	e potential de	terminations	(83TER/HOL)).		
C ₃ H ₂ +	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		<u> </u>				
HC≡CCH		(330±3)	(1381±12)				2008-19-7
••	$C_3H^+ + H_2 \rightarrow C_3H^+$	С ₃ Н ₂ + + Н	is ~1 kcal/mo	ol endothermic.	(84SMI/AD	A).	
\wedge		281±3	1176±12				75123-91-0
	From appearance			mpounds, (84)	IOL/SZU).		73123-91-0
	• •						
$C_3H_2F_2^+$	(0.70 . 0.02)	(170)	(742)	40	202	0703.64	420 (4.9
$CF_2 = C = CH_2$	(9.79±0.03)	(178)	(743)	-48	-202 	86SMA	430-64-8
$C_3H_2F_4O^+$							
(CHF ₂) ₂ CO	(10.7)	(15)	(61)	-232±4	-971±16	*EST	360-52-1
	IP is onset of pho	toelectron ba	and.				
C ₃ H ₂ F ₆ O +							
CF ₃ CH(OH)CF ₃	11.94	(-92)	(-384)	-367±2	-1536±8	*EST	920-66-1
	IP from 83KOP/N	MOL.					
C ₃ H ₂ F ₇ N +			·····				
$(CF_2H)_2NCF_3$	(11.4)	(-60)	(-250)	-323	-1350	*EST	73551-02-7
	IP from 82BUR/I	-	÷ •				
C ₃ H ₂ N ⁺							
HCCCNH		269	1127.5				
	From proton affi			-71-9) (87DEA	/MAU, 85KN	I/FRE).	
	PA = 180. kcal/n			• •	•	•	

Table 1. Positive Ion Table - Continued

	Table 1. Positive for Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	∆ _f H(Ne kcai/mol	eutral) kJ/mol	Neutral reference	CAS registry number			
C ₃ H ₂ N ₂ + CH ₂ (CN) ₂	(12.70) IP from 83MOL/	(356) PIK2.	(1491)	63.5±0.4	265.5±1.5	77PED/RYL	109-77-3			
C ₃ H ₂ N ₂ O ₃ +										
O NH O	(10.67)	(134)	(559)	-112	-470	*EST	120-89-8			
C ₃ H ₂ O ⁺		·								
HC≡CCHO	(10.8) IP from 80VON/E	(276) BIE. See als	(1157) so: 79CAR/MOU	27 J.	115	*EST	624-67-9			
$CH_2 = C = C = O$	9.12±0.05 IP from 83TER/H	(233) IOL. See al	(975) so: 8SMCN/SUF	23	95	*EST	61244-93-7			
	(9.47)	(251)	(1052)	33±2	138±8	*EST	2961-80-0			
C ₃ H ₂ OS ₂ ⁺										
S O	(8.6) IP is onset of photon	(195) toelectron b	(815) eand (83SCH/SC	−3.6±1.2 H).	-15.0±5.1	77PED/RYL	2314-40-1			
C ₃ H ₂ O ₂ ⁺ HC≡CCOOH	(10.45) IP is onset of photon	(213) coelectron b	(891) eand (80VON/BI	-28 E).	-117	*EST	471-25-0			
C ₃ H ₂ O ₃ +										
	(9.8) IP is onset of phot	(126) coelectron b	(527) and.	-100±5	−419±21	77PED/RYL	872-36-6			
С ₃ H ₂ S ₃ +										
S s	8.26	251	1050	60.5±2	253±7	77PED/RYL	930-35-8			
				-						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Iα kcal/mol		Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry			
		· · · · · · · · · · · · · · · · · · ·		·						
C ₃ H ₃ ⁺ CH ₂ C≡CH	8.68 282 1179 82 343 2932-78-7 HCCCH ⁺ + H ₂ \rightarrow CH ₂ C=CH ⁺ + H is 4 kcal/mol endothermic (84SMI/ADA); value derived from appearance potential measurements is 281±3 kcal/mol; 1176 kJ/mol. $\Delta_f H(\text{Neutral}) = \Delta_f H(\text{Ion})$ - IP.									
	6.6 Heat of formation $\Delta_f H(\text{Ion}) - \Delta_f H(\text{Ion})$		1075 n appearance	105±4 potential meas	440±17 urements; IP	82MCM/GOL given is	28933-84-8			
C ₃ H ₃ Cl ⁺										
$CH_2 = C = CHCI$	(9.57)	(263)	(1102)	43	179	*EST	3223-70-9			
CH ₃ C≡CCI	9.82	(276)	(1153)	49±4	206±15	*EST	7747-84-4			
CH ₂ CIC≡CH	10.68 See also: 81ZVE/I	(285) ERM, 82BII	(1192) E/ASB.	39	162	*EST	624-65-7			
C ₃ H ₃ F ₃ + CH ₂ CHCF ₃	(10.9)	(104)	(438)	-147±2	-614±7	77PED/RYL	32718-30-2			
C ₃ H ₃ F ₃ O ⁺ CH ₃ COCF ₃	10.67	(52)	(217)	-194	-812	*EST	421-50-1			
C ₃ H ₃ F ₃ O ₂ + HCOOCH ₂ CF ₃	(11.31)	(5)	(18)	-256	-1073	*EST	32042-38-9			
С ₃ Н ₃ F ₄ O ⁺ (СF ₂ H) ₂ СОН	From proton affin 711 kJ/mol.	-32 ity of CF ₂ H	−134 COCF ₂ H (R	N 360-52-1). Pa	A = 170 kcai/	mol,				
С ₃ Н ₃ F ₅ О ⁺ С ₂ F ₅ СН ₂ ОН	(11.2) IP is onset of phot		(-229) and.	-313±0.7	-1310±3	77PED/RYL	422-05-9			
C ₃ H ₃ F ₆ N ⁺										
(CF ₂ H) ₃ N	(11.2) IP from 82BUR/P.		(-29)	-265	-1110	*EST	73551-03-8			
C ₃ H ₃ F ₆ O ⁺ (CF ₃) ₂ CHOH ₂	From proton affini 690 kJ/mol.	-180 ity of (CF ₃)	-755 ₂ CHOH (RN	920-66-1). PA	= 165.0 kcal/	mol,				
C ₃ H ₃ N ⁺ CH ₂ CHCN	10.91±0.01 See also: 84OHN/I	296 MAT 81KIN	1237 M/KAT.	44	184	82CHU/NGU	107-13-1			

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) ol kJ/mol	Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C ₃ H ₃ NO + CH ₂ = CHNCO	(9.3) IP is onset of pho	(208) toelectron	(872) band.	-6	-25	*EST	3555-94-0				
HC≡CCONH ₂	(9.85) IP is onset of pho	(244) toelectron	(1023) band (81ASB/	17 SVE).	73	*EST	7341-96-0				
N	9.93±0.05 IP from 81BOU/I	248 HOP.	1037	19	79	78МСС/НАМ	288-14-2				
	(9.6)	(217)	(910)	-4±0.2	-16±1	78МСС/НАМ	288-42-6				
C ₃ H ₃ NS ⁺						* ************************************					
s N	(9.55)	(261)	(1090)	40	169	*EST	288-16-4				
∑ _N	(≤9.50)	(≤256)	(≤1070)	37±2	153±10	*EST	288-47-1				
C ₃ H ₃ N ₂ + NCCH ₂ CNH	From proton affin 735 kJ/mol.	254 ity of CH ₂	1061 (CN) ₂ (RN 109	9-77-3). PA =	175.6 kcal/mo	1,					
C ₃ H ₃ N ₃ +											
C ₃ H ₃ N ₃ +	(9.3) IP is onset of phot	(314) oelectron	(1313) band (83GLE/5	99 SPA).	416	*EST	289-96-3				
	(9.2) IP is onset of phot	(292) oelectron	(1222) band.	80	334	*EST	290-38-0				

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	al ∆ _f H(Io	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₃ H ₃ N ₃ +						.,	
	10.03±0.05 See also: 84SH	285 A/URA.	1194	54±0.2	226±1	82BYS	290-87-9
C ₃ H ₃ N ₃ O ₂ +							
1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	(10.59) IP from 81AJO	(181) /CAS2.	(756)	-64	-266	*EST	
	10.18 IP from 81AJO	(181) /CAS2, <i>77</i> RO	(756) S/DRA.	-54	-226	*EST	
C ₃ H ₃ O ⁺			·				
CH ₂ =CHCO	(7.0) IP is $\Delta_f H(Ion)$	(179) - ∆ _f H(Neutral	(751)). Δ _f H(Ion) f	17 rom appearance	72 potential de	82MCM/GOL termination.	72241-20-4
HC≡CCH ₂ O	$\Delta_{ m f} H$ (Ion) from	227 appearance po	950 otential deterr	nination (84LO	S/HOL).		92056-62-7
C ₃ H ₄ +							
$CH_2 = C = CH_2$	9.69±0.01	269 <i>271</i>	1126 <i>1134</i>	45.6±.2	190.6±1	77PED/RYL	463-49-0
	See also: 81KIM			47.7	199.5		
CH ₃ C≡CH	10.36±0.01	283.5 285.5	1186.2 <i>1194.5</i>	44.6±.5 46.6	186.6±2 195.1	77PED/RYL	74-99-7
	See also: 81KIM	1/KAT, 84MO	M/BUR.				
\triangle	9.67±0.01	289	1210	66±0.7	277±3	77PED/RYL	2781-85-3
C ₃ H ₄ F ₃ O +							
CH ₃ C(OH)CF ₃		-3	-11				
	From proton aff	finity of CH ₃ C	OCF ₃ (RN 42	1-50-1). PA =	174.2 kcal/m	ol, 729 kJ/mol.	
C ₃ H ₄ F ₃ O ₂ +							
HC(OH)CH ₂ CF ₃	Enome mustors of	-70	-294	VI 33043 30 0V	DA _ 170 4 5	roo1/m o1	
	From proton aff 751 kJ/mol.	imiy oi ncot	701120F3 (R	* J2 U1 2-J0*7).	1.71 — 1/3.4 K	cai/IIIOI,	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mo	_	Neutral) ol kJ/mol	Neutral reference	CAS registry number					
С ₃ H ₄ F ₃ O ₂ + CF ₃ C(OH)CH ₃	From proton affin 748 kJ/mol.	-55 -231 ity of CF ₃ COOCH	₃ (RN 431-47-0). F	°A = 178.8 kca	ıl/mol,						
C ₃ H ₄ N ⁺ CH ₂ CHCNH	(7.37) From proton affin IP cited is ∆ _f H(lo	_	50±2 N (RN 107-13-1). P	209±10 A = 189.7 kca	82MCM/GOL i/mol, 794. kJ/mol.	. 74738-52-6					
С ₃ Н ₄ NO ⁺ СН ₃ СОСNН	From proton affin 751. kJ/mol (86M.A	_	RN 631-57-2). PA	= 179.5 kcal/m	nol,						
ON-H	From proton affini 848 kJ/mol.	182 761 ity of isooxazole (R	N 288-14-2). PA =	= 202.7 kcal/mo	ol,						
Cost.	From proton affini	154 643 ty of oxazole (RN 2	288-42-6). PA = 20	08.2 kcal/mol, 8	71 kJ/mol.						
С ₃ H₄NO₂ + СН ₃ СООСNН	From proton affini	138 576 ty of CH ₃ OOCCN	(86MAR/TOP). P	'A = 179.5 kca	l/mol, 751. kJ/mol.						
C ₃ H ₄ NS ⁺	From proton affini	189 791 ty of thiazole (RN 2	288-47-1). PA = 2.	13.2 kcal/mol, 8	392 kJ/mol.						
C ₃ H ₄ N ₂ +	9.25±0.01 IP from 86MAI/OI	258 1077 261 1093 .E.	44±0.5 48	185±2 201	80SAB	288-13-1					
	8.81±0.01 IP from 86MAI/OL	238 995 242 1011 .E.	35±0.5 38	145±2 161	80SAB	288-32-4					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₄ N ₃ +			·	· · · · · · · · · · · · · · · · · · ·			
L'A S	From proton affii 841 kJ/mol.	219 nity of 1,3,5-6	915 triazine (RN 2	290-87-9). PA	= 201.1 kcal/m	ol,	
C ₃ H ₄ O + CH ₃ CH = C = O	8.95 IP from 81BOC/F	181 HIR.	759	-25	-105	80DEM/WUL	6004-44-0
CH ₂ =CHCHO	10.103±0.006 See also: 80VON/	215 /BIE, 81KIM	898 I/KAT, 7 8VA	-18 N/OS K .	77	79VAJ/HAR	107-02-8
HC≡CCH ₂ OH	10.51 IP from 83KOP/N	(253) MOL, 80VO	(1060) N/BIE.	11	46	*EST	107-19-7
HC≡COCH ₃	9.48 IP from 86HOL/I	(236) LOS.	(989)	18	74	*EST	6443-91-0
Å	(9.1±0.1)	(214)	(894)	4	16	76ROD/CHA	5009-27-8
С ₃ H ₄ OS ₂ +							
s s	(9.2) IP is onset of pho	(182) toelectron b	(762) and.	-30±1	-126±5	77PED/RYL	2080-58-2
С ₃ H ₄ O ₂ + CH ₂ =CHCOOH	10.60 See also: 78VAN/	167 OSK.	699	-77	-324	80VIL/PER	79-10-7
сн ₃ сосно	9.60±0.06 See also: 81KIM/I	156 KAT.	655	-65±1	-271±5	77PED/RYL	78-98-8
00	(9.70±0.01)	(156)	(653)	−67.6±0.2	-282.9±0.8	77PED/RYL	57-57-8

LIAS ET AL.

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued								
ION Neutral	Ionization potentia	•	on) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number	
C ₃ H ₄ O ₂ S ⁺								
	(8.6) IP is onset of ph	(129) notoelectron t	(538) pand.	-70	-292	*EST	20628-59-5	
C ₃ H ₄ O ₃ +			•					
	(10.4)	(117)	(491)	-122±1	−512±4	83CAL	96-49-1	
сн ₃ сосоон	9.9 IP is onset of ph	97 notoelectron t	407 pand.	-131	-548	83TER/WEZ	127-17-3	
C ₃ H ₄ S + CH ₂ = CHCH = S	(8.3) IP from 82BOC	(223) /MOH.	(934)	32	133	*EST	53439-64-8	
CH ₃ SC≡CH	(8.3) IP is onset of ph	(247) notoelectron b	(1036) pand (81BOC/R	56 IE).	235	*EST	10152-75-7	
С ₃ н ₄ S ₃ +								
S s	(8.40)	(216)	(904)	22.4±0.5	93.8±2.2	77PED/RYL	822-38-8	
C ₃ H ₅ ⁺				····				
$CH_2CH = CH_2$	8.13 ΔH _f (Ion) from a For IP determin recommends 43	ation, see also	83KAG/UJS.	For ∆ _f H(Neu	tral), 81TSA	84HOL/LOS 2MAC). kcal/mol, 167 kJ/mo	1981-80-2 ol.	
CH ₃ CCH ₂	$\Delta_{ extsf{f}}H extsf{(Ion)}$ from a	231 appearance p	969 otential determ	inations (83B	UR/HOL).			
(△)H+	8.18±0.03 IP from 85DYK,	255 /ELL.	1069	66.9	279.9	82MCM/GOL	2417-82-5	
$C_3H_5Br^+$ $CH_3CH = CHBr$	(9.30±0.05)	(224)	(938)	10±1	41±4	77PED/RYL	41407-21-0	
CH ₂ =CHCH ₂ Br	10.06 See also: 82BIE/	243 /ASB.	1018	11.4±0.6	47.7±2.4	84TRA	106-95-6	

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	Δ _f <i>H</i> (Ic	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₃ H ₅ BrO ⁺					· · · · · · · · · · · · · · · · · · ·	The state of the s	
CH ₃ COCH ₂ Br	(9.73)	(181)	(758)	-43±2	-181±8	77PED/RYL	598-31-2
	IP from 84OLI/	GUE.					
C ₃ H ₅ Cl ⁺							
CH ₂ = CHCH ₂ CI	9.9	227	949	-1.3±0.6	-5.6±2.4	84TRA	107-05-1
	IP is onset of ph	otoelectron b	and (82BIE/A	ASB). See also:	82LEV/LIA,	81ZVE/ERM.	
C ₃ H ₅ CIN ⁺			· · · · · · · · · · · · · · · · · · ·				
CICH ₂ CH ₂ CNH		188	787				
	From proton aff	inity of CICH	₂ CH ₂ CN (RI	N 542-76-7). PA	x = 187.5 kca	l/mol,	
	784.5 kJ/mol.						
C ₃ H ₅ ClO ⁺							
CH ₃ COCH ₂ CI	9.91±0.03	(175)	(731)	-54	-225	*EST	78-95-5
	See also: 84OLI	/GUE.					
0	(10.2)	(200)	(07()	26.1	100 - 4	ggntzts (n.s./r	104 90 0
CH ₂ CI	(10.2) IP is onset of ph	(209) otoelectron b	(876) and	-26±1	-108±4	77PED/RYL	106-89-8
-							
C ₃ H ₅ ClO ₂ +							
CIH ₂ CCOOCH ₃	(10.3)	(138)	(577)	-100	-417	*EST	96-34-4
	IP is onset of ph	otoelectron b	and (85CAN/	НАМ).			
C ₃ H ₅ F +							
$CH_2 = CHCH_2F$	10.11	196	819	-37	-156	82DOL/MED	818-92-8
C ₃ H ₅ FO ⁺							
CH ₃ COCH ₂ F	(9.9)	(136)	(572)	-92	-383	*EST	430-51-3
- -	See also: 84OLI	•	•				
C ₃ H ₅ F ₂ O ⁺							
(CFH ₂) ₂ COH		52	219				
	From proton aff	inity of CFH ₂	COCFH ₂ (RI	N 453-14-5). PA	A = 187 kcal/s	mol,	
	782 kJ/mol.						
C ₃ H ₅ F ₃ O ⁺				***************************************			
CF ₃ CH ₂ OCH ₃	10.53	(35)	(147)	-208	-869	*EST	460-43-5
	IP from 83MOL	PIK.					
C ₃ H ₅ I +						·	·
CH ₂ CHCH ₂ I	9.298	238.2	996.6	23.8	99.5	84TRA	556-56-9
C ₃ H ₅ IO ⁺							
CH ₃ COCH ₂ I	(9.3)	(183)	(767)	-31±1	-130±5	77PED/RYL	3019-04-3
J	IP is onset of pho					-	

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	∆ _f H(kcal/mc	Ion) l kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry			
C ₃ H ₅ N ⁺										
C ₂ H ₅ CN	11.84±0.02 See also: 82CHE/l	285 LAP, 81K	1194 IM/KAT.	12.3±0.1	51.5±0.5	82CHU/NGU	107-12-0			
C ₂ H ₅ NC	11.2±0.1 IP from 82CHE/L	292 AP, 77RC	1222 OS/DRA.	33.8±1	141.4±4.2	77BAG/COL	624-79-3			
(E)-CH ₂ = CHCH = NH										
	(9.65) IP is onset of phot	(249) oelectron	(1043) band (82SCH/5	27 SCH).	112	*EST	73311-40-7			
н ₂ С—сн н ₂ с—и	(9.30) IP from 83DAM/E	(265) 3OC.	(1108)	50	211	*EST	6788-85-8			
	(≤9.76±0.22)	(≤300)	(≤1256)	75	314	*EST	19540-05-7			
C ₃ H ₅ NO ⁺ C ₂ H ₅ NCO	(10.1)	(196)	(819)	-37	-155	*EST	109-90-0			
021131100	IP is onset of phot		• .	-31	~133	131	109-90-0			
NCCH ₂ OCH ₃	10.75 IP from 83MOL/P	(240) IK.	(1002)	8	-35	*EST	1738-36-9			
CH ₂ CHCONH ₂	9.5 IP is onset of photo	(172) oelectron	(722) band (78VAN/	-47 OSK).	-195	*EST	79-06-1			
C ₃ H ₅ NOS ⁺										
\$ NH	(9.2) IP is onset of photo	(177) pelectron	(743) band (80AND/	-35 DEV).	-145	*EST	2682-49-7			
C ₃ H ₅ NO ₂ +										
ун	(9.6) IP is onset of photo	(139) pelectron	(582) band (80AND/1	-82 DEV).	-344	*EST	497-25-6			

Table 1. Positive Ion Table - Continued

	Table	1. Posi	tive Ion Table	e - Conti	nuea 		****
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	-	leutral) I kJ/mol	Neutral reference	CAS registry
C ₃ H ₅ NSSe ⁺							
HN S	7.3 IP is onset of pho	(155) toelectro	(650) n band (80AND,	–13 DEV).	-54	*EST	63369-86-8
C ₃ H ₅ NS ₂ ⁺					V 184 March		
HZS	≤8.25 IP from 80AND/I	(≤161) DEV, 82L	(≤672) ÆV/LIA.	-30	-124	*EST	96-53-7
C ₃ H ₅ N ₂ +					n. n		
€NH.	From proton affir PA = 223.4 kcal/r			32-4) (86MA)	U/LIE, 84FLA/	MAQ, 86TAF/AN	/).
N. NH	From proton affin PA = 212.8 kcal/r			3-1) (86MAU	/LIE, 84FLA/N	IAQ).	
C ₃ H ₅ O ⁺ C ₂ H ₅ CO	(5.7) Δ _f H(Ion) from ap affinity of CH ₃ CH IP given is Δ _f H(Io	I = CO (F	RN 6004-44-0). P				15843-24-0
сн ₂ снснон	From proton affin	153 ity of CH	642 ₂ = CHCHO (RI	N 107-02-8). I	PA = 193.9 kca	.!/mol, 811 kJ/mol.	
$C_3H_6^+$ $CH_3CH = CH_2$	9.73±0.02 See also: 81KIM/k	229 (AT.	959	4.8±0.2	20.2±0.4	77PED/RYL	115-07-1
\triangle	9.86 IP from 84LIA/BU	240 <i>244</i> JC. See a	1004 <i>1022</i> lso: 81KIM/KAT	12.7±.2 <i>16.9</i>	53.3±0.5 70.9	77PED/RYL	75-19-4
C3H6Br2 ⁺ CH2BrCHBrCH3	10.1	216	903	-17±0.2	−71±1	77PED/RYL	78-75-1
23	IP is onset of phot						· = · • •
CH ₂ BrCH ₂ CH ₂ Br	≤10.26	(≤220)	(≤919)	-17	-71	*EST	109-64-8

118 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₆ Cl ₂ +							· · · · · · · · · · · · · · · · · · ·
CH ₃ CHClCH ₂ Cl	(10.87±0.05)	(212)	(886)	-38.9±0.3	-162.6±0.3	77PED/RYL	78-87-5
CH ₂ CICH ₂ CH ₂ CI	10.85±0.05	212	887	-38±2	-160±8	77PED/RYL	142-28-9
C ₃ H ₆ FO ⁺							
CH ₃ C(OH)CH ₂ F	From proton affir 803. kJ/mol.	82 nity of CH	344 ₃ COCH ₂ F (RN	430-51-3). PA	. = 192.0 kcal/n	nol,	
C ₃ H ₆ F ₂ +							
$(CH_3)_2CF_2$	(11.42±0.02)	(138)	(578)	-125±3	-524±13	82DOL/MED	420-45-1
C ₃ H ₆ F ₃ N ⁺							
CF ₃ CH ₂ CH ₂ NH ₂	(9.3) IP from 79AUE/E	(40) BOW	(166)	-175	-731	*EST	460-39-9
CF ₃ N(CH ₃) ₂	(9.2) IP from 79AUE/E	(25) BOW.	(104)	-187	-784	*EST	677-41-8
C ₃ H ₆ N ⁺			·				
C ₂ H ₅ CNH		185	775				
	From proton affin	ity of C ₂ H	I ₅ CN (RN 107-1	12-0). PA = 19	92.6 kcai/mol, 80	06 kJ/mol.	
C ₂ H ₅ NCH	From proton affin 852. kJ/mol.	196 aity of C ₂ F	819 I _S NC (RN 624-1	79-3) (86MAU/	(KAR). PA = 2	203.7 kcal/mol,	
HCCCH ₂ NH ₃		208	870				
	From proton affin 882 kJ/mol.	ity of HC≢	ECCH ₂ NH ₂ (R	N 2450-71-7). I	PA = 210.8 kca	l/mol,	
(→) H ⁺	From proton affin PA = (212) kcal/r			utane (RN 1954	10-05-7). 10-05-7).		
C ₃ H ₆ N ₂ + (CH ₃) ₂ NC≡N	(9.0) IP is onset of phot	(241) coelectron	(1007) band.	33	139	*EST	1467-79-4
н₃С∖ ∕й	(≤9.76)	(≤267)	(≤1118)	42	176	*EST	5161-49-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₆ N ₂ O +							
HN	(8.9) IP is onset of pho	(163) toelectron b	(683) and (80AND/DI	-42 EV).	-176	*EST	120-93-4
C ₃ H ₆ N ₂ S ⁺		,,,, ,					
HN NH	8.15	210	880	22	94	*EST	96-45-7
C ₃ H ₆ N ₂ Se ⁺							
HN NH Se	(7.0) IP is onset of photon	(192) toelectron b	(803) and (80AND/DI	31 EV).	128	*EST	33251-51-3
C ₃ H ₆ O +				·			
C ₂ H ₅ CHO	9.953±0.005 See also: 81ELS/A	184.7 ALL, 85TRA	772.9 ., 81KIM/KAT, 7		-187.4±1.5	77PED/RYL	123-38-6
(CH ₃) ₂ CO	9.705 See also: 72POT/S	171.9 SOR, 81KIM	719.2 I/KAT, 77STA/W		-217.2±0.4	76CHA/ZWO	67-64-1
CH ₂ = CHCH ₂ OH	9.67±0.05 See also: 83BOM/	193 ƊAN, 82HO	809 DL/BUR.	-30±0.5	-124±2	77PED/RYL	107-18-6
(E)-CH ₃ CH = CHOH	8.64 ± 0.02 $\Delta_f H$ (Ion) from ap IP from 84TUR2.					84TUR2 OL/BUR).	57642-95-2
(Z)-CH ₃ CH = CHOH	8.70 \pm 0.03 $\Delta_{ m f}H({ m Ion})$ from ap IP from 84TUR2.					84TUR2 OL/BUR)	57642-96-3
$CH_2 = C(OH)CH_3$	8.67 ± 0.05 $\Delta_{ m f}H({ m Ion})$ from ap (See also: 82LIF2)				–176)L/LOS3.	84TUR/HAN	74324-85-9
$CH_2 = CHOCH_3$	(8.93±0.02)	(182)	(762)	-24±2	-100±7	*EST	107-25-5
	9.668±0.005 See also: 79AUE/F	203.7 3OW.	852.3	-19.2±0.1	-80.5±0.6	77PED/RYL	503-30-0

Table 1. Positive Ion Table - Continued

	Table .	Table 1. Positive Ion Table - Continued								
ION Neutral	Ionization potential eV	∆ _f H(l kcal/mol	ion) I kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
С ₃ H ₆ O+				, ,						
СНЗ	10.22±0.02 See also: 81KIM/F	213 KAT, 79AU	891 UE/BOW.	-22.6±0.1	−94.7±0.6	77PED/RYL	75-56-9			
OH	(9.10) IP from 83BOM/I	(188) DAN. See a	(785) also: 82HOL/BUR	-2 2	-93	*EST	16545-68-9			
$C_3H_6OS^+$ $CH_3C(=O)SCH_3$	(9.5) IP is onset of phot	(182)	(761) band.	-37	-156	*EST	1534-08-3			
S I O	(8.1) IP is onset of phot	(231) coelectron	(966) band (83JOR/CAF	44 R).	184	*EST	5684-29-7			
S=0	(8.5) IP is onset of phot	(184) coelectron	(769) band (83JOR/CAF	-12 R).	-51	*EST	13153-11-2			
S OH	(8.3) IP is onset of phot	(137) oelectron l	(572) band (83JOR/CAF	−55 L).	-229	*EST	50879-06-6			
С ₃ H ₆ O ₂ + С ₂ H ₅ СООН	10.525±0.003 See also: 81HOL/l	136 FIN, 81KIN	567 M/KAT.	-107±0.5	~448±2	77PED/RYL	79-09-4			
HCOOC ₂ H ₅	10.61±0.01	(153)	(637)	-92	-387	*EST	109-94-4			
СН ₃ СООСН ₃	10.27±0.02 See also: 85CAN/F	139 HAM.	581	-98.0±0.2	-410.0±0.8	77PED/RYL	79-20-9			
$CH_2 = C(OH)OCH_3$	From appearance	114 potential d	477 letermination.				4453-91-2			
$CH_3CH = C(OH)_2$	From appearance	104 potential d	437 leterminations.							
СН ₃ С(ОН)ОСН ₂	Estimated in 86BU	(127) JR/HOL.	(533)							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₆ O ₂ +				<u> </u>			
○ -0	(≤9.86)	(≤203)	(≤847)	-25	-104	*EST	4362-13-4
	(9.9) IP is onset of pho	(157) toelectron l	(658) Dand.	-71.1±0.1	−297.5±0.6	77PED/RYL	646-06-0
C ₃ H ₆ O ₂ S ⁺							
(CH ₃ O) ₂ CS	(8.7) IP is onset of pho	(121) toelectron t	(504) pand.	-80	-335	*EST	1115-13-5
C ₃ H ₆ O ₃ +							
сн ₃ осоосн ₃	(10.5) IP is onset of pho	(103) toelectron t	(432) pand.	~139	-581	*EST	616-38-6
	(10.3) IP is onset of pho	(126) toelectron t	(528) pand.	−111.4±0.1	-465.9±0.3	77PED/RYL	110-88-3
C ₃ H ₆ O ₃ P ⁺		, <u></u>					
O H	From proton affir PA = 194.0 kcal/i			habicyclo[2.2.1]]heptane (RN 2	279-53-8).	
C ₃ H ₆ S ⁺					·		
(CH ₃) ₂ CS	≤8.60±0.05	≤196	≤821	-2	-9	79JOS	4756-05-2
CH ₂ = CHCH ₂ SH	9.25	(228)	(956)	15±2	64±9	*EST	870-23-5
CH ₂ =CHSCH ₃	8.2 IP is onset of phot	(207) toelectron b	(865) and.	18±0.2	74±1	*EST	1822-74-8
\s\ \^\$\	8.69	214.9 <i>219.5</i>	899.1 <i>918.4</i>	14.5 <i>19.1</i>	60.7 <i>79.9</i>	77PED/RYL	287-27-4
\checkmark	Results from 83Bl				17.7		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(l kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₆ S +					· · · · · · · · · · · · · · · · · · ·		
S СН3	8.7 IP is onset of photon	212 toelectron	885 band. See also:	11±0.5 79AUE/BOW	46±2	77PED/RYL	1072-43-1
C ₃ H ₆ S ₂ + CH ₃ CSSCH ₃	(8.1) IP is onset of phot	(211)	(882) band.	24±3	100±13	*EST	2168-84-5
s-s	(7.6) IP is onset of phot	(170) coelectron	(712) band (80BOC/S	-5 STE).	-21	*EST	557-22-2
5 _5	8.6 IP is onset of phot	(201) coelectron	(840) pand.	2	10	*EST	4829-04-3
C ₃ H ₆ S ₃ + (CH ₃ S) ₂ CS	(7.9) IP is onset of phot	(203) oelectron l	(851) pand.	21	89	*EST	2314-48-9
s s	(7.7) IP is onset of phot	(190) oelectron t	(797) pand. (81BOC/S	13 SCH).	54	*EST	291-21-4
C-H-+							
С 3H₇ ⁺ n-С ₃ H ₇	8.09±0.01 IP from 85DYK/E D[C-H] = 100.5 kg		881 <i>896</i> so: 84SCH/HO	24.0±0.5 <i>27</i> U. ∆ _f H(Neutra	100.5±2.1 115 al) based on	85TSA	2143-61-5
iso-C ₃ H ₇	7.36±0.02	190.9 195.3	798.9 <i>817.1</i>	22.3±0.6 25.6	93.3±2.5 107.0	85TSA	19252-53-0
	Heat of formation (80BAE, 82ROS/E $\Delta_f H$ (Neutral) base 751. kJ/mol.	UF, 81TR	A/MCL). IP fr	om 85DYK/EI	.L. See also: 8		
(△)H+	From proton affini	198.5 ty of c-C ₃ I	831 H ₆ . (RN 75-19-4	l). PA = 179.8	kcal/mol, 752	kJ/mol.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₃ H ₇ Br ⁺			·				
n-C ₃ H ₇ Br	10.18±0.01	214	898	-20.2±0.1	-84.5±0.5	77PED/RYL	106-94-5
		221	926	-13	-56		
	See also: 81KIM	/KAT.					
iso-C ₃ H ₇ Br	10.07±0.01	209	873	-23.4±0.2	-98.3±0.9	80TRA	75-26-3
		215	901	-17	-70		
	See also: 81KIM	/KAT.					
C ₃ H ₇ Cl ⁺							
n-C ₃ H ₇ Cl	10.82±0.03	218	911	-31.6±0.1	-132.4±0.6	77PED/RYL	540-54-5
	See also: 81KIM	/KAT.					
iso-C ₃ H ₇ Cl	10.78±0.02	214	895	-34 6+0 1	-145.0±0.6	80TRA	75-29-6
0311/01	See also: 81KIM		0,0	31.010.1	143.010.0	001101	13-27-0
C ₃ H ₇ ClHg ⁺							· · · · · · · · · · · · · · · · · · ·
n-C ₃ H ₇ HgCl	≤10.15	≤213	≤891	-21±2	-88±8	80TEL/RAB	2440-40-6
3 / 0	IP from 81BAI/0	CHI2.				·	
iso-C ₃ H ₇ HgCl	≤9.80	≤206	≤863	-20±2	-83±8	80TEL/RAB	30615-19-1
0311/11601	IP from 81BAI/0	_	2003	ZOLZ	0310	OULLINAD	30013-17-1
C ₃ H ₇ ClO ⁺				<u> </u>			
CICH ₂ OC ₂ H ₅	10.30	(184)	(771)	-53	-223	*EST	3188-13-4
223	IP from 83MOL		(115)				7707 10 1
				·		·····	· · · · · · · · · · · · · · · · · · ·
n-C ₃ H ₇ F	(11.3)	(192)	(804)	-68±0.5	-286±2	77PED/RYL	460-13-9
• .	IP is onset of pho	otoelectron ba	and.				
iso-C ₃ H ₇ F	(11.08±0.02)	(185)	(776)	-70±0.5	-293±2	77PED/RYL	420-26-8
							
C3H7F3N+		16	45				
CF ₃ NH(CH ₃) ₂	From proton affi	-15	-65 (CHa)a (RN)	577_41_8\ ₽∧ -	= 103 8 kcal/m	NI	
	811 kJ/mol.	inty of Cr314	(C113)2 (RIV)	3// -4 1-0). 1A -	– 193.0 KCai/III	,, ,	
CF ₃ CH ₂ CH ₂ NH ₃		-20	-82				
	From proton affi 881 kJ/mol.	nity of CF ₃ C	H ₂ CH ₂ NH ₂ (RN 460-39-9).	PA = 210.6 kc	al/mol,	
CF ₃ CH ₂ NH ₂ CH ₃		-11	-47				
5 - 2 5	From proton affi 878 kJ/mol.	nity of CF ₃ CI	H ₂ NHCH ₃ (I	RN 2730-67-8).	PA = 209.8 kc	al/mol,	
1				· · · · ·			
C ₃ H ₇ I +							
C 3H7I ⁺ n-C3H7I	9.269	206 <i>211</i>	862 <i>884</i>		−32.5±1.7 −10.2±2	77PED/RYL	107-08-4

Table 1. Positive Ion Table - Continued

			ve ion table	- Contin			
ION Neutral	Ionization potential eV		on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₇ I +							
iso-C ₃ H ₇ I	9.175	202	844	-9.9±0.4	-41.6±1.7	77PED/RYL	75-30-9
	See: 82ROS/BU	<i>207</i> F, 83BRA/B	<i>865</i> AE2, 81KIM/K	<i>-4.8±0.5</i> AT.	−20.1±2		
C ₃ H ₇ N ⁺							· · · · · · · · · · · · · · · · · · ·
CH ₂ =CHCH ₂ NH ₂	8.76 See also: 79AUE	(213) E/BOW.	(893)	11	48	*EST	107-11-9
NH	(8.3) IP from 79AUE/	(215) ⁄BOW.	(898)	24±1	99±4	*EST	503-29-7
CH3	(8.7) IP from 79AUE/	(230) BOW. See a	(964) Iso: 86CAU/DI	30±0.5 V.	12 7±2	*EST	1072-44-2
н Сн ₃	(9.0) IP from 79AUE/	(230) BOW.	(961)	22±1	91±6	*EST	75-55-8
NH ₂	(8.7) IP is onset of pho	(219) otoelectron b	(916) and (81KIM/K/	18.4±0.1 AT). See also:	77.0±0.6 79AUE/BOW.	77PED/RYL	765-30-0
C ₃ H ₇ NO ⁺							
HCON(CH ₃) ₂	9.13±0.02 See also: 82BIE/	165 ASB, 81HEN	689 I/ISA.	-45.8±0.4	−191.7±1.7	77PED/RYL	68-12-2
$(CH_3)_2C = NOH$	(9.1) IP is onset of pho	(195) otoelectron b	(815) and.	-15±3	-63±12	*EST	127-06-0
CH ₃ CONHCH ₃	9.3 IP is onset of pho	158 otoelectron b	661 and.	-56	-236	*EST	79-16-3
C ₃ H ₇ NO ₂ +							
n-C ₃ H ₇ NO ₂	10.81±0.03 See also: 81KIM/	220 KAT.	919	-29.7±0.1	−124.0±0.6	77PED/RYL	108-03-2
i-C ₃ H ₇ NO ₂	10.71±0.05 See also: 81KIM/	214 KAT.	894	-33.2±0.2	-139.0±0.9	77PED/RYL	79-46-9
n-C ₃ H ₇ ONO	(10.34±0.01)	(210)	(879)	-28±1	−119±4	74BAT/CHR	543-67-9

Table 1. Positive Ion Table - Continued

		1. PUSITI		e - Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₇ NO ₂ +							
i-C ₃ H ₇ ONO	(10.23±0.01)	(204)	(854)	-32±1	-133±4	74BAT/CHR	541-42-4
H ₂ NCH ₂ CH ₂ COOH	(8.8) IP is onset of pho	(101) toelectron b	(425) pand (83CAN	-101±0.5 /HAM).	-424±2	83SKO/SAB	28854-76-4
СН ₃ NНСН ₂ СООН	(8.4) IP is onset of pho	(106) toelectron b	(443) pand (83CAN	-88±0.2 /HAM).	-367±1	78SAB/LAF	107-97-1
L-CH ₃ CH(NH ₂)COOH							
2 01301(. 112)00011	8.88 See also: 83CAN/	106 HAM.	442	-99±1	-415±4	77NGA/SAB	56-41-7
NH ₂ COOC ₂ H ₅	(10.15) IP is onset of pho	(127) toelectron b	(533) pand.	-107	-446	75BER/BOU	51-79-6
NH ₂ CH ₂ COOCH ₃	(9.1) IP is onset of pho	(121) toelectron b	(505) and (83CAN	-89 /HAM).	-373	*EST	616-34-2
C ₃ H ₇ NO ₂ S ⁺		······································			· · · · · · · · · · · · · · · · · · ·		
L-HSCH ₂ CH(NH ₂)COOH	(9.5) IP from 83CAN/F	(128) HAM.	(534)	-92	-383	*EST	3374-22-9
C ₃ H ₇ NO ₃ + n-C ₃ H ₇ ONO ₂	(11.07±0.02)	(214)	(894)	-41.6±0.3	-173.9±1.3	77PED/RYL	627-13-4
L-HOCH ₂ CH(NH ₂)COOH	I (8.7) IP is onset of pho	(67) toelectron b	(278) and(83CAN/	−134 HAM).	-561	*EST	302-84-1
C ₃ H ₇ NS ⁺					······································		
HCSN(CH ₃) ₂	(≤8.2) IP from 81HEN/I	(≤201) SA.	(≤840)	12	49	*EST	758-16-7
C ₃ H ₇ N ₂ +			<u></u>				
H ₃ N(CH ₂) ₂ CN	From proton affir 866. kJ/mol.	180 hity of H ₂ N(755 CH ₂) ₂ CN (R	N 151-18-8). PA	A = 207.0 kcal	/mol,	
CH ₃ NH ₂ CH ₂ CN	From proton affir 862. kJ/mol.	185 nity of CH ₃ N	775 NHCH ₂ CN (I	N 5616-32-0). I	PA = 206.0 kc	al/mol,	
(CH ₃) ₂ NCNH	From proton affin 858 kJ/mol.	194 nity of (CH ₃	811) ₂ NCN (RN 1	.467-79-4) (86M	AR/TOP). PA	A = 205.0 kcal/mol,	
C-H-O+							
C3H7O + n-C3H7O	(9.20±0.05)	(202)	(847)	-10	-41	82MCM/GOL	16499-18-6
i-C ₃ H ₇ O	(9.20±0.05)	(197)	(825)	-15	-63	82MCM/GOL	3958-66-5

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	-		$\Delta_{\mathbf{f}}H(Ner)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₃ H ₇ O +							
С ₂ H ₅ CHOH		131	550				
	From proton af						
	C ₃ H ₇ O ⁺ form same species. S			irance potentia	1 of 10.71 eV	is probably the	
	Jame species.	00 0150. 021111					
$(CH_3)_2COH$		117	490				
	From proton af) ₂ CO (RN 67-	$64-1$). PA = 1°	96.7 kcal/mol	, 823 kJ/mol.	
	See also: 84LOS	S/HOL.					
C ₂ H ₅ OCH ₂		(142)	(593)				
	$\Delta_{\mathbf{f}}H$ (Ion) from		otential detern	nination. See al	so: 82MAC.		
CH ₃ CHOCH ₃		134	562				
ongenoeng	From proton af			N 107-25-5). P.	A = 207.4 kc	al/mol, 868 kJ/mol.	
	See also: 82MA	_	J \			, ,	
/ <u>r</u> -o/		149	625				
(From proton aff			0). PA = 196.	9 kcal/mol, 82	24 kJ/mol.	
,		•		•			
/ o \		148	620				
(/) H+	From proton aff	finity of methy	loxirane (RN 1	75-56-9). PA =	194.7 kcal/m	iol, 815 kJ/mol.	
(CH ₃ /							
C ₃ H ₇ OS ⁺							
CH ₃ C(SH)OCH ₃	Enom muston off	125	522 (=\$)OCU_(281 21110 12 1	(02C A C/ZIX	•	
	From proton aff PA = 203.7 kcal	-	-	(N 21119-13-1)	(83CAS/KIN	<i>1</i>).	
		,,,					
CH ₃ C(OH)SCH ₃		106	443				
	From proton aff			KN 1534-08-3) ((83CAS/KIM).	
	PA = 199.7 kcal	/moi, 836. kJ/r	noi.	· · · · · · · · · · · · · · · · · · ·			
C ₃ H ₇ O ₂ +							
$C_2H_5C(OH)_2$	_	67	280				
	From proton aff	inity of C ₂ H ₅ C	COOH (RN 79	-09-4). PA =	191.8 kcal/mo	l, 802 kJ/mol.	
HC(OH)OC ₂ H ₅		80	335				
2 2	From proton aff	inity of HCOC	C ₂ H ₅ (RN 10	9-94-4). PA =	193.1 kcal/m	ol, 808 kJ/mol.	
CH.C/ODOGU		60	200				
CH ₃ C(OH)OCH ₃	From proton aff	69 inity of CHaC(288 Ooch, (rn:	79_20_9) PA	107 8 koal/m	of 828 kT/mal	
	. Tom proton and	mily or origin	20013 (101		177.0 KCai/III	, 020. M/IIIOI.	
CH(OCH ₃) ₂		97	406				4483-45-8
	From appearanc	e potential det	ermination (8	2HOL/LOS2).			

Table 1. Positive Ion Table - Continued

		1. 1 OSICIV	C TON TABLE	- Contin			
ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₃ H ₇ O ₃ ⁺ Сн ₃ OC(ОН)ОСН ₃	From proton affir 838. kJ/mol.	27 hity of CH ₃ C	111 DCOOCH ₃ (F	RN 616-38-6). 1	PA = 200.2 kc	al/moi,	
C ₃ H ₇ O ₃ P ⁺							
0 P-OCH ₃	(9.06±0.1) See also: 82WOR	(45) HAR.	(186)	-164	688	*EST	3741-36-4
C ₃ H ₇ S ⁺							
(S) H+	From proton affin (842) kJ/mol.	(179) ity of thieta	(749) ne (RN 287-27	7-4). PA = (20	01.3) kcal/mol,		
CH ₃	From proton affin (839) kJ/mol.	(176) ity of 2-met	(737) hylthiirane (R	N 1072-43-1).	PA = (200.6)	kcal/mol,	
C ₃ H ₇ S ₂ + CH ₃ C(SH)SCH ₃	From proton affin 867. kJ/mol.	182 ity of CH ₃ C	763 C(=S)SCH ₃ (I	RN 2168-84-5).	PA = 207.3 l	ccal/mol,	
C3H8+							
C ₃ H ₈	10.95±0.05 See also: 81KIM/k	227.5 CAT.	951.5	-25.0±0.1	-104.5±0.3	77PED/RYL	74-98-6
C ₃ H ₈ Cl ⁺ CH ₃ ClC ₂ H ₅	$\Delta_{ m f} H$ (Ion) from eq	(164) uilibrium co	(688)	ination (85SH	A/HOJ).		
C ₃ H ₈ Cl ₂ Si ⁺							
(CH ₃) ₂ SiCl(CH ₂ Cl)	(9.2) IP is onset of phot	(126) oelectron ba	(527) and (81ZYK/k	-86 (HV).	-361	*EST	1719-57-9
C ₃ H ₈ N ⁺							
CH ₃ CH ₂ CHNH ₂	Δ _f H(Ion) from ap	152 pearance po	636 tential measu	rements (81LC	OS/LAM).		
CH₃CHCH₂NH₂	From proton affin	(161) ity of CH ₂ =	(673) CHCH ₂ NH ₂	(RN 107-11-9)). PA = 215.6	kcal/mol,	

Table 1. Positive Ion Table - Continued

				- Contin			
ION Neutral	Ionization potentia eV	l ∆ _f H(Ic kcal/mol		∆ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₈ N ⁺							
(CH ₃) ₂ CNH ₂	Value derived fr	rom proton af	finity of CH ₂	$=C(CH_3)NH_2$	(PA = 226.3)	81LOS/LAM derived (83BUR/C kcal/mol, kcal/mol, 615 kJ/m	
CH₃CH₂NHCH₂	$\Delta_{ extsf{f}} extsf{H} extsf{(Ion)}$ from	156 appearance po	653 otential meas	rements (81L0	OS/LAM).		
CH₃CHNHCH₃	$\Delta_{\mathbf{f}}H$ (Ion) from	(147) appearance po	(615) otential measu	rements (81LC	OS/LAM).		
CH ₂ N(CH ₃) ₂	5.7 $\Delta_f H(\text{Ion})$ from (81GRI/LOS, 83				(109) OS/LAM), IP o	81GRI/LOS lerived	30208-47-0
(H+	From proton aff	(167) inity of azetid	(698) ine. (RN 503-	29-7). PA = 22	22.8 kcal/mol, !	932. kJ/mol.	
(✓NH ₂) H ⁺	From proton aff 900 kJ/mol.	169 inity of c-C ₃ H	707 1 ₅ NH ₂ (RN 70	55-30-0). PA =	215.2 kcal/mo	ol,	
CH ₃	From proton aff 927. kJ/mol.	174 inity of N-met	730 hylaziridine (RN 1072-44-2).	PA = 221.6 k	ccal/mol,	
(MCH3) H+	From proton aff (917) kJ/mol.	(168) inity of 2-meth	(704) nylaziridine (F	KN 75-55-8). PA	A = (219.2) kc	al/mol,	
C ₃ H ₈ NO ⁺ HC(OH)N(CH ₃) ₂	From proton aff	108 inity of HCON	454 N(CH ₃) ₂ (RN	68-12-2). PA =	= 211.4 kcal/m	ol, 884 kJ/mol.	,,,,,
С 3H8NO2 ⁺ i-С ₃ H ₇ ONHO	From proton affi 845 kJ/mol.	132 nity of i-C ₃ H-	552 ₇ ONO (RN 54	11-42-4). PA =	201.9 kcal/mo	ol,	· · · · · · · · · · · · · · · · · · ·
CH ₃ CH(NH ₃)COOH	From proton affi	52 nity of L-alan	216 ine (RN 56-41	-7). PA = 214	.8 kcal/mol, 89	9. kJ/mol.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₈ NO ₂ ⁺ CH ₃ NH ₂ CH ₂ COOH	From proton affir	59 nity of sarco	248 sine (RN 107-97-	1). PA = 2	18.7 kcal/mol, 915	5. kJ/mol.	
C ₃ H ₈ NO ₃ + HOCH ₂ CH(NH ₃)COOH					***************************************		
		15	62				
	From proton affii	nity of L-ser	ine (RN 302-84-1)). $PA = 21$	6.8 kcal/mol, 907.	kJ/mol.	
C ₃ H ₈ N ₂ +					······································		
H, NH	(≤7.90)	(≤216)	(≤903)	34	141	*EST	504-70-1
√N-CH ₃	(8.7) IP is onset of pho	(259) toelectron b	(1082) vand.	58	243	*EST	6794-95-2
C ₃ H ₈ N ₂ O ⁺							
(CH ₃ NH) ₂ CO	(≤9.23)	(≤155)	(≤649)	-58	-242	*EST	96-31-1
(CH ₃) ₂ NCONH ₂	(≤8.96)	(≤149)	(≤622)	-58	-242	*EST	598-94-7
C ₃ H ₈ N ₂ S ⁺		· ····					
(CH ₃ NH) ₂ CS	(≤8.08±0.03)	(≤194)	(≤814)	8	34	*EST	534-13-4
C ₃ H ₈ O ⁺							
n-C ₃ H ₇ OH	10.22±0.03	175	731	-60.9±0.2	-254.8±1.	77PED/RYL	71-23-8
•		181	756	-55.1	-230.4		
	See also: 84BOW	/MAC, 81K	M/KAT, 80BAC,	MOU.			
iso-C ₃ H ₇ OH	10.12±0.08	168	704	-65.1±0.1	-272.5±0.4	77PED/RYL	67-63-0
	2002	174	729	-59.2	-247.7	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0. 00 0
	See also: 72POT/S	SOR, 81KIN	1/KAT, 80BAC/N	10U, 84BO	W/MAC.		
C ₂ H ₅ OCH ₃	9.72	172	721	-51.7+0.1	-216.4±0.6	77PED/RYL	540-67-0
-233	IP from 81HOL/F						
CH ₂ CH ₂ CH ₂ OH ₂		171	714				
011201120112	From appearance			HOL/MOM	ſ).		
							
CH ₂ CHCH ₂ HOH ₂	_	172	721				
	From appearance						
	propose that ion i	s broton-go	und dimer of wate	r and allyl i	raulcal.		

130

Table 1. Positive Ion Table - Continued

	Table	1. Posi	tive Ion Tabl	le – Contir	nued		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₃ H ₈ O ₂ +							
(CH ₃ O) ₂ CH ₂	9.5 IP from 82HOL/I	136 LOS2. Se	568 e also: 81JOR, 8		-348.2±0.7 KIM/KAT.	77PED/RYL	109-87-5
HOCH ₂ CH ₂ OCH ₃	9.6 IP is onset of pho	134 toelectron	562 n band (83BIE/	-87 MOR, 81KIM/I	–364 KAT).	*EST	109-86-4
C ₃ H ₈ O ₃ P +							
O PCH3	From proton affir PA = 212.7 kcal/i			oxaphospholan	e (RN 3741-36	4).	
C ₃ H ₈ S ⁺							
n-C ₃ H ₇ SH	9.195±0.005 See also: 81KIM/F	195.8 KAT.	819.2	-16.2±0.1	-67.9±0.6	77PED/RYL	107-03-9
iso-C ₃ H ₇ SH	9.14 See: 81KIM/KAT	193	806	-18.2±0.1	-76.2±0.6	77PED/RYL	75-33-2
C ₂ H ₅ SCH ₃	8.54±0.1 See also: 79AUE/	183 BOW.	764	-14.2±0.3	-59.6±1.1	77PED/RYL	624-89-5
C ₃ H ₈ S ₂ +							· · · · · · · · · · · · · · · · · · ·
CH ₃ SCH ₂ SCH ₃	(8.4) IP is onset of phot	(195) oelectron	(815) band.	1±2	5±8	*EST	1618-26-4
C ₃ H ₈ Sc ⁺				····		 	
C ₂ H ₄ ScH(CH ₃)	Δ _f H(Ion) from 84	(197) TOL/BE	(824) A.				
C ₃ H ₈ Si ⁺							
$(CH_3)_2Si = CH_2$	7.71±0.03 IP from 82DYK/J	183 OS. See al	765 lso: 81KOE/MC	5 CK.	21	86WAL	4112-23-6
С 3Н9⁺ С3Н9	From proton affin	191 ity of C ₃ H	797 I ₈ . (RN 74-98-6). PA = 150 kc	cal/mol, 628 kJ/	mol.	
C ₃ H ₉ Al ⁺ (CH ₃) ₃ Al	(≤9.76)	(≤206)	(≤861)	-19±3	-81±11	77PED/RYL	75-24-1
		. /					-
C3H9As ⁺ (CH ₃)3As	(8.2) IP is onset of photo	(192) pelectron	(804) band (82ELB/I	3±2 DIE).	13±10	77PED/RYL	593-88-4
C3H9AsO3 + As(OCH3)3	(7.93)	(51)	(215)	-131±0.5	-550±2	77PED/RYL	6596-95-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
С3Н9В+					······································	*	
(CH ₃) ₃ B	(9.5)	(190)	(794)	-29±2	-123±10	77PED/RYL	593-90-8
		(196)	(820)	-23	-97		
	IP is onset of photo	toelectron b	and.				
C ₃ H ₉ BO ₃ +							
B(OCH ₃) ₃	(10.0)	(15)	(65)	-215±0.5	-900±2	77PED/RYL	121-43-7
	IP is onset of photo	toelectron b	and.				
C ₃ H ₉ BS ₃ +	**************************************			· · · · · · · · · · · · · · · · · · ·			
B(SCH ₃) ₃	(8.74)	(164)	(687)	-37±0.7	-156±3	77PED/RYL	997-49-9
						-	
C ₃ H ₉ BrPb ⁺	(0.50)	((050		5 0	045	24.10 · · · · =
(CH ₃) ₃ PbBr	(≤9.30)	(≤229)	(≤956)	14	59	85DEW/HOL	6148-48-7
C ₃ H ₉ BrSi ⁺							
(CH ₃) ₃ SiBr	10.0	(161)	(672)	-70±1	-293±4	77PED/RYL	2857-97-8
		(169)	(707)	−61±0.8	−258±4		
	IP is onset of phot	toelectron b	and.				
C ₃ H ₉ BrSn ⁺							
(CH ₃) ₃ SnBr	(9.4)	(184)	(769)	-33±1	-138±6	77PED/RYL	1066-44-0
C ₃ H ₉ ClGe ⁺							
(CH ₃) ₃ GeCl	(9.2)	(148)	(620)	-64±3	-268±13	80TEL/RAB	1529-47-1
. 3.3	IP is onset of phot	oelectron b	and. See also:	79DRA/GLA2	2.		
C ₃ H ₉ ClSi ⁺							
(CH ₃) ₃ SiCl	(10.15)	(149)	(625)	-85	-354	81BEL/PER	75-77-4
(0113/30/01	(10.10)	(156)	(654)	- <i>78</i>	-325		,,,,,,
	IP is onset of phot	. ,	• •	84SZE/BAE, 8	1ZYK/KHV.		
C ₃ H ₉ ClSn ⁺		- · · ·					
(CH ₃) ₃ SnCl	(9.90)	(185)	(773)	-43	-182	*EST	1066-45-1
(0.1.3)30.101	IP from 82LEV/L		()	.0	102	201	1000 10 1
C II EN +							
C3H9FN ⁺		07	265				
CH ₂ FCH ₂ CH ₂ NH ₃	From proton affin	87 its of CH-F	365 CH-CH-NH.	. (RNI 462 41 0)	PΔ = 2170	keal/mol	
	911. kJ/mol.	ny or Cri ₂ r	CH2CH2NH2	2 (1(1) 402-41-9)	i. IA - 217.8	kcai/iiioi,	
C ₃ H ₉ FSi ⁺							
(CH ₃) ₃ SiF	10.31±0.04	112	468	-126	-527	77MUR/BEA	420-56-4
 С ₃ Н ₉ Ga ⁺							
(CH ₃) ₃ Ga	(8.9)	(195)	(817)	-10±1	-42±6	77PED/RYL	1445-79-0
(01.3/300	IP is onset of phot			1011	1 aras Cr	, , a and / AN A A	* (10 / / - O

132 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
С 3Н9Ge ⁺ (СН ₃) ₃ Ge	•	180 754 $\Delta_f H(\text{Ion}) \text{ from appearance potential determinations. Proton affinity of } (CH_3)_2\text{Ge} = \text{CH}_2 (\text{RN 82064-99-1}) = 204.9 \text{ kcal, 857. kJ/mol.}$					
C ₃ H ₉ N ⁺ n-C ₃ H ₇ NH ₂	8.78±0.02 See also: 81KIM/F	186 KAT.	777	-16.8±0.1	-70.2±0.4	77PED/RYL	107-10-8
iso-C ₃ H ₇ NH ₂	8.72±0.03 See also: 81KIM/K	181 (AT.	758	-20.0±0.1	-83.8±0.5	77PED/RYL	75-31-0
(CH ₃)(C ₂ H ₅)NH	(8.15) IP from 79AUE/B	(177) OW.	(740)	-11±0.5	-46±2	*EST	624-78-2
(CH ₃) ₃ N	7.82±0.06 See also: 81KIM/k	175 LAT, 82E	731 LB/DIE.	-5.7±0.1	-23.7±0.6	77PED/RYL	75-50-3
C ₃ H ₉ NO ⁺ NH ₂ (CH ₂) ₃ OH	(9.0) IP is onset of phot	(156) oelectror	(650) a band.	-52	-218	*EST	156-87-6
CH ₃ OCH ₂ CH ₂ NH ₂	(8.9) IP is onset of phot	(161) oelectron	(675) band.	-44±0.7	-184±3	*EST	109-85-3
CH ₃ ON(CH ₃) ₂	≤8.78 IP from 83MOL/P	(≤194) IK. See a	(≤810) lso: 82LEV/LIA	-9	-37	*EST	5669-39-6
C ₃ H ₉ N ₃ Si ⁺ (CH ₃) ₃ SiN ₃	(≤9.7±0.1)	(≤241)	(≤1007)	17±2	71±8	80TEL/RAB	4648-54-8
С ₃ H ₉ O ⁺ n-С ₃ H ₇ OH ₂	From proton affin	114 ity of n-C	476 ₃ H ₇ OH (RN 71	-23-8). PA = 1	.90.8 kcal/mol,	798. kJ/mol.	
i-C ₃ H ₇ OH ₂	From proton affin	109 ity of i-C	457 ₃ H ₇ OH (RN 67-	63-0). PA = 19	91.2 kcal/mol,	800. kJ/mol.	
С ₂ Н ₅ ОНСН ₃	From proton affin	118 ty of C ₂ F	492 H ₅ OCH ₃ (RN 54	0-67-0). PA =	196.4 kcal/mc	ol, 822. kJ/mol.	
C3 H9OP ⁺ (CH ₃) ₃ PO	(9.5) IP is onset of photo	(115) pelectron	(482) band.	-104±2	-434±8	77PED/RYL	676-96-0
С ₃ H ₉ O ₂ + носн ₂ сн ₂ онсн ₃	From proton affini PA = 182.6 kcal/m			(RN 109-86-4)	(78ТАҒ/ТАА	.).	

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{ m f} H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₃ H ₉ O ₃ P +							
P(OCH ₃) ₃	(8.50)	(29)	(123)	-167±5	-697±20	77PED/RYL	121-45-9
	See also: 81CHA	/FIN, 82WO	R/HAR, 77C	OW/GOO.			
C ₃ H ₉ O ₃ PS +							
(CH ₃ O) ₃ PS	(≤9.16)	(≤28)	(≤117)	-183	-767	*EST	152-18-1
C ₃ H ₉ O ₄ P +						*****	
(CH ₃ O) ₃ PO	9.99	(-34)	(-143)	-265	-1107	*EST	512-56-1
	See also: 81CHA	FIN.					
С3Н9Р+							
(CH ₃) ₃ P	8.06±0.05	162	677	-24±1	-101±5	77PED/RYL	594-09-2
- 3.3	See also: 82IKU/I	KEB, 82COV	V/KEM, 82E	LB/DIE, 82BAI	N/CHA2.		
C ₃ H ₉ Pb ⁺							
(CH ₃) ₃ Pb		200	840				
. 5.5	$\Delta_{\mathbf{f}}H(Ion)$ from a	pearance po	tential deter	minations. Prot	on affinity of		
	$(CH_3)_2 Pb = CH_2$	(RN 82065-0	01-8) = 223.9	kcal/moi, 937.	kJ/mol.		
C ₃ H ₉ S ⁺							
n-C ₃ H ₇ SH ₂		158	660				
	From proton affir	nity of n-C ₃ H	1 ₇ SH (RN 10°	7-03-9). PA =	191.6 kcal/mo	l, 802 kJ/mol.	
i-C ₂ H ₇ SH ₂		153	642				
i-C ₃ H ₇ SH ₂	From proton affir			33-2). PA = 19	4.1 kcal/mol,	812 kJ/mol.	
- ' -	From proton affir	nity of i-C ₃ H	₇ SH (RN 75-	33-2). PA = 19	4.1 kcal/mol,	812 kJ/mol.	
i-C ₃ H ₇ SH ₂ CH ₃ SHC ₂ H ₅	From proton affir From proton affir	nity of i-C ₃ H	₇ SH (RN 75-: 619				
CH₃SHC₂H₅		nity of i-C ₃ H	₇ SH (RN 75-: 619				
СН ₃ SHС ₂ Н ₅	From proton affir	nity of i-C ₃ H 148 nity of CH ₃ S	₇ SH (RN 75- 619 C ₂ H ₅ (RN 62	4-89-5). PA =		ol, 851 kJ/mol.	594-10-5
CH₃SHC₂H₅		148 hity of i-C ₃ H 148 hity of CH ₃ S	₇ SH (RN 75- 619 C ₂ H ₅ (RN 62 (775)	4-89-5). PA =	203.5 kcal/mo		594-10-5
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb	From proton affir	148 hity of i-C ₃ H 148 hity of CH ₃ S	₇ SH (RN 75- 619 C ₂ H ₅ (RN 62 (775)	4-89-5). PA =	203.5 kcal/mo	ol, 851 kJ/mol.	594-10-5
C ₃ H ₉ Sb ⁺ (CH ₃) ₃ Sb	From proton affir (7.7) IP is onset of pho	148 148 aity of CH ₃ S (185) toelectron ba	7SH (RN 75-1 619 C ₂ H ₅ (RN 62 (775) and(82ELB/E	4-89-5). PA = 8±6 PIE).	203.5 kcal/mc	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb	From proton affir	148 hity of i-C ₃ H 148 hity of CH ₃ S (185) toelectron ba	7SH (RN 75-1 619 C ₂ H ₅ (RN 62 (775) and(82ELB/E	8±6 OIE).	203.5 kcal/mc 32±25	ol, 851 kJ/mol.	594-10-5 16571-41-8
C ₃ H ₉ Sb ⁺ (CH ₃) ₃ Sb	(7.7) IP is onset of photosometric (6.5)	148 hity of i-C ₃ H 148 hity of CH ₃ Se (185) toelectron be (150) (157)	7SH (RN 75-1 619 C ₂ H ₅ (RN 62 (775) and(82ELB/E (630) (656)	4-89-5). PA = 8±6 DIE). -0.8±2 6	203.5 kcal/mc 32±25 -3±8 26	ol, 851 kJ/mol. 77PED/RYL	
C ₃ H ₉ Sb ⁺ (CH ₃) ₃ Sb	From proton affir (7.7) IP is onset of pho	148 148 nity of CH ₃ Se (185) toelectron ba (150) (157) opearance po	7SH (RN 75-619) C ₂ H ₅ (RN 62) (775) and(82ELB/E) (630) (656) tential deterr	4-89-5). PA = 8±6 DIE). -0.8±2 6 minations (84SZ	203.5 kcal/mc 32±25 -3±8 26	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometric (6.5) $\Delta_f H(\text{Ion}) \text{ from ap}$	148 148 nity of CH ₃ Se (185) toelectron ba (150) (157) opearance po	7SH (RN 75-619) C ₂ H ₅ (RN 62) (775) and(82ELB/E) (630) (656) tential deterr	4-89-5). PA = 8±6 DIE). -0.8±2 6 minations (84SZ	203.5 kcal/mc 32±25 -3±8 26	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometry (6.5) $\Delta_f H(\text{Ion})$ from ap 84SZE/BAE2). If	148 148 149 of CH ₃ Se (185) toelectron ba (150) (157) opearance po P is $\Delta_f H$ (Ion	$_{7}$ SH (RN 75-1619) C_{2} H $_{5}$ (RN 62) (775) C_{2} H $_{3}$ (630) (636) C_{3} tential deterrible C_{4}	4-89-5). PA = 8±6 DIE). -0.8±2 6 minations (84SZ	203.5 kcal/mc 32±25 -3±8 26	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometric (6.5) $\Delta_f H(\text{Ion})$ from an 84SZE/BAE2). II	148 148 149 of CH ₃ Se (185) toelectron be (150) (157) opearance po P is $\Delta_f H$ (Ion (181)	$_{7}$ SH (RN 75-1619) $_{2}$ H ₅ (RN 62) (775) $_{3}$ And(82ELB/E) (630) (656) $_{4}$ tential determination of the second of the	8±6 PIE). -0.8±2 6 minations (84S2 al).	203.5 kcal/mc 32±25 -3±8 26 ZE/BAE,	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometry (6.5) $\Delta_f H(\text{Ion})$ from ap 84SZE/BAE2). If	148 148 149 of CH ₃ Se (185) toelectron ba (150) (157) opearance po P is $\Delta_f H$ (Ion (181) opearance po	$_{7}$ SH (RN 75-619) $_{2}$ H ₅ (RN 62) $_{2}$ H ₅ (RN 62) $_{3}$ And (82ELB/E) $_{4}$ (630) $_{5}$ (656) $_{5}$ Atential determination (759) $_{5}$ Atential determination (759)	8±6 DIE). -0.8±2 6 ninations (84S2 al).	203.5 kcal/mc 32±25 -3±8 26 CE/BAE,	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometric (6.5) $\Delta_f H(\text{Ion})$ from ap 84SZE/BAE2). If (7.10±0.05) $\Delta_f H(\text{Ion})$ from ap	148 148 149 of CH ₃ Se (185) toelectron ba (150) (157) opearance po P is $\Delta_f H$ (Ion (181) opearance po	$_{7}$ SH (RN 75-619) $_{2}$ H ₅ (RN 62) $_{2}$ H ₅ (RN 62) $_{3}$ And (82ELB/E) $_{4}$ (630) $_{5}$ (656) $_{5}$ Atential determination (759) $_{5}$ Atential determination (759)	8±6 DIE). -0.8±2 6 ninations (84S2 al).	203.5 kcal/mc 32±25 -3±8 26 CE/BAE,	ol, 851 kJ/mol. 77PED/RYL	
CH ₃ SHC ₂ H ₅ C ₃ H ₉ Sb + (CH ₃) ₃ Sb C ₃ H ₉ Si + (CH ₃) ₃ Si	From proton affir (7.7) IP is onset of photosometric (6.5) $\Delta_f H(\text{Ion})$ from ap 84SZE/BAE2). If (7.10±0.05) $\Delta_f H(\text{Ion})$ from ap	148 148 149 of CH ₃ Se (185) toelectron ba (150) (157) opearance po P is $\Delta_f H$ (Ion (181) opearance po	$_{7}$ SH (RN 75-619) $_{2}$ H ₅ (RN 62) $_{2}$ H ₅ (RN 62) $_{3}$ And (82ELB/E) $_{4}$ (630) $_{5}$ (656) $_{5}$ Atential determination (759) $_{5}$ Atential determination (759)	8±6 DIE). -0.8±2 6 ninations (84S2 al).	203.5 kcal/mc 32±25 -3±8 26 CE/BAE,	ol, 851 kJ/mol. 77PED/RYL	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₃ H ₁₀ N +							
n-C ₃ H ₇ NH ₃		131	548				
	From proton affi	inity of n-C ₃ F	H ₇ NH ₂ (RN 1	07-10-8). PA =	= 217.9 kcal/n	nol, 912. kJ/mol.	
i-C ₃ H ₇ NH ₃		127	531				
	From proton affi	inity of i-C ₃ H	1 ₇ NH ₂ (RN 75	-31-0). PA =	218.6 kcai/mo	l, 915. kJ/mol.	
$(CH_3)(C_2H_5)NH_2$		132	552				
	From proton affi 932. kJ/mol.	inity of (CH ₃))(C ₂ H ₅)NH (RN 624-78-2).	PA = 222.8 k	ccal/mol,	
(CH ₃) ₃ NH		135	564				
	From proton affi	inity of (CH ₃)) ₃ N (RN 75-50	9-3). PA = 225	5.1 kcai/mol, 9	42. kJ/mol.	
C ₃ H ₁₀ NO +							
$NH_3(CH_2)_3OH$		85	356				
	From proton affi 956.5 kJ/mol.	inity of NH ₂ (CH ₂) ₃ OH (R	N 156-87-6). P.	A = 228.6 kca	al/mol,	
CH3OCH2CH2NH3		98	412				
	From proton affi 934 kJ/mol.	inity of CH ₃ C	OCH ₂ CH ₂ NH	2 (RN 109-85-3). PA = 223.	3 kcal/mol,	
C ₃ H ₁₀ N ₂ +							
$(CH_3)_2NNH(CH_3)$				21	87	69BEN/CRU	1741-01-1
	A value of 7.93 e				-		
	Reported values	-		-			
	usually significan change associated			c value decause	of the large [geometry	
C ₃ H ₁₀ OP ⁺							
(CH ₃) ₃ POH		124	518				
` 5/5	From proton affi			-96-0) (84BOL	/HOU). PA	= 217.1 kcal/mol,	
	908. kJ/mol.						
C ₃ H ₁₀ O ₃ P ⁺							
$HP(OCH_3)_3$		-22	-92				
	From proton affi	nity of P(OC	H ₃) ₃ (RN 121	45-9). PA = 2	220.6 kcal/mol	, 923. kJ/mol.	
C ₃ H ₁₀ O ₃ PS +							
(CH ₃ O) ₃ PSH		-32	-134				
	From proton affi	nity of (CH ₃ 0	O) ₃ PS (RN 15	2-18-1). PA =	214.5 kcal/mo	ol, 897. kJ/mol.	
C ₃ H ₁₀ O ₄ P ⁺							
(CH ₃ O) ₃ POH		-111	-464				
	From proton affi	nity of (CH ₃ C	O) ₃ PO (RN 51	2-56-1). PA =	212.0 kcal/m	ol, 887. kJ/mol.	
C ₃ H ₁₀ P +							
(CH ₃) ₃ PH		114	479				
	From proton affi	nity of (CH ₃)	₃ P (RN 594-0	P-2). PA = 227	7.1 kcal/mol, 9	50. kJ/mol.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃ H ₁₀ Si ⁺ (CH ₃) ₃ SiH	9.9 IP from 81HOT.	189	792	−39±1	~163±4	86DON/WAL	993-07-7
C ₃ H ₁₀ Sn + (CH ₃) ₃ SnH	(≤9.9)	(≤228)	(≤955)	0±2	0±8	80TEL/RAB	1631-73-8
C ₃ H ₁₁ N ₂ + NH ₂ (CH ₂) ₃ NH ₃	From proton affii 979. kJ/mol.	124 nity of NH ₂ (518 (CH ₂) ₃ NH ₂	(RN 109-76-2).	PA = 234.1 k	cal/mol,	
C ₃ H ₁₂ BN ⁺ (CH ₃) ₃ NBH ₃	(9.28±0.2)	(194) <i>(203)</i>	(810) <i>(848)</i>	-20 -11	-85 -47	82TN270	75-22-9
C ₃ H ₁₂ B ₃ N ₃ + CH ₃ CH ₃	(9.1±0.15)	(-13)	(-55)	-223	-933	70FIN/GAR	1004-35-9
HB N CH3	(9.07)	(-8)	(-33)	-217±1	−908±4	80TEL/RAB	5314-85-2
C3IN+ IC=CCN	(10.18±0.02) See also: 84KUH/	(347) MAI.	(1451)	112±10	469±40	79BUC/VOG	2003-32-9
C ₃ La ⁺ LaC ₃	(6.8±0.5)	(336)	(1404)	179±1	748±1	81GIN/PEL	12602-63-0
C ₃ N ₂ O ⁺ (CN) ₂ CO	(≤12.56)	(≤349)	(≤1459)	59±1	247±6	77PED/RYL	1115-12-4
C ₃ O ₂ + C ₃ O ₂	10.60	222	929	-22±0.5	-94±2	71JANAF	504-64-3
C ₄ ⁺	(12.6)	(522)	(2187)	232±8	971±33	71JANAF	12184-80-4
C ₄ Cl ₂ Hg ⁺ (ClC≡C) ₂ Hg	9.58±0.02 IP is onset of phot	(373)	(1559) and (81FUR/	152 PIA).	635	*EST	64771-59-1

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	- Continued		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C ₄ Cl ₂ O ₂ +	(9.5) IP is onset of phot	(204) (856) coelectron band (81BOC/R	−14 −61 IE).	*EST	2892-63-9
C ₄ F ₂ O ₃ +		·			
0 F	(11.45) IP from 81ASB/SV	(79) (330) VE.	-185 -775	*EST	669-78-3
C ₄ F ₄ O ₂ +					······································
F O O	10.05±0.1 IP is onset of phot	(47) (199) oelectron band (85GLE/So	–184 –771 CH, 85ALB/HEL).	*EST	663-45-6
$C_4F_6^+$ $CF_2 = CFCF = CF_2$	(9.5)	(-5) (-21)	-224 -938	68LAC/SKI	685-63-2
C ₄ F ₆ O + (CF ₃) ₂ C=C=O	(10.67) IP is onset of phot	(–95) (–398) oelectron band (83GLE/SA	−341 −1427 AA).	*EST	
F F	(10.7) IP is onset of phot	(-30) (-124) oelectron band (85GLE/S0	−276 −1157 CH).	*EST	699-35-4
$C_4F_6S^+$ $(CF_3)_2C=C=S$		(-71) (-295) oelectron band (83GLE/SA	−287 −1202 AA).	*EST	7445-60-5
C ₄ F ₆ S ₂ +					
F ₃ C S	9.6 IP is onset of phot	(37) (154) oelectron band (83SCH/SC	–185 –772 H, 83JIA/MOH).	*EST	360-91-8
C ₄ F ₈ ⁺ (Z)-2-C ₄ F ₈	(11.1) IP is onset of photo	(-126) (-526) pelectron band.	-382 -1597	70BEN/O'N	1516-65-0
(E)-2-C ₄ F ₈	(11.0) IP is onset of photo	(-129) (-540) oelectron band.	-383 -1601	70BEN/O'N	1516-64-9

Table 1. Positive Ion Table - Continued

1able 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/moi		Neutral reference	CAS registry number				
C ₄ FeI ₂ O ₄ + Fe(CO) ₄ I ₂	(8.4) IP is onset of pho	(42) stoelectron b	(174) eand.	-152±2	-636±9	82PIL/SKI	14911-55-8				
C ₄ HCl ⁺ CH=CC=CCl	(9.72±0.02)	(345)	(1443)	121±0.5	505±2	*EST	6089-44-7				
C ₄ HC ₀ O ₄ + HC ₀ (CO) ₄	(8.2) IP is onset of pho	(53) toelectron b	(222) and.	-136±0.5	-569±2	77PED/RYL	16842-03-8				
C ₄ HF ₇ N ⁺ n-C ₃ F ₇ CNH	From proton affin	-110 nity of n-C ₃ I	-460 ⁷ 7CN (RN 37	5-00-8). PA =	167.4 kcal/mo) l,					
С ₄ НF ₉ О ⁺ (CF ₃) ₃ СОН	12.25 IP from 83KOP/N	(-266) AOL.	(-1115)	(-549)	(-2297)	*EST	2378-02-1				
C ₄ HNiO ₄ ⁺ HNi(CO) ₄	From proton affir	(43) nity of Ni(CO	(179) D) ₄ (RN 1346	3-39-3). PA =	(180) kcal/mo	ıl, (753) kJ/mol.					
C ₄ H ₂ + HC≡CC≡CH	10.180±0.003 See also: 80MAI/	340 THO.	1422	105	440	85STE/FAH	460-12-8				
C ₄ H ₂ Br ₂ S ⁺							*				
Br S Br	(≤8.49)	(≤233)	(≤976)	38	157	*EST	3141-27-3				
Br Br	(≤8.94)	(≤246)	(≤1028)	39	165	*EST	3141-26-2				
C ₄ H ₂ Cl ₂ S ⁺											
CI S CI	(8.60±0.05)	(213)	(890)	14	60	*EST	3172-52-9				
C ₄ H ₂ F ₄ + CF ₂ CHCHCF ₂	(10.6±0.1)	(82)	(343)	-163	-680	*EST	407-70-5				

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			ΔεHΩ	Neutral)	Neutral	ıtral CAS registry	
Neutral	eV		ol kJ/mol		ol kJ/mol	reference	number	
C ₄ H ₃ BrS ⁺								
∠ _S B _r	8.6 IP is onset of pho	(231) toelectroi	(966) 1 band.	33	136	*EST	1003-09-4	
S Br	8.812±0.005	(236)	(986)	33	136	*EST	872-31-1	
C ₄ H ₃ CIS ⁺								
C _S C _I	8.89±0.05	(225)	(941)	20	83	*EST	96-43-5	
C ₄ H ₃ F ₉ N ⁺ (CF ₃) ₃ CNH ₃	From proton affir (801.) kJ/mol.	(-329) nity of (CF	(-1375) ? ₃) ₃ CNH ₂ (RN	2809-92-9). P	A = (191.5) kc	al/mol,		
C ₄ H ₃ IS ⁺				. protesta				
(s)_I	≤8.46	(≤242)	(≤1010)	46	194	*EST	3437-95-4	
√ _S ∫ [™]	(≤8.46)	(≤241)	(≤1010)	46	194	*EST	10486-61-0	
C4H3N+ CH ₂ =C=CHCN	(10.1) IP is onset of phot	(259)	(1084) band.	26	110	*EST	1001-56-5	
CH ₃ C≡CCN	10.78±0.02	(329)	(1378)	81±0.7	338±3	*EST	13752-78-8	
C ₄ H ₃ NO ₃ +							10	
C ₄ H ₃ NO ₃ +	(≤9.75±0.05)	(≤218)	(≤910)	-7	-31	*EST	609-39-2	

Table 1. Positive Ion Table - Continued

ION	Ionization potential			$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₄ H ₂ F ₉ N ⁺ (CF ₃) ₃ CNH ₂	(10.4) IP from 79AUE/	(-263) BOW.	(-1100)	-503	-2104	*EST	2809-92-9
C ₄ H ₂ F ₉ O + (CF ₃) ₃ COH ₂	From proton affi 682. kJ/mol.	-346 nity of (CF ₃	–1449) ₃ COH (RN	2378-02-1). PA	= 163.1 kcal/	mol,	
C ₄ H ₂ I ₂ S ⁺	· · · · · · · · · · · · · · · · · · ·						
1 _2 _1	≤8.28	(≤256)	(≤1072)	65	273	*EST	625-88-7
	(≤8.45)	(≤263)	(≤1099)	68	284	*EST	19259-08-6
C ₄ H ₂ N ₂ + (Z)-CH(CN)CH(CN)	(11.15)	(338)	(1416)	81.3±0.5	340.2±1.9	77PED/RYL	928-53-0
(E)-CH(CN)CH(CN)	11.16±0.03	338	1417	81	340	82CHU/NGU	764-42-1
C ₄ H ₂ O ₂ +	(≤9.79)	(≤239)	(≤1002)	14	57	*EST	32936-74-6
C ₄ H ₂ O ₃ +	(10.8) IP is onset of pho	(154) toelectron b	(644) and (81KIM/	-95±1 KAT).	-398±5	77PED/RYL	108-31-6
С ₄ H ₃ + нссссн ₂	From proton affii PA = 180 kcal/m			60-12-8) (87DE	A/MAU).		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
$C_4H_4^+$ $CH_2=C=C=CH_2$	(9.15) See also: 85DEV	(294) W/TIE.	(1232)	83	349	82ROS/DAN	2873-50-9
CH ₂ =CHC≢CH	9.58±0.02	(294)	(1229)	73	305	69STU/WES	689-97-4
CH ₂	8.15 Heat of formation $\Delta_f H$ (Neutral) is				423 prements (82R	87STA/NOR OS/DAN);	4095-06-1
C ₄ H ₄ N ₂ + NCCH ₂ CH ₂ CN	12.1±0.25 IP from 82CHE,	329 /LAP.	1377	50.1±0.1	209.7±0.6	77PED/RYL	110-61-2
	(8.64)	(266)	(1112)	66.5±0.2	278.3±1	77PED/RYL	289-80-5
© _N	9.23 See also: 83PIA	260 /KEL.	1087	47.0±0.2	196.6±0.9	77PED/RYL	289-95-2
	9.29±0.01 See also: 83PIA/	261 KEL.	1092	46.8±0.3	196.0±1.3	77PED/RYL	290-37-9
C ₄ H ₄ N ₂ O +	(8.89±0.02)	(252)	(1056)	47	198	*EST	1457-42-7
Ozo S	(8.80±0.02)	(231)	(966)	28	117	*EST	17043-94-6
Z O	(10.06±0.05)	(221)	(924)	-11	-47	*EST	557-01-7

Table 1. Positive Ion Table - Continued

	rabic	1. 1 0510	ive ion labi	e - Contin	ucu		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₄ N ₂ O ⁺			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
NO NO	(9.0) IP is onset of pho	(235) toelectron	(984) band.	28	116	*EST	2423-65-6
C ₄ H ₄ N ₂ O ₂ +					****	1844-04-0	
O H O	(9.2) IP is onset of pho	(140) toelectron	(585) band. See also	–72±0.5 : 81YU/ODO.	-303±2	77NAB/SAB	66-22-8
NO 2	(9.30±0.05)	(237)	(990)	23	93	*EST	5919-26-6
C ₄ H ₄ N ₂ O ₃ +							
O NH O	(10.20)	(103)	(430)	-132	-554	72DOM	67-52-7
C ₄ H ₄ O + CH ₃ CH = C = C = O	8.68±0.05 IP from 83TER/H	(215) OL. See al	(900) lso: 79HOL/TF	15 ER, 81MOH/HI	63 R.	*EST	78957-08-1
(CH2)2C = C = O	From appearance	198 potential d	828 letermination ((82BUR/HOL)			
$CH_2 = CHCH = C = O$	8.29±0.05 IP from 79TER/B	(195) UR. See al	(817) so: 82BUR/H0	4 DL, 81MOH/H1	17 R, 79HOL/TI	*EST ER, 85MCN/SUF, 83	50888-73-8 IBOC/HIR.
CH ₂ = C = CHCHO	(9.5) Δ _f H(Ion) from 82	(236) BUR/HOI	(987) IP from 79H	18 IOL/TER.	75	*EST	53268-92-1
HC≅CCH ₂ CHO	(9.85) IP estimated in 82	(247) BUR/HOI	(1034) 	20	84	*EST	52844-23-2
CH ₃ C≡CCHO	10.20±0.02 IP from 79CAR/M	(253) IOU. See a	(1057) lso: 79TER/BU	17 JR, 82BUR/HO	73 DL, 79HOL/T	*EST ER.	1119-19-3
CH ₃ COC≡CH	10.17±0.02 IP from 79CAR/M	(250.18) IOU. See a	(1046.75) lso: 79TER/BU	15.6±.2 JR, 82BUR/HC	65.5±1 DL, 79HOL/T	85FUC ER.	1423-60-5
CH ₂ =C=C=CHOH	From appearance	222 potential d	931 etermination(8	32BUR/HOL).			

Table 1. Positive Ion Table - Continued

	Table.	L. FUSIL	ive ion Table	- Contin	ilueu		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) ol kJ/mol	Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₄ O ⁺ HC≅CCH = CHOH	From appearance	220 potential	922 determination(82BUR/HOL).		59095-55-5
CH ₂ =C(OH)C≡CH	(8.92) Δ _f H(Ion) from ap See also: 82BUR/I			20±2 mination (86T	83±7 UR/HAV2).	86TUR/HAV	2
HC≅COCH = CH ₂	9.40 IP from 82BUR/H	(273) OL. See a	(1142) also: 79HOL/TI	56 BR.	235	*EST	
	8.883±0.003 See also: 82BUR/I 80TED/VID, 83B0				-34.8±0.4 AL/KLA, 81KI	77PED/RYL M/KAT, 82BIE/A	110-00-9 SB,
0	(9.3) From appearance in IP from 79HOL/T		(933) determination;	8 kinetic energy	33 release = 0.19 e	*EST V (82BUR/HOL).	32264-87-2
H ₃ C 0	9.15±0.05 See also: 79TER/E	(240) SUR, 82B	(1004) UR/HOL, 79HO	29 DL/TER.	121	*EST	4883-96-9
c=o	(8.78) IP from 81BOC/H	(222) IR.	(931)	20	84	*EST	
СНО	(9.6) IP from 79HOL/T	(235) ER.	(983)	14	58	*EST	36998-21-7
C ₄ H ₄ O ₂ + HC≅CCOOCH ₃	(10.3) IP is onset of photo	(214) Delectron	(894) band (82BIE/A	-24 SB).	-100	*EST	922-67-8
$\binom{\circ}{\circ}$	(7.75±0.02)	(152)	(633)	-27±1	~115±5	*EST	290-67-5

Table 1. Positive Ion Table - Continued

ION	Ionigotion activiti	A 77/7		A TEXA!		No	CAS
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₄ O ₂ +							
	(9.4) IP is onset of photon	(178) toelectron ba	(745) and.	-39	-163	*EST	33689-28-0
H ₂ C 0	(9.6±0.02) IP from 84OLI/FI	(176) LE.	(736)	-45.5±0.1	-190.3±0.4	77PED/RYL	674-82-8
C ₄ H ₄ O ₃ +					- 		
C ₄ H ₄ O ₃ +	(10.6) IP is onset of phot	(119) oelectron ba	(498) and (81KIM/KAT	-125).	-525	77PED/RYL	108-30-5
C ₄ H ₄ O ₄ +				 			
(E)-HO ₂ CCH = CHCO ₂ H	(10.7) IP is onset of phot	(85) oelectron ba	• ,	−162±0.6	-680±3	77PED/RYL	110-17-8
C ₄ H ₄ S ⁺				· · · · · · · · · · · · · · · · · · ·			
s	8.87±0.04 See also: 80TED/\	232 /ID, 83BOC	971 C/ROT, 81GAL/K	27.5±0.1 LA, 82KL	115.0±0.4 A/SAB.	81KUD/KUD3	110-02-1
C ₄ H ₄ S ₂ +						 	
(s)	(7.7) IP is onset of photo		(976) and.	56±3	233±13	*EST	290-79-9
C ₄ H ₅ ⁺		(0.44)	(4000)				
$CH_2 = CCH = CH_2$	From appearance j		(1029) asurements (84L)	OS/HOL).			62698-26-4
CH≡CCHCH ₃	7.97 From appearance p	257 potential me	1074 asurements (84L)	73 OS/HOL).	305	82MCM/GOL	3315-42-2
CH ₃ C≡CCH ₂	7.95 From appearance p	252 potential me		69 OS/HOL).	289	82MCM/GOL	64235-83-2

Table 1. Positive Ion Table - Continued

Neutral	Ionization potential eV	•	(Ion) ol kJ/mol	∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₅ +			***************************************				
CH ₃	From appearanc	(237) re potential	(992) I measurements	(84LOS/HOL)).		60824-24-0
C ₄ H ₅ ClO ⁺							
(E)-CH ₃ CH = CHCOCl	(9.4) IP is onset of pho	(216) otoelectroi	(906) n band (81MOH	-0.2 /HIR).	-1	*EST	625-35-4
C ₄ H ₅ F ₃ O ₂ + CF ₃ COOC ₂ H ₅	(11.0) IP is onset of pho	(5)	(19) 1 band.	-249	-1042	*EST	383-63-1
С ₄ H ₅ F ₄ O ₂ + СF ₃ C(ОН)ОСН ₂ СН ₂ F							
	From proton affi 747. kJ/mol.	-105 inity of CF	-441 ₃ СООСН ₂ СН ₂	F (RN 1683-88	-1). PA = 178	.6 kcal/mol,	
C ₄ H ₅ F ₆ O ⁺ (CF ₃) ₂ C(CH ₃)OH ₂		-192	-805		e e e e e e e e e e e e e e e e e e e		***
	From proton affi 699. kJ/mol.	inity of (CF	F ₃) ₂ C(CH ₃)OH	(RN 1515-14-6	6). $PA = 167.0$	kcal/mol,	
C ₄ H _E N ⁺						TO A SELECTION OF THE SECOND O	
$C_4H_5N^+$ $CH_2 = CHCH_2CN$	10.20±0.05 See also: 840HN	273 V/MAT.	1140	37±0.5	156±2	77PED/RYL	109-75-1
			1140 1128	37±0.5	156±2 130	Margarian and American and Amer	109-75-1 126-98-7
CH ₂ = CHCH ₂ CN	See also: 840HN	I/MAT.				77PED/RYL	
$CH_2 = CHCH_2CN$ $CH_2C(CH_3)CN$	See also: 840HN	269 (≤272) 215.2	1128 (≤1137) 900.2	31 36 25.9±0.1	130 150 108.3±0.4	77PED/RYL 80WIL/BAE	126-98-7
CH ₂ C(CH ₃)CN	See also: 84OHN 10.34 (≤10.23±0.05) 8.208±0.005	269 (≤272) 215.2	1128 (≤1137) 900.2	31 36 25.9±0.1	130 150 108.3±0.4	77PED/RYL 80WIL/BAE 82CHU/NGU	126-98-7 627-26-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io		Δ _f H(Ne	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₄ H ₅ N ₂ ⁺	From proton affir	216 nity of pyrida	906 zine (RN 289	-80-5). PA =	215.7 kcal/mo	ol, 902 kJ/mol.	
	From proton affir 882. kJ/mol.	202 nity of pyrimi	846 idine (RN 289	9-95-2). PA =	210.8 kcal/m	ol,	
	From proton affin	203 hity of pyrazi	852 ne (RN 290-3	7-9). PA = 20	9.0 kcal/mol,	874. kJ/mol.	
C ₄ H ₅ N ₂ O +							
O NH	From proton affin ~870 kJ/mol.	146 aity of 2(1H)	613 -pyrimidinon	e (RN 557-01-7	7). PA = ~20	98 kcal/mol,	
C ₄ H ₅ N ₂ O ₂ +							
(I NH) H+	From proton affin	(85) hity of uracil	(357) (RN 66-22-8)	. PA = ~208 k	scal/mol, ~870) kJ/mol.	
C ₄ H ₅ N ₂ S ₂ +		<u></u>					
(NH S) H+	From proton affin ~907 kJ/mol.	(200) lity of dithio	(836) ıracil (RN 20	01-93-6). PA :	= ~217 kcal/n	nol,	
C ₄ H ₅ N ₃ +				 			
N CH3	(≤9.7) IP from 83GLE/S		(≤1311)	90	375	*EST	77202-08-5
Z C L S	(9.1) IP is onset of phot		(1258) and (83GLE/S	91 SPA).	380	*EST	86402-30-4

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	∆ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number		
C ₄ H ₅ N ₃ +							·		
ON CH3	(8.6) IP is onset of pho	(268) toelectron t	(1123) pand.	70	293	*EST	24108-33-6		
H ₃ C N	(≤9.31)	(≤285)	(≤1191)	70	293	*EST	21134-95-2		
H ₃ C N	(≤9.35)	(≤286)	(≤1195)	70	293	*EST	21134-96-3		
C ₄ H ₅ N ₃ O +									
O NHZ	(8.45)	(181)	(756)	-14±2	−59±10	80SAB2	71-30-7		
C ₄ H ₅ O ⁺	From proton affir	165 hity of furan	691 (RN 110-00-9). PA = 192.21	scal/mol, 804.	kJ/mol.			
$C_4H_5O_2^+$ $CH_3C(OH) = CHCO$	From appearance	110 potential of	461 f 10.24 eV in C	:H ₃ COCH ₂ CO	СН ₃ .		43115-54-4		
C ₄ H ₅ S +									
() H ₂	From proton affin PA = 195.8 kcal/r			02-1) (86MAU,	84LIA/LIE).				
$\frac{C_4H_6^+}{CH_2=C=CHCH_3}$	(9.03)	(247)	(1033)	38.8±0.1	162.3±0.5	77PED/RYL	590-19-2		

Table 1. Positive Ion Table - Continued

····	Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₄ H ₆ + CH ₃ C≡CCH ₃	9.562±0.005	255.2	1068	34.7±0.2	145.4±0.8	77PED/RYL	503-17-3				
	9.43	255	1067	37.5±0.4	156.7±1.5	77PED/RYL	822-35-5				
СН2	(9.57) See also: 81KIM/F	(269) KAT.	(1124)	48±0.5	201±2	77PED/RYL	6142-73-0				
\Diamond	8.700±0.005 IP from 83BOM/I	253 DAN3.	1057	51.9±0.2	217.2±0.8	77PED/RYL	157-33-5				
$C_4H_6Cl_2Si^+$ $CH_2 = CHSiCl_2CH = CH_2$											
	(≤10.8) IP from 81KHV/Z	(≤192) CYK.	(≤802)	-57	-240	*EST	1745-72-8				
CISICI	≤9.65 See also: 81KHV/2	-	(≤598)	-80	-333	*EST	872-46-8				
C ₄ H ₆ F ₃ O ₂ + CF ₃ C(OH)OC ₂ H ₅	From proton affin 772. kJ/mol.	-68 ity of CF ₃ C	-284 OOC ₂ H ₅ (RN	383-63-1). PA	. = 184.6 kcal/	mol,					
C ₄ H ₆ N ⁺ (CH ₃) ₂ CCN	(8.2) IP is onset of photo	(229) oelectron ba	(960) and.	40.3±2.2	168.6±9.2	82MCM/GOL	3225-31-8				
HN H2	From proton affini 868 kJ/mol.	184 ity of pyrrol	769 e (RN 109-97-7). PA = 207.6	kcal/mol,						
(CN) H+	From proton affini 817.5 kJ/mol.	214 ity of cyclop	895 ropylcarbonitri	le (RN 5500-21	I-0). PA = 19	5.4 kcal/mol,					

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ive Ion Tabl	e - Contin	iued		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) I kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
С ₄ H ₆ NO ₂ ⁺ (NCCOOC ₂ H ₅)Н	From proton affin	134 nity of NCC	562 COOC ₂ H ₅ (RN	I 623-49-4). PA	A = 179.5 kcal/	mol,	
C ₄ H ₆ N ₂ +	(≤8.66)	≤236	≤986	36	150	*EST	616-47-7
H3C N	(≤8.50)	≤225	≤942	29	122	*EST	693-98-1
C ₄ H ₆ N ₂ S + CH ₃	≤9.1 IP from 83GUI/PI	(≤265) FI.	(≤1107)	55	229	*EST	
CH ₃ N—N SH	IP from 83GUI/PI	(≤251) ₹I.	(≤1049)	52	219	*EST	79208-64-3
C4H6N3O+ NH2 NH2 N H+	From proton affin 936. kJ/mol.	128 ity of cytos	535 sine (RN 71-30-	7). PA = 223.	8 kcal/mol,		
$C_4H_6O^+$ $C_2H_5CH=C=O$	8.80 IP from 81BOC/H	(171) IR.	(714)	-32	-135	*EST	20334-52-5
$(CH_3)_2C = C = O$	(8.45) IP from 81BOC/H	(163) IR.	(681)	-32±1	-134±4	80DEM/WUL	598-26-5
(E)-CH ₃ CH = CHCHO	9.73±0.01 See also: 78VAN/0	200 OSK.	835	-24.8±0.4	-103.6±1.5	79VAJ/HAR	4170-30-3
$CH_2 = C(CH_3)CHO$	(9.86) IP from 86HOL/L	(199) OS.	(834)	-28	-117	79VAJ/HAR	78-85-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₆ O +							
CH ₂ =CHCOCH ₃	9.64 See also: 80TER/I	(189) HEE, 82MC	(792) DR/MER.	-33	-138	79VAJ/HAR	78-94-4
CH ₃ C≡COCH ₃	(8.79) IP from 86HOL/L	(206) .OS.	(860)	2.9	12.1	*EST	13169-01-2
СН ₂ = СНСН = СНОН(Е	(8.51±0.03) IP from 86TUR/H	(175) IAV, 86TU	(733) R/HAV3. Se	-21±1 ee also: 80TER/H	-88±5 (EE.	86TUR/HAV	70411-98-2
CH ₂ = CHCH = CHOH(Z	(8.47±0.03) IP from 86TUR/H	(174) IAV, 86TU	(728) R/HAV3. S	−21±2 ee also: 80TER/F	−89±9 1EE.	86TUR/HEE	70415-58-6
CH ₂ = C = CHCH ₂ OH	(8.74) IP from 80TER/H	(206) EEE.	(861)	4.3	18.0	*EST	18913-31-0
HC≡CCH ₂ CH ₂ OH	(9.66) IP from 86HOL/L	(226) .OS.	(945)	3.2	13.4	*EST	927-74-2
СН ₃ С≡ССН ₂ ОН	(9.78) IP from 86HOL/L	(227) .OS.	(948)	1.1	4.6	*EST	764-01-2
НС≅ССН(СН ₃)ОН	(10.15)	(236)	(987)	2	8	*EST	2028-63-9
$CH_2 = CHC(OH) = CH_2$	8.68±0.03 $\Delta_{ m f} H$ (Ion) from ap	182 pearance po	761 otential dete	-18 ermination(80TE)	–76 R/HEE). IP f	84TUR rom 84TUR.	59120-04-6
$CH_2 = C = CHOCH_3$	(8.64) IP from 86HOL/L	(207) .OS, onset o	(866) If photoelect	7.7 eron band (86KA)	32.2 M/BOS).	*EST	13169-00-1
HC≡CCH ₂ OCH ₃	(9.78) IP from 86HOL/L	(240) .OS.	(1005)	14.7	61.5	*EST	627-41-8
$CH_2 = CHOCH = CH_2$	(8.7) $\Delta_f H(\text{Ion})$ from ap IP is $\Delta_f H(\text{Ion})$ - Δ			-3 rmination (81HC	~13 DL/BUR).	*EST	109-93-3
	9.14±0.02	195	816	-16±1	-66±3	81ALL/GLA	1708-29-8
0	9.354	(194)	(814)	-21	-89	*EST	1191-95-3

150

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₆ O ⁺							
О сн=сн2	9.52 IP from 86HOL/	(222) LOS.	(928)	2	10	*EST	930-22-3
C ₄ H ₆ OSi ⁺							
SiH3	(<8.0) IP is onset of pho	(<183) otoelectron b	(<765) pand (83ZYK/	-2 ERC).	-7	*EST	73726-79-1
$C_4H_6O_2^+$ (Z)-CH ₃ CH = CHCOOH	(10.08)	(150)	(626)	-83	-346	*EST	503-64-0
(E)-CH ₃ CH = CHCOOH							
`	(9.9) IP is onset of pho	(145) otoelectron b	(605) and (78VAN/	-84 OSK, 81MOH/	-350 HIR).	*EST	107-93-7
CH ₂ =CHCH ₂ COOH	(9.75) IP is onset of pho	(141) otoelectron b	(589) and (81MOH)	-84 HIR).	-352	*EST	625-38-7
$CH_2 = C(CH_3)COOH$	(10.15)	(146)	(610)	-88	-369	84BOU/HOP	3724-65-0
$CH_3CO_2CH = CH_2$	9.19 "Doubtful" IP val J. Quant. Spectro	sc. Radiat. T	ransfer 2, 369	e, T. Nakayam (1962) is in god	od agreement w		108-05-4
CH ₂ = CHCOOCH ₃	(9.9) IP is onset of pho	(154) otoelectron b	(643) and (78VAN/0	-75 OSK). See also	-312 : 82LEV/LIA.	80VIL/PER	96-33-3
(CH ₃ CO) ₂	9.24±0.04 See also: 80VON	135 /BIE, 81KIM	564 I/KAT.	-78.2±0.3	-327.1±1.1	77PED/RYL	431-03-8
	(9.5) IP is onset of pho	(224) stoelectron b	(938) and (81KIM/K	5 (AT).	21	*EST	18715-02-1
$\binom{\circ}{\circ}$	(8.07±0.02)	(131)	(549)	-55	-230	*EST	543-75-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₄ Н ₆ О ₂ + соон	10.64	(167)	(699)	-78	-328	*EST	1759-53-1
$C_4H_6O_2S^+$ $(CH_2 = CH)_2SO_2$	10.59±0.03	208	871	−36±0.9	-151±4	77PED/RYL	77-77-0
So ₂	(10.0) IP is onset of pho	(169) toelectron b	(709) and (82LEV/LI	−61±0.7 A, 84AIT/G0	−256±3 OS).	77PED/RYL	77-79-2
C ₄ H ₆ O ₃ ⁺ (CH ₃ CO) ₂ O	(10.0) IP is onset of pho	(95) toelectron b	(398) and (81BOC/H		3 -567.3±1.3	77PED/RYL	108-24-7
H ₃ C 0 0	(10.52)	(103)	(432)	-139±0.5	−583±2	77PED/RYL	108-32-7
С ₄ H ₆ O ₄ + сн ₃ ососоосн ₃	(10.0) IP is onset of photon	(69) toelectron ba	(289) and.	-162	-676	76ANT/CAR	553-90-2
$C_4H_6S^+$ $(CH_2=CH)_2S$	(8.25±0.01)	(232)	(970)	42±2	174±9	*EST	627-51-0
s	(8.4) IP is onset of phot	(215) toelectron ba	(897) and.	20.8±0.3	87.0±1.1	81KUD/KUD3	1708-32-3
C ₄ H ₆ S ₂ + CH ₃ SC≡CSCH ₃	(7.8) IP is onset of phot	(238)	(995) and (81BOC/RI	58 E).	242	*EST	59507-56-1
H ₃ C S	(8.0) IP is onset of pho	(231) toelectron b	(966) and (83SCH/SC	46 EH).	194	*EST	74378-81-7

Table 1. Positive Ion Table - Continued

	Table .	I. Posi	tive Ion Tabl	e - Conti	nued		
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/moi	-	Veutral) ol kJ/mol	Neutral reference	CAS registry number
C ₄ H ₆ S ₃ +							,
S=s	(8.2) IP is onset of photon	(208) coelectroi	(869) n band.	19±0.7	78±3	77PED/RYL	1748-15-8
C ₄ H ₇ +							
C_4H_7 $CH_3CHCH = CH_2$	(7.49±0.02)	202 <i>206</i>	845 <i>863</i>	31.7 <i>35.7</i>	132.6 149.4	87LIA/AUS	65338-31-0
	IP from 84SCH/H 1,3-butadiene (RN	OU2. Va	lue of $\Delta_f H(Ion)$	from proton	affinity of	US). See also: 86TR	Α.
$CH_2C(CH_3) = CH_2$	7.90±0.02 IP from 84SCH/H	(211) OU2.	(883)	29	121	87LIA/AUS	15157-95-6
(+ From proton affin (862) kJ/mol.	(218) ity of 1-m	(912) aethylcycloprope	ne (RN 3100-	.04-7). PA = (2	206) kcal/mol,	65338-31-0
СН ₃ ССНСН ₃	From proton affin	(213) <i>(217)</i> ity of 2-b	(893) <i>(908)</i> utyne. (RN 503-	17-3).			
	PA = 188 kcal/mc	ol, 787 kJ/	mol (87LIA/AU	JS).			
$CH_2 = CHCH_2CH_2$	8.04 IP from 84SCH/H	(231) OU2.	(968)	46	191	84SCH/HOU2	2154-62-3
(H ^t	7.54±0.02 IP from 84SCH/H (RN 822-35-5) = 21			51.2 formed by pr	214.2 ottonation of cyc	82MCM/GOL clobutene	4548-06-5
C ₄ H ₇ F ₃ O ⁺							·
CF ₃ CH ₂ OC ₂ H ₅	10.27 IP from 83MOL/P	(21) IK.	(86)	-216	-905	*EST	461-24-5
С ₄ H ₇ IO ₂ ⁺ СН ₃ СНІСООСН ₃	(9.1) IP from 83BUR/H	(122) OL3.	(510)	-88	-368	*EST	56905-18-1
C ₄ H ₇ N ⁺				MR-17-			
n-C ₃ H ₇ CN	(11.2) IP is onset of photo	(266) oelectron	(1112) band (840HN/	7 MAT, 81KIM	31 /KAT). See also	82CHU/NGU o: 82CHE/LAP.	109-74-0
n-C ₃ H ₇ NC	(11.8) IP from 82CHE/La	(302) AP.	(1262)	29.5	123.4	*EST	627-36-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₄ H ₇ N +			*				· , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
iso-C ₃ H ₇ CN	(11.3) IP is onset of pho	(266) toelectron b	(1115) and (840HN)	5.8±0.2 /MAT, 81KIM/	24.5±0.7 KAT).	77PED/RYL	78-82-0
1-2	(8.0) IP is onset of photon	(210) toelectron b	(882) and.	26±0.7	110±3	*EST	109-96-6
	(8.2) IP from 81MUL/F	(251) PRE.	(1048)	61	257	*EST	
C ₄ H ₇ NO ⁺							
HN	(9.2) IP is onset of phot	(161) coelectron b	(675) and (80AND/	-51 DEV).	-213	77PED/RYL	616-45-5
$C_4H_7NO_2^+$ $CH_2 = CHCH_2CH_2ONO$							
	(9.7) IP is onset of phot	(224) coelectron b	(939) and.	0.7	3	*EST	67428-02-8
C ₄ H ₇ NO ₃ + CH ₃ CONHCH ₂ COOH	(9.4) IP is onset of phot	(72)	(303) and (83CAN/)	-144 HAM).	-604	*EST	543-24-8
C ₄ H ₇ NS ⁺							
NH	(8.14) IP is onset of phot	(192) oelectron ba	(801) and (80AND/	4 DEV).	16	*EST	2295-35-4
C ₄ H ₇ NSe ⁺							
HN Se	7.6 IP is onset of phot	(196) oelectron ba	(819) and (80AND/	21 DEV).	86	*EST	23164-74-1

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potential eV	Δ _f H((Ion) bl kJ/mol	_	Neutral) ol kJ/mol	Neutral reference	CAS registry number						
C ₄ H ₇ N ₂ + C ₄ H ₇ N ₂ + C ₄ H ₇ N ₂ + C _N +	From proton affin 958. kJ/mol.	(173) ity of 1-m	(723) ethylimidazole	(RN 616-47-	7). PA = 228.9	kcal/mol,							
13C H	From proton affin 939. kJ/mol.	(170) ity of 4-m	(713) ethylimidazole ((RN 822-36-	6). PA = 224.4	kcal/mol,							
C ₄ H ₇ N ₃ S ⁺													
N—N II N—SCH ₃	≤8.33 IP from 83GUI/PI	(≤250) FI.	(≤1047)	58	243	*EST	36811-14-0						
N — N — SCH ₃	≤8.65 IP from 83GUI/PI	(≤258) य.	(≤1077)	58	243	*EST	35262-23-8						
H ₃ C CH ₃	(7.4) IP from 83GUI/PI	(259) •1.	(1084)	88	370	*EST	64808-28-2						
C ₄ H ₇ O ⁺		···											
(E)-CH ₃ CHCHCHOH													
	From proton affine 835.5 kJ/mol.	141 ity of (E)-	591 CH ₃ CH = CHC	HO (RN 41	70-30-3). PA =	199.7 kcal/mol,							
СН ₂ С(СН ₃)СНОН	From proton affini 817. kJ/mol.	142 ity of CH ₂	596 ₂ =C(CH ₃)CHC) (RN 78-85-	3). PA = 195.2	kcal/mol,							
сн ₂ снс(он)сӊ ₃	From proton affini 838. kJ/mol.	133 ity of CH ₂	554 = CHCOCH ₃ (RN 78-94-4)). PA = 200.2 k	cal/mol,							
	From proton affini PA = 206.8 kcal/m			N 1191-99-7)	(86BOU/DJA)).							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₇ O ⁺							
·	From proton affi PA = 198.4 kcal/			N 1708-29-8) (86BOU/DJ <i>A</i>)).	
$C_4H_7O_2^+$ (Z)-CH ₃ CH = CHC(OH) ₂							
	From proton affin PA = 199.7 kcal/		•	OOH (RN 503	3-64-0)(84BC	U/HOP).	
СН ₃ С(СН ₂)С(ОН) ₂	From proton affii PA = 196.8 kcal/	_	_)H (RN 3724-6	5-0)(84BOU	/HOP).	
CH ₂ = CHC(OH)OCH ₃	$\Delta_{ m f} extit{ extit{H}}$ (Ion) from a	92 ppearance po	386 tential detern	nination (83BU	IR/HOL3).		
СН ₃ СО ₂ СНСН ₃	From proton affir 823. kJ/mol.	94 nity of CH ₃ C	392 O ₂ CH = CH ₂	(RN 108-05-4)	(86MAU).	PA = 196.7 kcal/m	ol,
CH ₃ CHCOOCH ₃	Δ _f H(Ion) from a _f	115 opearance po	480 tential detern	aination (83BU	R/HOL3).		
CH ₃ COC(OH)CH ₃	From proton affir	93 nity of (CH ₃ C	388 CO) ₂ (RN 431	-03-8). PA = 1	194.8 kcal/mo	ol, 815. kJ/mol.	
· .	From proton affir PA = 198.4 kcal/i			RN 543-75-9) (8	86BOU/HAI	√).	
ОСН3	Δ _f H(Ion) from ag	108 opearance po	450 tential determ	ination (83BU	R/HOL3).		
C ₄ H ₇ O ₃ P ⁺							
	(9.42±0.1)	(89)	(371)	-129	-538	*EST	280-45-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		$\Delta_{\mathbf{f}}H(\mathbf{N})$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₄ H ₇ S ⁺							
		237	992				39925-70-7
< ⁵ >·		214	895				37723-10-1
	$\Delta_{\mathbf{f}}H(Ion)$ from a			rahydrothiophe	ene (83BUT/B	AE2).	
	-						
C ₄ H ₈ +							
1-C ₄ H ₈	9.58±0.02	221	924	-0.1±0.1	-0.4±0.5	77PED/RYL	106-98-9
48	See also: 83HOL			0.120.1	0.1120.0	THE BOTTE	100-70-7
(Z)-2-C ₄ H ₈	9.108±0.008	208	871	-1.9±0.1	-7.8±0.5	77PED/RYL	590-18-1
. 5	IP from 78LIA/A	US. See also	: 81KIM/KAT	Γ, 86TRA.			
(E)-2-C ₄ H ₈	9.100±0.008	207	866	-2.9±0.2	-12.2±0.5	77PED/RYL	624-64-6
	IP from 78LIA/A	US. See also	: 81KIM/KA7	Γ, 86TRA.			
iso-C ₄ H ₈	9.239±0.003	209	874	-4.0±0.1	-16.9±0.6	77PED/RYL	115-11-7
. •	See also: 83HOL/	LOS, 81KIN	1/KAT, 86TR	A.			
	(9.92±0.05)	(235)	(985)	6.8±0.2	28.4±0.5	77PED/RYL	287-23-0
N	(9.46)	(224)	(938)	5.5	23	770ED/DVI	594-11-6
CH ₃	(9.40)	(224)	(936)	3.3	23	77PED/RYL	394-11-0
7 YY D., +				······································	<u> </u>		
C4 H8Br2 ⁺ CH3CHB1CHB1CH3-(R,R	(±))						
	(≤10.12)	(≤206)	(≤860)	-28	-116	*EST	598-71-0
CH ₃ CHBrCHBrCH ₃ -(R,S))						
	(≤10.16)	(≤207)	(≤864)	-28	-116	*EST	5780-13-2
BrCH ₂ CH ₂ CH ₂ CH ₂ Br							
21011201120112011201	(10.15)	(210)	(880)	-24	-99	77PED/RYL	110-52-1
	IP from 77STA/W		· •				
C ₄ H ₈ F ₃ N +							. ,
CF ₃ CH ₂ CH ₂ CH ₂ NH ₂	(0.4)		(400)				
	(9.1) IP from 79AUE/B	(29) KOW	(123)	-180	- 755	*EST	819-46-5
	II HOM //AOE/B	· · · · · · · · · · · · · · · · · · ·					
$(CH_3)_2NCH_2CF_3$	(8.42)	(27)	(112)	-167	-700	81LOG/TAK	819-06-7
	IP from 81LOG/T	AK. See also	o: 79AUE/BO	w.			

Table 1. Positive Ion Table - Continued

YON							
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₈ F ₃ O +			· · · · · · · · · · · · · · · · · · ·				
C ₂ H ₅ OHCH ₂ CF ₃		-37	-154				
	From proton affi 780. kJ/mol.	nity of C ₂ H ₅	OCH ₂ CF ₃ (F	RN 461-24-5).	PA = 186.4 l	kcal/mol,	
C ₄ H ₈ N ⁺							
n-C ₃ H ₇ CNH	From proton affi	179 nity of n-C ₃ F	751 I ₇ CN (RN 10	9-74-0). PA =	193.7 kcal/n	nol, 810. kJ/mol.	
i-C ₃ H ₇ CNH		177	740				
3 /	From proton affi	nity of i-C ₃ H	₇ CN (RN 78-	82-0). PA = 1	94.3 kcal/mo	l, 813. kJ/mol.	
i-C ₃ H ₇ NCH		186	778				
3 /	From proton affin 862. kJ/mol.			-45-8) (86MA)	U/KAR). PA	A = 206. kcal/mol,	
C ₄ H ₈ NO ₄ ⁺							
HOOCCH ₂ CH(NH ₃)CO	ОН						
		-44	-184				
	From proton affii 907. kJ/mol.	nity of L-aspa	artic acid (RN	(617-45-8). PA	x = 216.7 kca	al/mol,	
C ₄ H ₈ N ₂ +							
(CH ₃) ₂ NCH ₂ CN	(8.72±0.05) See also: 83MOL		(953)	27	112	*EST	926-64-7
C ₄ H ₈ N ₂ OS ⁺						······································	
(CH ₃) ₂ NCSOCNH ₂	(≤8.21) IP from 81HEN/I		(≤714)	-19	-78	*EST	41168-96-1
(CH ₃) ₂ NCOCSNH ₂	≤8.37 IP from 81HEN/I		(≤704)	-25	-104	*EST	18138-14-2
C ₄ H ₈ N ₂ O ₂ + CH ₃ NHCOCONHCH ₃	(9.33)	(121)	(504)	-95	-396	*EST	615-35-0
C ₄ H ₈ N ₂ S ⁺							
HN CH3	(7.7) IP is onset of photon	-	(842) nd (80AND/I	24 DEV).	99	*EST	13431-10-2
C ₄ H ₈ N ₂ S ₂ + CH ₃ NHCSCSNHCH ₃	≤8.23 IP from 81HEN/IS		(≤684)	-26	-110	*EST	120-79-6
C ₄ H ₈ N ₄ + NCN = C(NHCH ₃) ₂	(8.5) IP is onset of phot	•	(977) nd (80KLA/B	38 :UT).	157	*EST	31857-31-5

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number					
C ₄ H ₈ O ⁺												
n-C ₃ H ₇ CHO	9.84±0.02 See also: 81ELS/A	177 ALL, 83MC	742 A/HUD, 81K		-207.5±1.5 RA/MCA.	77PED/RYL	123-72-8					
iso-C ₃ H ₇ CHO	9.705±0.005 See also: 83MCA/	172 HUD, 86T	721 RA/MCA.	-51.5±0.1	-215.6±0.6	77PED/RYL	78-84-2					
С2Н5СОСН3	9.51±0.04 See also: 72POT/S	162 SOR, 85TR	677 A, 81KIM/K <i>A</i>		-240.8±0.6	77PED/RYL	78-93-3					
СН ₃ СН ₂ СН = СНОН	(8.34 \pm 0.05) $\Delta_f H$ (Ion) from ap (83HOL/LOS). S			−42 minations. IP i	-177 s ∆ _f H(Ion) - ∆	*EST _{Af} H(Neutral)	56640-69-8					
(E)-CH ₃ CH = CHCH ₂ OH	H (9.13±0.02) IP from 86TRA/M	(173) ICA. See a	(726) lso: 83MCA/I	-37 HUD.	-155	*EST						
$CH_2 = CHCH_2CH_2OH$	(9.56±0.05) IP from 83HOL/L	(184) .OS.	(770)	-36	-152	*EST	627-27-0					
сн ₃ снсн ₂ снон	Based on appeara	(165) nce energy	(690) measurement	s of metastable	processes (83N	MCA/HUD).						
$CH_2 = C(CH_3)CH_2OH$	(9.26±0.02) IP is average of va	(176) lues from 8	(734) 3HOL/LOS a	-38 and 86TRA/MC	–159 CA.	*EST	513-42-8					
(CH ₃) ₂ C = CHOH	(8.27±0.05) $\Delta_f H(\text{Ion})$ from ap IP is $\Delta_f H(\text{Ion})$ - Δ				-192	*EST	56640-70-1					
СН ₂ СН(СН ₃)СНОН	Based on appearan	(154) nce energy i	(644) neasurements	s of metastable	processes (83M	ICA/HUD).						
$CH_3CH_2C(OH) = CH_2$	(8.36±0.05) $\Delta_f H(\text{Ion})$ from ap IP is $\Delta_f H(\text{Ion})$ - Δ				-179 MCA/HUD.	*EST	61923-55-5					
$CH_3C(OH) = CHCH_3$	Δ _f H(Ion) from ap	139 pearance po	581 otential deter	minations. See	also: 83MCA/I	HUD.	21411-38-1					
CH ₂ = CHCH(OH)CH ₃	9.50±0.05 IP from 83MCA/H	(180) IUD, 83HO	(756) L/LOS, 86TF	-38 RA/MCA.	-161	*EST	598-32-3					
СН ₃ С(ОН)СН ₂ СН ₂	Based on appearar	(147) nce energy r	(613) neasurements	s of metastable	processes (83M	ICA/HUD).						
$CH_2 = CHCH_2OCH_3$	(9.56) IP from 86HOL/Le	(195) OS.	(817)	-25	-105	*EST	627-40-7					

Table 1. Positive Ion Table - Continued

	Tavi	e 1. Pusiti	ve ion Table	- Contin			
ION Neutral	Ionization potentia eV	•	on) kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
$C_4H_8O^+$ $CH_2 = CHOC_2H_5$	(8.8) IP from 86HOL	(169) /LOS. See als	(708) so: 82MOR/MER	-34 L	-141	77PED/RYL	109-92-2
$CH_2 = C(CH_3)OCH_3$	(8.64) IP from 82HOL	(164) /LOS2.	(688)	-35	-146	*EST	116-11-0
$\stackrel{\circ}{\bigcirc}$	9.41±0.02 See also: 81KIM	173 I/KAT.	724	-44.0±0.2	-184.2±0.7	77PED/RYL	109-99-9
ОН	9.25 IP from 83MCA	(181) ⁄HUD, 86TR	(756) .A/MCA.	-32	-136	*EST	2919-23-5
CH ₃	(10.00)	(198)	(830)	-32	-135	*EST	558-30-5
H ₃ CCH ₃	(9.98)	(199)	(832)	-31	-131	*EST	21490-63-1
_°с ₂ н ₅	(10.15)	(206)	(864)	-28	-115	*EST	106-88-7
C ₄ H ₈ OS ⁺ CH ₃ COSC ₂ H ₅	(9.2) IP is onset of pho	(158) otoelectron ba	(660) and.	−54±0.2	-228±1	66WAD	625-60-5
$\binom{\circ}{s}$	(8.67)	(164)	(688)	-36	-149	*EST	15980-15-1
S=0	8.5 IP is onset of pho	(161) otoelectron ba	(674) and.	-35	-146	*EST	1600-44-8

Table 1. Positive Ion Table - Continued

	- Tubic	1. 1 051	ive ion radio	C Contin			
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	(Ion) ol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₈ O ₂ +							
n-C ₃ H ₇ COOH	10.17±0.05	121 <i>127</i>	507 <i>533</i>	-113±1 -107	-473±4 -447	82BUT/FRA	107-92-6
	See also: 82BUT/		IOL/FIN.				
iso-C ₃ H ₇ COOH	10.33±0.03	(123)	(517)	-115	-480	*EST	79-31-2
нсоосн ₂ сн ₂ сн ₃	10.52±0.02	132	553	-110	-462	77PED/RYL	110-74-7
HCOOCH(CH ₃) ₂	10.44±0.05	(144)	(602)	-97	-405	*EST	625-55-8
CH ₃ COOC ₂ H ₅	10.01±0.05	125	523		-443.9±0.4	77PED/RYL	141-78-6
	IP from 82FRA/F	<i>131</i> TRA2.	548	-99.9±0.1	-418.0±0.4		
С ₂ H ₅ COOCH ₃	10.15±0.03	(131)	(547)	-103	-432	*EST	554-12-1
$CH_3CH_2CH = C(OH)_2$							
3 2 \ 72		97	405				12542-32-4
	From appearance	potential	of 10.14 eV in (C ₂ H ₅) ₂ CHCO	OH (RN 88-09	-5).	
$(CH_3)_2C = C(OH)_2$		92	387				
	From appearance and 9.96 eV in n-C				COOH (RN 59	95-37-9)	
$CH_2 = C(OH)OC_2H_5$		104	433				
	From appearance and 9.96 eV in n-C				H ₅ (RN 105-54	l-4)	
CH ₃ CH = C(OH)OCH ₃							
	E	99	413	- C II COOCI	I (DN 0/0 57	5)	
	From appearance	рогенца	01 9.61 6 4 111 860	:-C4H9COOCF	13 (KIN 606-37	-o).	
CH ₃ COCH ₂ OCH ₃	≤9.66 IP from 84OLI/G	(≤143) UE.	(≤598)	-80	-334	*EST	5878-19-3
_							
	(≤10.0)	(≤195)	(≤816)	-36	-149	*EST	5703-46-8
~ -							
^ 0\	9.8	145	608	−81±0.2	-338±1	82BYS/MAN	505-22-6
	See also: 84ASF/Z					-,	-

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Ne kcal/mol		Neutral	CAS registry
	ev		KJ/MOI	Kcai/moi	KJ/MOI	reference	number
C ₄ H ₈ O ₂ +							
\bigcirc	9.19±0.01	136	571		-316.0±0.7	82BYS/MAN	123-91-1
	IP from 82FRA/F	<i>144</i> RA. See als	<i>602</i> o: 81KIM/K <i>A</i>		<i>−285.3±0.8</i> R, 82BIE/ASB.		
o w o a+							
C ₄ H ₈ O ₂ S +							
	(9.8)	(138)	(577)	-88	-369	*EST	126-33-0
\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	IP is onset of pho	toelectron b	and. See also	: 84A11/GOS.			
0 0							
5	(9.5)	(142)	(593)	-77	-324	*EST	54697-52-8
H ₃ C CH ₃	IP is onset of pho	toelectron b	and.				
C ₄ H ₈ O ₃ +							
(CH ₃) ₂ COHCOOH	≤10.9 IP from 73GOL/I	(≤96) KOR.	(≤404)	-155	-648	*EST	594-61-6
C ₄ H ₈ O ₃ P +			····	··· <u>·</u>			,
		30	126				
н 0 ^{-Б} 50	From proton affir PA = 207.1 kcal/s			phabicyclo[2.2.2]octane (RN 28	0-45-5).	
ÇH ₃							
	From proton affir	13 nity of 4-met	55 hvl-2 6 7-trio	ra-1-nhosnhahio	volo[2 2 1]henta	ine	
o po	(RN 61580-09-4).				yelo[<i>2.2.</i> 1]nopto		
C ₄ H ₈ O ₄ +							
н ₃ С-С С-СН ₃	(≤10.6)	(≤22)	(≤94)	-222	-929	*EST	6993-75-5
\0—но́							
C4H8S+ CH3SCH2CH=CH2	8.6	(210)	(880)	12±2	50±9	*EST	10152-76 9
ongoengen – eng	U.U	(210)	(000)	12±2	JUEF	1201	10152-76-8
$CH_2 = CHSC_2H_5$	(8.21±0.01)	(201)	(840)	11±1	48±6	*EST	627-50-9

Table 1. Positive Ion Table - Continued

*			ve ion labi	e - Contin		·····	
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₈ S ⁺							
\(\sigma \)	8.47	187.1 193.8	782.8 <i>810.8</i>	-8.2±0.2 -1.5	-34.1±0.9 -6.2	81KUD/KUD3	110-01-0
	Results from 83B						
$C_4H_8S_2^+$ (Z)-CH ₃ SCH = CHSCH ₃							
	(≤7.80)	(≤203)	(≤849)	23	96	*EST	764-44-3
(E)- $CH_3SCH = CHSCH_3$	(M 0 g)	(- 0.1)	(0.50)				
	(≤7.85)	(≤204)	(≤853)	23	96	*EST	764-45-4
$CH_2 = C(SCH_3)_2$	(≤8.2)	(≤212)	(≤887)	23	96	*EST	51102-74-0
e	0.1	(170)	(746)	0	24	*ECT	505 20 4
(3)5	8.1 IP is onset of pho	(178) toelectron t	(746) pand.	-9	-36	*EST	505-20-4
•							
5^5 	8.2	(188)	(786)	-1	- 5	*EST	505-23-7
	IP is onset of pho	toelectron t	and.				
(\$)	(8.4)	(193)	(805)	-1	-5	*EST	505-29-3
(_s)	IP is onset of pho			-		201	555 27 5
C ₄ H ₈ S ₄ +	***************************************		· · · · · · · · · · · · · · · · · · ·				····
S	(7.8)	(197)	(825)	17	72	*EST	2373-00-4
s j	IP is onset of photo						
C ₄ H ₈ Sc ⁺							
((E)-CH ₃ CH = CHCH ₃)Sc		(191)	(799)				
	$\Delta_{f}H(Ion)$ from on	` ,	` '	on (84TOL/BE	A).		
CH3							
sc	$\Delta_{\mathbf{f}}H$ (Ion) from on	(179) set of endo	(749) thermic reaction	on (84TO) /RF4	4).		
~	[(-011) 110111 011			(0.1.014.015	-),		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Ionization potential $\Delta_{\rm f} H({ m Ion})$ $\Delta_{\rm f} H({ m Neutral})$ Ne					CAS registry
Neutral	eV	kcal/mol		kcal/mol		Neutral reference	number
C ₄ H ₉ +							
n-C ₄ H ₉	8.02	(203)	(849)	18	74	*EST	2492-36-6
	IP from 84SCH/I		limits + 0.04-0.	l. Δ _f H(Neut	ral) based on		
	D[C-H] = 100.5	kcal/mol.					
sec-C ₄ H ₉	7.25±0.02	183	766	17.0±0.4	71.0±1.6	85TSA	4630-45-9
	IP from 84SCH/I						
	potential measur Δ _f H(Ion) - IP lea		-			kcal/mol.	
	Δ[//(10/1) · 11 / 16/	ics to Africa	(CULIAI) — 10 K	avmoi, oo ki	/IIIOI.		
iso-C ₄ H ₉	7.93	(199)	(832)	16	70	81TSA	65114-21-8
	IP from 84SCH/F		limits +0.03-0.1	. $\Delta_{\mathbf{f}}H(\text{Neutr})$	al) based on		
	D[C-H] = 100.5	kcai/moi.					
tert-C ₄ H ₉	6.70±0.03	165.8	693.7	11.0±0.6	46.2±2.5	85TSA	1605-73-8
	Same value is obt						
	potential measur Δ _f H(Ion) - IP lea					= y5.5 kcal/mol.	
							· · · · · · · · · · · · · · · · · · ·
C ₄ H ₉ Br ⁺	10.12	200	070	25 (. 0.2	107.1.1.0	anner ann	100 (5.0
n-C ₄ H ₉ Br	10.13 See: 81KIM/KAT	208	870	-25.6±0.3	-107.1±1.3	77PED/RYL	109-65-9
	Sce. SIRINARA	•					
sec-C ₄ H ₉ Br	9.98±0.01	201	842	-28.9±0.1	-120.9±0.4	77PED/RYL	78-76-2
	See also: 81TRA,	81KIM/KAT	Γ.				
iso-C ₄ H ₉ Br	10.09±0.02	(205)	(858)	-27	-115	*EST	78-77-3
4)	See: 81KIM/KAT		` ,				
Asset C XX Dec	0.00.000	107	004	22	100	70111D (0011	505 10 5
tert-C ₄ H ₉ Br	9.92±0.03 See: 81KIM/KAT	197	824	-32	-133	79WIB/SQU	507-19-7
	330. 5111111111111111111111111111111111111					· · · · · · · · · · · · · · · · · · ·	
C ₄ H ₉ Cl ⁺	10.47.0.00	200	074	240.00	1545.1	GOODI (GGID	100 (0.3
n-C ₄ H ₉ Cl	10.67±0.03 See also: 81KIM/	209 Kat	874	-36.9±0.2	-154.5±1	78SEL/STR	109-69-3
	See also, otherwij	KAI.					
sec-C ₄ H ₉ Cl	10.53	204	855	-38±2	-161±8	77PED/RYL	78-86-4
	See also: 81KIM/I	KAT.					
iso-C ₄ H ₉ Cl	10.66±0.03	208	869	-38±2	-159±8	77PED/RYL	513-36-0
ino ogrigor	See also: 81KIM/		007	3012	13710	MEDIKIE	313-30-0
tert-C ₄ H ₉ Cl	10.61±0.03	201	842	-43.5±0.3	-182.1±1.2	77PED/RYL	507-20-0
	See also: 81KIM/l	KAT.					
C4H9ClHg+							
n-C ₄ H ₉ HgCl	≤10.08		(≤864)	-26	-109	*EST	543-63-5
	IP from 81BAI/C	HI2.					
sec-C ₄ H ₉ HgCl	9.5	(194)	(814)	-25	-103	*EST	-38455-12-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$		$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry	
Neutral	eV	-	kJ/mol	kcal/mol		reference	number
C ₄ H ₉ ClHg ⁺							
iso-C ₄ H ₉ HgCl	≤10.04	(≤204)	(≤852)	-28	-117	*EST	27151-74-2
	IP from 81BAI/C	HI2.					
tert-C ₄ H ₉ HgCl	≤9.52	(≤198)	(≤830)	-21	-89	*EST	38442-51-2
4 9 0	IP from 81BAI/Cl		(====)		-		557,202
C ₄ H ₉ ClO ⁺				· · · · · · · · · · · · · · · · · · ·			
tert-C ₄ H ₉ OCl	≤9.91	≤188	≤788	-40	-168	68WAL/PAP	507-40-4
• ,	IP from 81COL/F	RO.					
C ₄ H ₉ Cl ₂ P ⁺			- 4				
tert-C ₄ H ₉ PCl ₂	(9.0)	(136)	(570)	-71	-298	*EST	25979-07-1
· · · ·	IP is onset of phot	•	• •				
C ₄ H ₉ F ₂ P ⁺		, <u>,</u>			· · · · · · · · · · · · · · · · · · ·		
tert-C ₄ H ₉ PF ₂	(9.2)	(34)	(143)	-178	-745	*EST	29149-32-4
-	IP is onset of phot	oelectron b	and.				
C ₄ H ₉ F ₃ N ⁺							
CF ₃ CH ₂ NH(CH ₃) ₂		-17	-69				
J L . 3.L	From proton affin	ity of CF ₃ C	CH ₂ N(CH ₃) ₂ ((RN 819-06-7).	PA = 215.0 k	cal/mol,	
	900. kJ/mol.						
CF ₃ CH ₂ CH ₂ CH ₂ NH ₃							
32223		-29	-122				
	From proton affin	ity of CF ₃ C	H ₂ CH ₂ CH ₂ N	IH ₂ (RN 819-46	5-5). PA = 21-	4.3 kcal/mol,	
	897 kJ/mol.						
o m r+						,	
Callot '		···· .	<u> </u>	***************************************			
С4 Н91 ¹ n-С ₄ Н9 ^I	9.229	(200)	(838)	-12	-52	*EST	542-69-8
C ₄ H9I ⁺ n-C ₄ H9I	9.229 See: 81KIM/KAT.	•	(838)	-12	-52		542-69-8
n-C ₄ H ₉ I	See: 81KIM/KAT.	•				*EST	
• -		(195)	(815)	-12 -15	-52 -62		542-69-8 513-48-4
n-C ₄ H ₉ I sec-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 9	(195) 81KIM/KA	(815) Г.	-15	-62	*EST *EST	513-48-4
n-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 8	(195) B1KIM/KA' (197)	(815)			*EST	
n-C ₄ H ₉ I sec-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 9	(195) B1KIM/KA' (197)	(815) Г.	-15	-62	*EST *EST	513-48-4
n-C ₄ H ₉ I sec-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 8	(195) B1KIM/KA' (197)	(815) Г.	-15	-62 -62	*EST *EST	513-48-4
$n-C_4H_9I$ $sec-C_4H_9I$ $iso-C_4H_9I$	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 19.202 See also: 81KIM/K	(195) B1KIM/KA' (197) KAT. 191	(815) Γ. (826)	-15 -15	-62 -62	*EST *EST	513-48-4 513-38-2
n-C ₄ H ₉ I sec-C ₄ H ₉ I iso-C ₄ H ₉ I tert-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 8 9.202 See also: 81KIM/K 9.02±0.03	(195) B1KIM/KA' (197) KAT. 191	(815) Γ. (826)	-15 -15	-62 -62	*EST *EST	513-48-4 513-38-2
n-C ₄ H ₉ I sec-C ₄ H ₉ I iso-C ₄ H ₉ I tert-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 8 9.202 See also: 81KIM/K 9.02±0.03	(195) B1KIM/KA' (197) KAT. 191	(815) Γ. (826)	-15 -15	-62 -62	*EST *EST	513-48-4 513-38-2
n-C ₄ H ₉ I sec-C ₄ H ₉ I iso-C ₄ H ₉ I tert-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 8 9.202 See also: 81KIM/K 9.02±0.03	(195) B1KIM/KA' (197) KAT. 191	(815) Γ. (826)	-15 -15	-62 -62	*EST *EST	513-48-4 513-38-2
n-C ₄ H ₉ I sec-C ₄ H ₉ I iso-C ₄ H ₉ I tert-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 19.202 See also: 81KIM/K 9.02±0.03 See also: 81KIM/K	(195) B1KIM/KA' (197) (AT. 191 (AT.	(815) Γ. (826) 798	-15 -15 -17.2±0.5	-62 -62 -72.0±2.2	*EST *EST *EST 77PED/RYL	513-48-4 513-38-2 558-17-8
sec- C_4H_9I iso- C_4H_9I tert- C_4H_9I $C_4H_9N^+$ $CH_2 = C(CH_3)CH_2NH_2$	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 19.022 See also: 81KIM/K 9.02±0.03 See also: 81KIM/K	(195) B1KIM/KA' (197) (AT. 191 (AT.	(815) Γ. (826) 798	-15 -15 -17.2±0.5	-62 -62 -72.0±2.2	*EST *EST *EST 77PED/RYL	513-48-4 513-38-2 558-17-8
n-C ₄ H ₉ I sec-C ₄ H ₉ I iso-C ₄ H ₉ I tert-C ₄ H ₉ I	See: 81KIM/KAT. 9.09±0.02 See also: 81TRA, 19.022 See also: 81KIM/K 9.02±0.03 See also: 81KIM/K	(195) B1KIM/KA' (197) (AT. 191 (AT.	(815) Γ. (826) 798	-15 -15 -17.2±0.5	-62 -62 -72.0±2.2	*EST *EST *EST 77PED/RYL	513-48-4 513-38-2 558-17-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₉ N ⁺							
, in the second	(8.0) IP from 79AUE/ homologous serie						123-75-1
Н СН ₃	(8.94)	(222)	(929)	16±0.5	66±2	*EST	2658-24-4
C ₄ H ₉ NO ⁺		 					.,
tert-C ₄ H ₉ NO	(7.5) IP is onset of pho	(163) otoelectron b	(681) and.	-10±1	-43±6	74CHO/MEN	917-95-3
CH ₃ CON(CH ₃) ₂	8.81	147	617	-56	-233	78BEA/LEE	127-19-5
(E)-CH ₃ (CH ₂) ₂ CH = NOF	(9.5) IP is onset of pho	(203) stoelectron be	(849) and.	-16	-68	*EST	110-69-0
(°)	(8.2)	(201)	(842)	12	51	*EST	110-91-8
C ₄ H ₉ NOS ⁺		· · · · · · · · · · · · · · · · · ·					
(CH ₃) ₃ CNSO	(10.0) IP is onset of pho	(166) toelectron ba	(695) and.	-65	-270	*EST	38662-39-4
C ₄ H ₉ NO ₂ +							
H ₂ NCH ₂ CH ₂ CH ₂ COOH	(8.7) IP is onset of pho	(95) toelectron ba	(398) and (83CAN/	–105±0.5 HAM).	-441±2	83SKO/SAB	56-12-2
C ₂ H ₅ CH(NH ₂)COOH	(8.70)	(97)	(402)	-104±2	-437±10	*EST	80-60-4
H ₂ NCH ₂ COOC ₂ H ₅	(8.8)	(107)	(447)	-96	-402	*EST	459-73-4
n-C ₄ H ₉ NO ₂	(10.71±0.01)	(213)	(889)	-34.4±0.3	-143.9±1.4	77PED/RYL	627-05-4
sec-C ₄ H ₉ NO ₂	(10.71±0.01)	(208)	(870)	-39.1±0.4	-163.6±1.6	77PED/RYL	600-24-8
C ₄ H ₉ NO ₂ S ⁺	NU NU						
L-CH ₃ SCH ₂ CH(NH ₂)COC	(8.4) IP is onset of pho		(412) nd (83CAN/I	-95 HAM).	-398	*EST	1187-84-9

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	e - Conti	nued		· · · · · · · · · · · · · · · · · · ·
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	(Ion) bl kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry
C ₄ H ₉ NO ₃ +							· · · · · · · · · · · · · · · · · · ·
L-CH ₃ CH(OH)CH(NH	н ₂)соон						
	(≤10.2) IP from 83CAN/F	(≤94) I AM.	(≤392)	-141	-592	*EST	72-19-5
			·				
C ₄ H ₉ N ₂ + NCCH ₂ NH(CH ₃) ₂		(188)	(788)				
Nee1121111(C113)2	From proton affir			RN 926-64-7)	. PA = 211.1 k	rcal/mol	
	883. kJ/mol.	,	2- (3/2 (-	,		,	
C ₄ H ₉ N ₂ O ₃ +							
L-H ₂ NCOCH ₂ CH(NH	₃)COOH						
	17	5 .:c.t	19 	120.07.0	A 010.01	t1	
	From proton affir 920. kJ/mol.	nty of L-a	sparagine (RN 3	130-87-8). P.	A = 219.8 kcal/	mol,	
	700. IB/III0I.						
C ₄ H ₉ O ⁺							
n-C ₄ H ₉ O	(9.22)	(196)	(820)	-17	-69	82MCM/GOL	21576-64-7
, C.UCUOU		124	521				
n-C ₃ H ₇ CHOH	From proton affin			23.72.8) PA	= 191 5 kcal/n	nol	
	801. kJ/mol.	iity of ii-C	311/0110 (1011	.25-12-0j. 11:	1 — 171.5 Real/1	noi,	
i-C ₃ H ₇ CHOH		121	508				
	From proton affin 806. kJ/mol.	ity of i-C ₃	H ₇ CHO (RN 78	3-84-2). PA :	= 192.6 kcal/mo	ol,	
	ood Majiiloi.						
$(CH_3)(C_2H_5)COH$		109	455				
	From proton affin					ıol,	
	836. kJ/mol. See 8	32MAC fo	r appearance po	tential deteri	nination.		
С ₂ H ₅ OCHCH ₃		125	521				
2233	From proton affin			RN 109-92-2)	. PA = 207.4 k	cal/mol,	
	868. kJ/mol (86BC	-	-			, ,	
(CII.) COCII		(114)	(477)				
(CH ₃) ₂ COCH ₃	From appearance	(114)	(477) determination (8	R2MAC)			
	Trom appearance	potentiar	determination (c	szivirc).			
/ 0 >		123	514				
(~~\\ .	From proton affin			V 109-99-9). I	PA = 198.8 kca	l/mol.	
(\/) ".	831. kJ/mol.	, ,	,	· · · · · · ·		- · · · ·	
C ₄ H ₉ O ₂ +							
1HOH(O-n-C ₃ H ₇)	_	61	256				
	From proton affin	ity of HC	OO(n-C ₃ H ₇) (R	N 110-74-7).	PA = 194.2 kg	al/mol,	

812.5 kJ/mol.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_f H(Ic$	$\Delta_f H(Ion)$		eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₄ H ₉ O ₂ +					-		
HCOH(O-i-C ₃ H ₇)		73	305				
	From proton affi	nity of HCO	OCH(CH ₃) ₂	(RN 625-55-8)	PA = 196.0	kcal/mol,	
	820. kJ/mol.						
CH ₃ COH(O-C ₂ H ₅)		59	247				
	From proton affi	nity of CH ₃ C	:00C ₂ H ₅ (RI	N 141 - 78-6). 1	PA = 200.7 kg	cal/mol,	
	840. kJ/mol.						
C ₂ H ₅ COH(O-CH ₃)		62	260				
2 3 \ 3'	From proton affi			N 554-12-1). I	PA = 200.2 kg	cal/mol,	
	838. kJ/mol.						
(~0~)		86	360				
() H	From proton affi	nity of 1,3-die	oxane (RN 505	5-22-6). PA =	198.8 kcal/m	ol,	
(•)	832. kJ/mol.						
(10)	77	96	403		100.01		
(Ó) HT	From proton affi 811. kJ/mol.	nity of 1,4-did	oxane (RN 123	-91-1). PA =	193.8 kcal/m	oi,	
()	orr. Raymon						
C ₄ H ₉ O ₂ S ⁺				-			Martin Control
С ₂ H ₅ S(OCH ₃)СОН		64	269				
2 3 \ 3	From proton affi	nity of C ₂ H ₅	S(OCH ₃)CO	(RN 38103-96	-7). PA = 20	1.0 kcal/mol,	
	841. kJ/mol.						
C ₄ H ₉ O ₃ +							
C(OCH ₃) ₃		53	223				
	From appearance						
	appearance poter	ntial of 9.86 e	V in CH ₃ C(O	CH ₃) ₃ (82HC	OL/LOS2).		
С ₂ H ₅ OC(OH)ОСН ₃		22	90				
	From proton affin			N 623-53-0).	PA = 202.71	ccal/mol,	
	848 kJ/mol.						
C ₄ H ₉ O ₃ P +				· <u> </u>			
C ₄ H ₉ O ₃ P ⁺	(0.5)		(440)	,			
[[-,00,	(8.74 ± 0.1)	(26)	(110)	-175	-733	*EST	31121-06-9
1 1							

Table 1. Positive Ion Table - Continued

		. 1 03161	e ton Tabi	e - Contin			***
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₉ S +					· · · · · · · · · · · · · · · · · · ·		
(\(\) \) H +	From proton affin PA = 204.6 kcal/n			ne (RN 110-01-0) (83CAS/KII	M).	
C ₄ H ₁₀ + n-C ₄ H ₁₀	10.53 \pm 0.10 IP based on charge IP (c-C ₅ H ₁₀) = 10			nstant in cyclop		77PED/RYL ane system. ee also: 81KIM/KA7	106-97-8 Г.
iso-C ₄ H ₁₀	10.57 See also: 81KIM/F	(212) (AT.	(885)	-32.1±0.1	-134.5±0.5	77PED/RYL	75-28-5
C ₄ H ₁₀ Cd ⁺ (C ₂ H ₅) ₂ Cd	(8.0) IP is onset of phot	(210) oelectron b	(877) and.	25±0.7	105±3	77PED/RYL	592-02-9
C ₄ H ₁₀ Cl ⁺ (CH ₃) ₂ CHClCH ₃	From equilibrium	(150) constant de	(628) etermination ((85SHA/HOJ).			
C ₄ H ₁₀ Cl ₂ Si ⁺ (CH ₃) ₃ SiCHCl ₂	(9.7) IP is onset of phot	(163) oelectron b	(683) and (81ZYK/	-60 KHV).	-253	*EST	5926-38-5
(CH ₃) ₂ Si(CH ₂ Cl) ₂	(9.7) IP is onset of phot	(165) oelectron b	(689) and (81ZYK/	-59 KHV).	-247	*EST	2917-46-6
C ₄ H ₁₀ Hg ⁺ (C ₂ H ₅) ₂ Hg	≤8.45	≤212	≤887	17.3±0.2	72.3±0.8	77PED/RYL	627-44-1
C ₄ H ₁₀ N + CH ₂ C(CH ₃)CH ₂ NH ₃		(152)	(638)				
	From proton affin (913.) kJ/mol.	ity of CH ₂ =	=C(CH ₃)CH ₂	₂ NH ₂ (RN 2878	-14-0). PA =	(218.2) kcal/mol,	
CH ₃ CHN(CH ₃) ₂	From proton affin. 953. kJ/mol.	153 ity of (CH ₃)	639) ₂ NCH = CH ₂	₂ (RN 5763-87-1). PA = 227.	8 kcal/mol,	
CH₃CHNHC₂H₅	From proton affini 932. kJ/mol.	147 ity of CH ₃ C	616 CH = NC ₂ H ₅ ((RN 1190-79-0).	PA = 222.7	kcal/mol,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$	on)	$\Delta_{\rm f}H(N_{\rm f})$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/moi		_	kJ/mol	reference	number
C ₄ H ₁₀ N ⁺	The street of th	····					
HT HT	From proton affii 942. kJ/mol.	140 nity of pyrro	585 lidine (RN 12	3-75-1). PA =	225.2 kcal/mo	ıl,	
C ₄ H ₁₀ NO +	-						
$CH_3C(OH)N(CH_3)_2$		94	392				
	From proton affir PA = 216.2 kcal/s	nity of CH ₃ C	CON(CH ₃) ₂ (RN 127-19-5) ((86TAF/GAL)) .	
n-C ₃ H ₇ NHCHOH		95	395				
<i>3</i> ,	From proton affir (879.) kJ/mol.	nity of n-C ₃ F	1 ₇ NHCHO (I	RN 6281-94-3).	PA = (210.0)) kcal/mol,	
(H+	From proton affir 918. kJ/mol.	158 nity of morpl	663 holine (RN 11	0-91-8). PA =	= 219.4 kcal/mc	ol,	
C ₄ H ₁₀ NO ₂ + t-C ₄ H ₉ ONHO	From proton affir 861. kJ/mol.	119 nity of t-C ₄ H	497 I ₉ ONO (RN 5	40-80-7). PA	= 205.7 kcal/m	ool,	
C ₄ H ₁₀ NO ₃ + CH ₃ CH(OH)CH(NH ₃)O	СООН						
J	From proton affin 915. kJ/mol.	(6) hity of L-thre	(23) conine (RN 72	-19-5). PA =	218.6 kcal/mol	,	
C ₄ H ₁₀ N ₂ + (CH ₃) ₂ NN = CHCH ₃	(7.54)	(176)	(736)	2	9	80LEB/MAS	7422-90-4
1-Z-1	(≤8.72)	(≤207)	(≤866)	6±0.2	25±1	*EST	110-85-0
C ₄ H ₁₀ N ₂ O + (CH ₃) ₂ NCONHCH ₃	(≤8.80)	(≤146)	(≤609)	-57	-240	*EST	632-14-4
C ₄ H ₁₀ O + n-C ₄ H ₉ OH	10.06±0.03 See also: 81KIM/k	166 KAT, 80BAC	696 C/MOU, 84BC		−275.0±0.4	77PED/RYL	71-36-3
sec-C ₄ H ₉ OH	9.88 IP from 81HOL/F	158 IN, 84BOW	660 /MAC. See al		−295.0±0.4 OU.	77PED/RYL	78-92-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) I kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₄ H ₁₀ O ⁺ iso-C ₄ H ₉ OH	10.12±0.04 IP from 81HOL/F	166 IN, 84BO	692 W/MAC, 77R(-283.6±0.4	77PED/RYL	78-83-1
tert-C ₄ H ₉ OH	9.97±0.02 See also: 84BOW/	155 /MAC.	650	-74.7±0.7	-312.5±2.9	77PED/RYL	75-65-0
(C ₂ H ₅) ₂ O	9.51±0.03 See also: 81KIM/R	159 KAT, 80B	666 AC/MOU, 84B		-251.7±0.3	77PED/RYL	60-29-7
n-C ₃ H ₇ OCH ₃	(9.42) IP from 84BOW/N	(160) MAC. See	(671) also: 80BAC/N		-237.9±0.5	77PED/RYL	557-17-5
i-C ₃ H ₇ OCH ₃	9.42 IP from 81HOL/F	157 IN, 84BO	657 W/MAC.	-60.2±0.2	-252.0±0.9	77PED/RYL	598-53-8
C ₄ H ₁₀ OS + (CH ₃ CH ₂) ₂ SO	≤8.76	≤153	≤640	~49.1±0.4	-205.6±1.5	77PED/RYL	70-29-1
С 4H₁₀O₂ ⁺ n-С ₄ H ₉ OOH	(9.36±0.03) IP from 77ASH/B	(166) UR.	(696)	-49	-207	*EST	4813-50-7
tert-C ₄ H ₉ OOH	(≤10.24)	(≤178)	(≤744)	-58±1	-244±6	77PED/RYL	75-91-2
HOCH ₂ CH ₂ CH ₂ OCH ₃	(9.3) IP is onset of phot	(122) oelectron	(509) band (83BIE/N	-93 IOR).	-388	*EST	1320-67-8
носн ₂ сн ₂ ос ₂ н ₅	(9.6) IP is onset of phot	(126) oelectron	(528) band (81KIM/I	-95 (AT).	-398	*EST	110-80-5
CH ₃ OCH ₂ CH ₂ OCH ₃	(9.3) IP is onset of photo	(133) oelectron l	(557) band (83BAK/	-81 ARM, 81KIM/F	-340 KAT).	67LOU/LAI	110-71-4
СH ₃ СH(ОСH ₃) ₂	(9.65±0.03)	(129)	(541)	-93.1±0.2	-389.7±0.8	77PED/RYL	534-15-6
C ₄ H ₁₀ O ₂ S ⁺ (C ₂ H ₅) ₂ SO ₂	(9.96±0.03)	(127)	(532)	-103±0.7	-429±3	77PED/RYL	597-35-3
C ₄ H ₁₀ O ₃ + CH(OCH ₃) ₃	(9.5) IP from 82HOL/L	(89) OS2.	(372)	-130±0.2	-545±1	77PED/RYL	149-73-5
C ₄ H ₁₀ O ₃ P ⁺							
0 p OCH3	From proton affini PA = 219.4 kcal/m	-	-	kaphosphorinar	ne (RN 31121-0	6-9).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ H ₁₀ O ₃ S + (C ₂ H ₅ O) ₂ SO	(9.68)	(91)	(382)	-132±0.5	-552±2	77PED/RYL	623-81-4
C ₄ H ₁₀ S +							
n-C ₄ H ₉ SH	9.14±0.02	190	794	−21.1±0.3	-88.1±1.2	77PED/RYL	109-79-5
sec-C ₄ H ₉ SH	(9.10)	(187)	(781)	-23.2±0.2	-96.9±0.8	77PED/RYL	513-53-1
iso-C ₄ H ₉ SH	(9.12)	(187)	(783)	-23.3±0.2	-97.3±0.8	77PED/RYL	513-44-0
tert-C ₄ H ₉ SH	(9.03)	(182)	(762)	-26.2±0.2	-109.6±0.8	77PED/RYL	75-66-1
n-C ₃ H ₇ SCH ₃	(8.8±0.2)	(183)	(767)	-19.6±0.2	-82.2±0.9	77PED/RYL	3877-15-4
iso-C ₃ H ₇ SCH ₃	(8.7±0.2)	(179)	(748)	-21.6±0.2	-90.5±0.7	77PED/RYL	
(C ₂ H ₅) ₂ S	8.43±0.01	174 <i>181</i>	729 757	-20±0.2 -13	-84±1 -56	77PED/RYL	352-93-2
$C_4H_{10}SSi^+$ $(C_2H_5)_2Si=S$	$\Delta_{\mathbf{f}}H(\text{Ion})$ from a \mathbf{f}	(188) opearance po (193)	(787) otential detern	nination (81GU	JS/VOL). (10)	81GUS/VOL	77205-52-8
(H ₃ C) ₂ Si C ₄ H ₁₀ S ₂ + (C ₂ H ₅ S) ₂	IP from 81GUS/V	≤173	≤723	-17.8±0.3	-74 7+1 1	77PED/RYL	110-81-6
(-25-72	Dialkyl disulfides upon ionization; a the experimentally	undergo a cl diabatic ioni	nange in the dization potent	ihedral CSSC a ials are probab	ngle from 90°	to 180°.	110-81-0
СН ₃ SCH ₂ CH ₂ SCH ₃	(≤8.64)	(≤190)	(≤797)	-9	-37	*EST	6628-18-8
C ₄ H ₁₀ Sc ⁺							
HScCH(CH ₃)C ₂ H ₅	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from on	(195) set of endot	(816) hermic reacti	on (84TOL/BE	A).		
CH ₃ ScC ₃ H ₇	$\Delta_{ extstyle f} H$ (Ion) from on		(728) hermic reaction	on (84TOL/BE	A).		
C ₂ H ₄ Sc(CH ₃) ₂	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from on		(732) hermic reactio	on (84TOL/BE	A).		
(CH ₃ CH = CH ₂)ScH(CH ₃	3)	40.0	(Tab)				
	$\Delta_{\mathbf{f}}H(\operatorname{Ion})$ from on		(770) hermic reactio	on (84TOL/RE	4) .		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$		$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₄ H ₁₀ Sc ⁺							
$(CH_3CH = CHCH_3)ScH_2$							
	$\Delta_f H(ext{Ion})$ from o	(195)	(816) thermic react	ion (8/TO) /BF	34)		
	Ziri(ton) from o	isct of chao				*	
C ₄ H ₁₀ Se +							
(C ₂ H ₅) ₂ Se	(8.3±0.3)	(178)	(743)	~14±1	−58±5	77PED/RYL	627-53-2
C ₄ H ₁₀ Zn ⁺							
$(C_2H_5)_2Zn$	(≤8.6)	(≤212)	(≤888)	14±0.7	58±3	77PED/RYL	557-20-0
C ₄ H ₁₁ +			 				
((CH ₃) ₃ CH)H		170	712				
· · · · · · · · · · · · · · · · · · ·	From proton affin	nity of iso-C	₁ H ₁₀ . (RN 75	-28-5). PA = 1	.63.3 kcal/mol,		
	683. kJ/mol.						
C ₄ H ₁₁ ClO ₃ Si ⁺							
(CH ₃ O) ₃ SiCH ₂ Cl	(10.0)	(4)	(17)	-226	-948	*EST	5926-26-1
•	IP is onset of pho	toelectron b	and (81ZYK/	KHV).			
C ₄ H ₁₁ ClSi ⁺						.,	
(CH ₃) ₃ SiCH ₂ Cl	(9.4)	(159)	(667)	-57	-240	*EST	2344-80-1
. 5.5 2	IP is onset of pho			KHV, 82LEV/I	LIA).		
C ₄ H ₁₁ N ⁺			· · · · · · · · · · · · · · · · · · ·	·. · · · · · · · · · · · · · · · · · ·			
n-C ₄ H ₉ NH ₂	8.71±0.03	179	748	-22±0.2	-92±1	77PED/RYL	109-73-9
	See also: 81KIM/	KAT, 79AU	E/BOW.				
sec-C ₄ H ₉ NH ₂	(8.70)	(176)	(734)	_25 0±0 2	-104.8±0.9	77PED/RYL	13952-84-6
sec-C411911112	(6.70)	(170)	(134)	-23.0±0.2	-104.0±0.9	//FED/KIL	13932-04-0
iso-C ₄ H ₉ NH ₂	(8.70)	(177)	(741)	-23.6±0.1	-98.8±0.4	77PED/RYL	78-81-9
Anna C YY NIYY	(0.44)	(170)	(712)	000.00	100001	CONTRACTOR AND A STATE	75 (4.0
tert-C ₄ H ₉ NH ₂	(8.64)	(170)	(713)	-28.9±0.1	-120.9±0.4	77PED/RYL	75-64-9
(C ₂ H ₅) ₂ NH	8.01±0.01	167	700	-17.4±0.5	-72.6±2	77PED/RYL	109-89-7
$C_2H_5N(CH_3)_2$	(7.74±0.05)	(167)	(701)	-11	-48	*EST	598-56-1
	IP is onset of pho		and. See also	oilUU/IAK,	/7AUE/BUW.		
C ₄ H ₁₁ NO ⁺							
(CH ₃) ₂ NCH ₂ CH ₂ OH	(0.8)	(n (n)	(#0#*		•••		400.55
	(8.2) IP is onset of pho	(140) toelectron b	(587)	-49 I I A 86VOR/R	-204 ROV	81LOS/LAM	108-01-0
	11 is offset of huo	COCICCITOII DE	(OLLEV)	LIA, 60 V UIVB		·	
$C_4H_{11}N_2^+$							
/н\		147	617				
(N) H+	From proton affir			-85-0). PA = 2	24.2 kcal/mol.		
\\ _N \/	938. kJ/mol.	1.11	V== - 444	y: = = = =			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(N- kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C ₄ H ₁₁ N ₂ +					••••		
(HN CH3) HT	From proton affin PA = (214.9) kca			aziridine (RN 4	901-75-1).	·	
C ₄ H ₁₁ O +		<u> </u>					
n-C ₄ H ₉ OH ₂	From proton affin	109 nity of n-C ₄ I	456 H ₉ OH (RN 7:	1-36-3). PA =	191.1 kcal/m	ol, 799.5 kJ/mol.	
sec-C ₄ H ₉ OH ₂	From proton affir PA = (195) kcal/		•	78-92-2) (78P <i>A</i>	lU/KIM).		
iso-C ₄ H ₉ OH ₂	From proton affir PA = 192.4 kcal/i			78-83-1) (78TA	.F/TAA).		
tert-C ₄ H ₉ OH ₂	From proton affir 810. kJ/mol.	97 hity of tert-C	408 ₄ H ₉ OH (RN	75-65-0). PA	= 193.7 kcal/	/mol,	
(C ₂ H ₅) ₂ OH	From proton affir PA = 200.2 kcal/r			29-7) (86KNI/I	PRE, 86MAU	J/LIE).	
С ₄ H ₁₁ O ₂ + HO(CH ₂) ₄ OH ₂	From proton affin (887) kJ/mol.	52 ity of HO(C	216 TH ₂)4OH (RN	V 110-63-4). PA	A = (212) kc	al/mol,	
СН ₃ ОСН ₂ СН ₂ ОНСН ₃							
	From proton affin 857. kJ/mol.	80 ity of CH ₃ O	333 CH ₂ CH ₂ OC	H ₃ (RN 110-71	-4). PA = 2	204.9 kcal/mol,	
C ₄ H ₁₁ O ₃ P +							
OPH(OC ₂ H ₅) ₂	(10.31) See also: 80ZVE/	(19) /IL.	(79)	-219	-916	*EST	762-04-9
C ₄ H ₁₁ P+			***************************************	····	······································		
tert-C ₄ H ₉ PH ₂	(8.9) IP is onset of phot		(757) and.	-24	-102	*EST	2501-94-2
$(C_2H_5)_2PH$	(8.69)	(176)	(736)	-24	-102	*EST	627-49-6
C ₄ H ₁₁ S + (C ₂ H ₅) ₂ SH	From proton affin	141	588				

Table 1. Positive Ion Table - Continued

	Table	1. Posii	tive Ion Tabl	e – Conti	nued		
ION Neutral	Ionization potential eV	∆ _f H kcal/m	(Ion) ol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number
C ₄ H ₁₁ S + tert-C ₄ H ₉ SH ₂	From proton affir	143 nity of t-C	596 34H9SH (RN 75	66-1). PA =	196.9 kcal/mol	, 824. kJ/mol.	
sec-C ₄ H ₉ SH ₂	From proton affin PA = (194.0) kca			513-53-1) (78P	AU/KIM).		
C ₄ H ₁₁ SSi ⁺ (C ₂ H ₅) ₂ SiSH	Δ _f H(Ion) from ap	(157) opearance	(657) potential deter	mination (810	GUS/VOL).		
C ₄ H ₁₂ BCIN ₂ + B(N(CH ₃) ₂) ₂ CI	8.08	106	445	-80±1	−335±5	77PED/RYL	6562-41-0
C ₄ H ₁₂ ClN ₂ OP + ((CH ₃) ₂ N) ₂ POCl	(8.61)	(75)	(316)	-123	-515	*EST	1605-65-8
C ₄ H ₁₂ CIN ₂ P + ((CH ₃) ₂ N) ₂ PCI	(7.6) IP is onset of phot	(127) coelectron	(531) n band.	-48	-202	*EST	3348-44-5
C ₄ H ₁₂ F ₄ N ₅ P ₃ +							
(CH ₃) ₂ N P N P N(CH ₃) ₂	(8.96) IP from 81CLA/S	(-169) OW.	(-706)	-375.5	-1571	*EST	30004-14-9
C ₄ H ₁₂ Ge ⁺							
(CH ₃) ₄ Ge	9.33±0.05	198	828	-17±2	-72±9	77PED/RYL	865-52-1
C ₄ H ₁₂ N ⁺ n-C ₄ H ₉ NH ₃	From proton affin 914. kJ/mol.	122 ity of n-C	524 2 ₄ H ₉ NH ₂ (RN 1	09-73-9). PA	= 218.4 kcai/m	ool,	
sec-C ₄ H ₉ NH ₃	From proton affin 922. kJ/mol.	120 ity of sec-	502 ·C ₄ H ₉ NH ₂ (RN	13952-84-6).	PA = 220.5 kc	al/mol,	
iso-C ₄ H ₉ NH ₃	From proton affin 915. kJ/mol.	123 ity of iso-	515 C ₄ H ₉ NH ₂ (RN	78-81-9). PA	= 218.8 kcal/n	nol,	
tert-C ₄ H ₉ NH ₃	From proton affin 924. kJ/mol.	116 ity of tert	485 -C ₄ H ₉ NH ₂ (RN	75-64-9). PA	= 220.8 kcal/i	nol,	
(C ₂ H ₅) ₂ NH ₂	From proton affin 945. kJ/mol.	125 ity of (C ₂	512 H ₅) ₂ NH (RN 10	9-89-7). PA :	= 225.9 kcal/m	ol,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	n)	$\Delta_{\mathbf{f}}H(\mathbf{N})$	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	-	kJ/moi	reference	number
C ₄ H ₁₂ N ⁺							
$(CH_3)_2(C_2H_5)NH$		127	531				
	From proton affi	inity of (CH3)) ₂ (C ₂ H ₅)N (RN 598 - 56-1).	PA = 227.5 kg	cal/mol,	
	952. kJ/mol.						
C ₄ H ₁₂ NO ⁺							
NH ₃ (CH ₂) ₄ OH		75	312				
	From proton affi 978. kJ/mol.	nity of NH ₂ (СН ₂) ₄ ОН (F	N 13325-10-5)	PA = 233.81	kcal/mol,	
C ₄ H ₁₂ NO ₂ P ⁺							
(CH ₃ O) ₂ PN(CH ₃) ₂							
. 5 /2 . 5/2	(8.1)	(71)	(296)	-116	-486	*EST	597-07-9
	IP is onset of pho	otoelectron ba	and (82WOR	/HAR).			
C ₄ H ₁₂ N ₂ +							
$(CH_3)_2NN(CH_3)_2$	(6.87)	(175)	(732)	16	69	61GOW/JON	6415-12-9
· 5/4 · 5/4			` '			Reference standard:	
	IP(C ₆ H ₅ N(CH ₃)						
C ₄ H ₁₂ N ₂ S ₂ +	-						
$(CH_3)_2NSSN(CH_3)_2$							
, J. L	(7.2)	(163)	(683)	-3	-12	*EST	928-05-2
	IP is onset of pho	otoelectron ba	and (81BOC/	SCH).			
C ₄ H ₁₂ N ₄ ⁺				· · · · · · · · · · · · · · · · · · ·		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
(E) - $(CH_3)NN = NN(CH_3)_2$).						
· · · · · · · · · · · · · · · · · · ·	(7.0)	(227)	(948)	65±0.7	273±3	77PED/RYL	6130-87-6
	IP is onset of pho	toelectron ba	ınd.				
C ₄ H ₁₂ OSi ⁺					· · · · · · · · · · · · · · · · · · ·		
(CH ₃) ₃ SiOCH ₃	9.61	(110)	(459)	-112±2	-468±8	*EST	1825-61-2
ت د.د .	IP from 83MOL/		• /		***	•	· -
С ₄ Н ₁₂ Рь+							
(CH ₃) ₄ Pb	(8.50)	(229)	(956)	33±1	136±4	82PIL/SKI	75-74-1
C ₄ H ₁₂ Si +							
(CH ₃) ₄ Si	9.80±0.04	170	711	-55.7±0.7		83STE2	75-76-3
		178	743	-48	-202		
$(C_2H_5)_2SiH_2$	(9.8)	(182)	(763)	-44±1	−183±6	77PED/RYL	542-91-6
C ₄ H ₁₂ SiS ⁺		and the second					
(CH ₃) ₃ SiSCH ₃	(8.4)	(128)	(534)	-66	-276	*EST	3908-55-2
-	IP is onset of pho						
C ₄ H ₁₂ Sn ⁺							
(CH ₃) ₄ Sn	8.89±0.05	200	838	-5±0.5	-20±2	77PED/RYL	594-27-4
	0.0710.03	200			2012	//LED/KIL	J2774194

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	l ∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C ₄ H ₁₃ N ₂ + NH ₂ (CH ₂) ₄ NH ₃	From proton aff 994 kJ/mol.	115 inity of NH ₂ (483 (CH ₂) ₄ NH ₂ (RN 110-60-1).	PA = 237.61	ccal/mol,					
(CH ₃) ₂ NNH(CH ₃) ₂	From proton aff PA = 224.8 kca	_		(RN 6415-12-9) (84MAU/N	EL).					
C ₄ H ₁₃ OSi ⁺ (CH ₃) ₃ Si(OH)CH ₃	From proton aft ~849 kJ/mol.	(51) inity of (CH ₃	(213)) ₃ SiOCH ₃ (R	N 1825-61-2).	PA = ~203 k	cal/mol,					
C ₄ H ₁₄ N ₃ OP ⁺ ((CH ₃) ₂ N) ₂ (NH ₂)PO	(8.60±0.05)	(83)	(348)	~115	-482	*EST	3732-86-3				
C ₄ H ₁₅ N ₃ OP ⁺ ((CH ₃) ₂ N) ₂ (NH ₂)POH	From proton aff PA = 224.4 kcal			PO (RN 3732-8	6-3) (85BOL	/HOU).					
С ₄ H ₁₅ OSi ₂ ⁺ ((СН ₃) ₂ SiH) ₂ OH	From proton aff ~849 kJ/mol.	(6) inity of ((CH	(26) ₃) ₂ SiH) ₂ O (R	N 3277-26-7).	PA = ~203 k	cal/mol,					
C ₄ I ₄ S + I S I	(≤8.27)	(≤302)	(≤1262)	111	464	*EST	19259-11-1				
C ₄ La ⁺ LaC ₄	(4.7±0.5)	(288)	(1207)	180±2	754±8	81GIN/PEL	12603-31-5				
C ₄ N ₂ ⁺ NCC≡CCN	11.81±0.01 See also: 82MAl	400 /MIS.	1673	128	534	82CHU/NGU	1071-98-3				
C ₄ N ₂ O + (NC) ₂ C = C = O	(10.56) IP is onset of ph	(300) otoelectron b	(1255) and (80HOT/	56.5 NEI).	236	*EST	4361-47-1				

Table 1. Positive Ion Table - Continued

			ve ion ladie	- Contin			
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₄ N ₂ S +							
$(NC)_2C = C = S$	(9.94) IP is onset of pho	(339) otoelectron	(1419) band (80SCH/S	110 CH2).	460	80SCH/SCH2	54856-36-9
C ₄ NiO ₄ +							
Ni(CO) ₄	8.27±0.04 See also: 86REU	48 I/WAN.	200	-143±1	-598±4	77PED/RYL	13463-39-3
C ₄ Sc ⁺			· · · · · · · · · · · · · · · · · · ·				
ScC ₄	(6.7±1.0) IP from 81HAQ	(339) /GIN.	(1418)	184±4	772±18	81HAQ/GIN	12547-95-4
C ₅ BrMnO ₅ +							
Mn(CO) ₅ Br	8.4 IP is onset of pho	(-16) otoelectron	(-65) band.	-209±1	-876±5	82CON/ZAF	14516-54-2
C ₅ BrO ₅ Re ⁺					·····		
Re(CO) ₅ Br	8.5 IP is onset of pho	(-9) otoelectron l	(-38) band.	-205±1	-858±5	83ALT/CON	14220-21-4
C ₅ ClMnO ₅ +		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
Mn(CO) ₅ Cl	8.6 IP is onset of pho	(-21) otoelectron l	(-88) band.	-219±2	-918±10	82CON/ZAF	14100-30-2
C ₅ ClO ₅ Re ⁺		·					
Re(CO) ₅ Cl	8.55 IP is onset of pho	(-12) otoelectron l	(-52) band.	-210±4	-877±18	83ALT/CON	14099-01-5
C ₅ FeO ₄ S ⁺			***************************************				
Fe(CO) ₄ CS	(7.8) IP is onset of pho	(65) otoelectron t	(273) band (82BOH/C	-115 LE).	-480	*EST	66517-47-3
C ₅ FeO ₅ +			<u> </u>		·-····································		
Fe(CO) ₅	7.96±0.01 See also: 83HAR	10 /OHN.	43	-173±2	-725±7	82PIL/SKI	13463-40-6
C ₅ HFeO ₅ + HFe(CO) ₅	From proton affi	(-10) nity of Fe(C	(-40) (O) ₅ (RN 13463-	40-6). PA =	~202 kcal/mo	l, ~845 kJ/mol.	
C ₅ HMnO ₅ +							
Mn(CO) ₅ H	8.5±0.1	19	80	-177±2	-740±10	82CON/ZAF	16972-33-1
C ₅ HN ₃ + C(CN) ₂ =CHCN	(~11.55)	(390)	(1632)	124	518	82CHU/NGU	997-76-2
C ₅ H ₂ MnO ₅ + H ₂ Mn(CO) ₅	From proton affi (841) kJ/mol.	(-12)	(-51)		= (201) kcal/	mol,	

Table 1. Positive Ion Table - Continued

	Table	1. Posit	tive Ion Table	e - Contin	ued		
ION Neutral	Ionization potential	∆ _f H((Ion) ol kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₅ H ₂ O ₃ +	(9.3) IP is onset of pho	(144) toelectror	(603) n band (82GLE/	–70 DOB).	-294	*EST	15548-56-8
C5H3Cl+ CH3C≅CC≡CCl	9.19±0.01 IP from 84KLA/I	(321) KUH.	(1342)	110±0.2	459±1	*EST	
C ₅ H ₃ NO ⁺	(≤9.47±0.05)	(≤243)	(≤1018)	25	104	*EST	617-90-3
C ₅ H ₃ Ns ⁺	(9.83±0.05)	(293)	(1226)	66	278	*EST	1003-31-2
$C_5H_4^+$ $CH_2 = C = C = CH_2$	(8.67)	(315)	(1318)	115	481	*EST	21986-03-8
CH≡CCH ₂ C≡CH	10.1 IP from 83HOL.	(338)	(1413)	105	439	*EST	24442-69-1
CH ₃ C≋CC≖CH	9.4 IP from 81FOR/N	(318) IAI. See a	(1332) Iso: 81MAI.	101	425	*EST	4911-55-1
C ₅ H ₄ BrN ⁺							
Q _N Br	9.65±0.05	(261)	(1092)	38	161	*EST	109-04-6
© Br	(9.75±0.1)	(263)	(1102)	38	161	*EST	626-55-1
Br N	9.94±0.05	(268)	(1120)	38	161	•EST	1120-87-2

Table 1. Positive Ion Table - Continued

· · · · · · · · · · · · · · · · · · ·	Tauk	e 1. Pusit	ive ion Table	e - Contin	ueu		·····
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₄ ClN ⁺							
Q _N CI	9.0 IP is onset of ph	(232) otoelectron	(971) a band (81MOD	25 /DIS2).	103	*EST	109-09-1
CI	9.1 IP is onset of ph	(236) otoelectron	(986) a band (81MOD)	26 /DIS2).	108	*EST	626-60-8
NO CI	9.5 IP is onset of ph	(245) otoelectron	(1025) s band (81MOD)	26 /DIS2).	108	*EST	626-61-9
C ₅ H ₄ ClN ₄ ⁺						······································	
(NOT N) HT	From proton aff ~870 kJ/mol.	(200) inity of 6-ch	(839) Moropurine (RN	187-42-3). PA	= ~208 kcal/ı	noi,	
C ₅ H ₄ FN ⁺							
Q _N _F	(9.4) IP is onset of pho	(201) otoelectron	(839) band (83PIA/K	-16 EL).	-68	*EST	372-48-5
SH4N2+							
C ₅ H ₄ N ₂ +	(8.09±0.01)	(277)	(1161)	91±4	380±16	*EST	1192-27-4
C ₅ H ₄ N ₂ O ₂ +							
C ₅ H ₄ N ₂ O ₂ +	(10.3±0.1)	(270)	(1130)	33	136	*EST	2530-26-9
2 ^N ON	(10.4)	(273)	(1140)	33	137	*EST	1122-61-8
•							

Table 1. Positive Ion Table - Continued

			ve ion lab	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₄ N ₂ O ₃ +							
on NO2	(9.03±0.02)	(222)	(930)	14	59	*EST	1124-82-9
C ₅ H ₄ N ₄ ⁺					<u> </u>		
	(≤9.52±0.03)	(≤275)	(≤1149)	55	230	*EST	120-73-0
C ₅ H ₄ N ₄ O ⁺							
HNTT	(≤8.55±0.03)	(≤209)	(≤875)	12	50	77PED/RYL	68-94-0
C ₅ H ₄ O +	 						
	(9.49)	(211)	(881)	-8±8	−35±35	*EST	13177-38-3
CeH4OS+							
C ₅ H ₄ OS ⁺	(≤9.37±0.05)	(≤222)	(≤928)	6	24	*EST	98-03-3
C ₅ H ₄ O ₂ +	-						
C ₅ H ₄ O ₂ +	9.35±0.05	(176)	(733)	-40	-169	*EST	108-97-4
0~~0	(9.6) IP is onset of pho	(168) toelectron b	(704) and (82GLE	-53 /DOB).	-222	*EST	930-60-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H() kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₅ H ₄ O ₂ +	9.21±0.01	176	738	-36±1	−151±5	77PED/RYL	98-01-1
С5Н4О3+	(≤9.16±0.05)	(≤118)	(≤493)	−93±0.7	-391±3	77PED/RYL	488-93-7
O CH3	(10.7) IP is onset of phot	(140) toelectron	(585) band (81KIM/i		5 −447.2±2.5	77PED/RYL	616-02-4
C ₅ H ₄ S +	(8.4) IP is onset of photo	(239)	(1000) band (81SCH/	45 SCH).	190	*EST	77825-99-1
C ₅ H ₅ ⁺ HC≡CCHCH = CH ₂	7.88 IP from 84LOS/H	271 OL.	1132	89	372	82MCM/GOL	50706-18-8
	8.41	(252)	(1052)	58±1	241±6	82MCM/GOL	62744-94-9
CH=CH ₂	From appearance	(242) energy fro	(1012) m C ₆ H ₅ CH ₂ ⁺	precursor, 3.55	s eV (78MCC/F	·RE).	

C₅H₅BrN⁺

H_N Br

189 793

From proton affinity of 2-bromopyridine (RN 109-04-6).

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ kcal/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry
C ₅ H ₅ BrN ⁺		189 791 ity of 3-bromopyridine (R)			
, C NH	From proton affin	186 779 ity of 4-bromopyridine (RI	N 1120-87-2).		
C ₅ H ₅ Br ₃ Ti ⁺ Br Ti Br Br	(9.1) IP is onset of phot	(102) (428) oelectron band (84TER/L	-108 -450 OU).	*EST	12240-42-5
C ₅ H ₅ CiN ⁺	From proton affin 897. kJ/mol.	176 736 ity of 2-chloropyridine (RN	N 109-09-1). PA = 214.4 kca	ıl/mol,	
CI CI	From proton affin 899. kJ/mol.	177 739 ity of 3-chloropyridine (RN	N 626-60-8). PA = 214.8 kca	i/mol,	
HN CI	From proton affin 911 kJ/mol.	174 727 ity of 4-chloropyridine (RN	N 626-61-9). PA = 217.8 kca	l/moi,	
C5H5Cl3Ti+ C1\sum_{C1}^{T_i} \c1	(9.1) IP is onset of phot	(76) (319) pelectron band (84TER/Le	−133±3 −559±12 OU).	77PED/RYL	1270-98-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
C ₅ H ₅ FN ⁺	From proton affin 881 kJ/mol.	139 ity of 2-fluo	581 ropyridine (RN	372-48-5). F	PA = 210.6 kcal/r	nol,	
T ST	From proton affin 897. kJ/mol.	138 ity of 3-fluo	577 ropyridine (RN	372-47-4). F	'A = 214.3 kcal/n	nol,	
₽ NH	From proton affin	135 ity of 4-fluor	567 ropyridine (RN	694-52-0). P	A = 216.6 kcal/n	nol,	
$C_5H_5F_3O_2^+$ $CF_3COH = CHCOCH_3$	(9.5) IP is onset of photo		(-86.7) and.	-239.8	-1003.3	84ERA/KOL	367-57-7
C ₅ H ₅ N ⁺	9.25 See also: 83PIA/KI	247 EL, 82LIF, 8	1032 31KIM/KAT.	33±0.2	140±1	79KUD/KUD3	110-86-1
C ₅ H ₅ NO +	8.38±0.02	(207)	(869)	14	61	*EST	694-59-7
CH.	(8.4) IP is onset of photo		(733) nd.	-18±0.5	-77±2	82SUR/ELS	142-08-5
N OH	8.6 IP is onset of photo		(750) nd.	-19±0.5	-80±2	82SUR/ELS	109-10-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(No kcal/mol		Neutral reference	CAS registry number			
C ₅ H ₅ NO ⁺										
Он	(≤9.15±0.03)	(≤200)	(≤839)	-11±0.5	-44±2	82SUR/ELS	109-00-2			
NO OH	9.75±0.11	(215)	(900)	-10±0.5	-41±2	82SUR/ELS	626-64-2			
C-H-NO. +										
C ₅ H ₅ NO ₂ ⁺	(8.90±0.05)	(167)	(699)	-38	-160	*EST				
OH O	(8.60±0.05)	(168)	(706)	-30	-124	*EST	6602-28-4			
ONOOH	(8.18±0.05)	(160)	(668)	-29	-121	*EST	6890-62-6			
										
C ₅ H ₅ NS ⁺	(7.7) IP is onset of photo	(220) toelectron b	(921) and.	43	178	*EST	2637-34-5			
SH	≤8.7 IP from 81DRE/B		(≤963) //LIA.	30	124	*EST	73018-10-7			
SH	(≤8.89±0.03)	(≤239)	(≤999)	34	141	*EST	16133-26-9			

Table 1.	Positive	Ion Table	_	Continued

	Table	1. Posit	ive Ion Tabl	e - Conti	nued		
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	(Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry
C ₅ H ₅ NS ⁺	≤9.25±0.03	(≤247)	(≤1033)	34	141	*EST	4556-23-4
C ₅ H ₅ N ₂ O ₂ +					····	es to see the see see	
O ₂ N NH	From proton affin 872. kJ/mol.	190 nity of 4-ni	795 tropyridine (RI	N 1122-61-8).	PA = 208.5 kc	al/mol,	
C ₅ H ₅ N ₄ +							
(NOTH) H+	From proton affir 917.5 kJ/mol.	201 nity of 9H-	843 purine (RN 120	0-73-0). PA =	= 219.3 kcal/mo	ı,	
C ₅ H ₅ N ₄ O ⁺				· · · · · · · · · · · · · · · · · · ·			
HIN N H	+ From proton affir -907 kJ/mol.	(161) nity of hypo	(673) Exanthine (RN	68-94-0). PA	= ~217 kcal/m	ol,	
C ₅ H ₅ N ₅ +							
NH2 N N N N	(7.8) IP is onset of pho	(229) toelectron	(960) band.	49±2	207±8	83KIR/DOM	73-24-5
C ₅ H ₅ N ₅ O ⁺							
H ₂ N N N N	(7.85)	(181)	(759)	0.5	2	77PED/RYL	73-40-5
C ₅ H ₆ ⁺ CH ₂ =C=CHCH=CH ₂	(8.88)	(265)	(1100)	60	251	*ECT	10562 01 6
$CH_2 = C = CHCH = CH_2$ (Z)- $CH_3CH = CHC = CH$	(8.88) 9.14±0.04	(265) 272	(1108) 1138	60 61±1	251 256±6	*EST 78SHA	10563-01-6 1574-40-9
(E)-CH ₃ CH = CHC≡CH	(9.05)	(270)	(1130)	61±0.7	257±3	78SHA	2004-69-5
CH ₂ =CHC≡CCH ₃	9.00±0.01	(267)	(1118)	(60)	(250)	*EST	646-05-9

Table 1. Positive Ion Table - Continued

	Table	I. Positi	ve Ion Table	e - Conti	nued		
ON Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	_	leutral) l kJ/mol	Neutral reference	CAS registry number
C ₅ H ₆ + CH ₂ = C(CH ₃)C≡CH	9.23±0.01	275	1148	62	258	77LEB/RYA	78-80-8
	8.56±0.01	229	957	31±1	131±4	77PED/RYL	542-92-7
С≡СН	(8.7) IP is onset of pho	(275) toelectron	(1152) band.	75	313	*EST	6746-94-7
	(8.0)	(264)	(1103)	79	331	*EST	5164-35-2
	9.74 IP from 85HON/I	308 HUB.	1291	84±1	351±4	85WIB/DAI	35634-10-7
5H6N+							
Ez.	From proton affin	178 ity of py ri d	746 ine (RN 110-86	5-1). PA = 22	20.8 kcal/mol, 9	724 kJ/mol.	
C ₅ H ₆ NO ⁺	**************************************						
N-OH	From proton affin 922. kJ/mol.	160 ity of py r id	669 ine-N-oxide (R	N 694-59-7).	PA = 220.3 kc	al/moi,	
C ₅ H ₆ N ₂ ⁺							
ON NH2	(8.0) IP is onset of phot	(213) oelectron t	(890) pand (82LEV/I	28±0.2 LIA, 82GUI/K	118±1 IHA).	84BIC/PIL	504-29-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₆ N ₂ +							
ON-NH2	(8.1) IP is onset of pho	(221) toelectron b	(926) eand.	34±0.5	144±2	84BIC/PIL	462-08-8
H ₂ N ON	(8.4) IP is onset of photaffinity considerat						504-24-5
C ₅ H ₆ N ₂ O +							
N NH2	(8.04±0.05)	(197)	(825)	12	49	*EST	14150-95-9
NO NH2	(8.21±0.05)	(204)	(853)	15	61	*EST	1657-32-5
H ₂ N NO	(7.67±0.05)	(191)	(797)	14	57	*EST	3535-75-9
C ₅ H ₆ N ₂ O ₂ +			***************************************				
H ₃ C NH	(8.8) IP from onset of p	(124) hotoelectro	(520) n band.	−79±1	-329±4	77NAB/SAB	65-71-4
C ₅ H ₆ N ₂ O ₂ S + H ₃ C S	8.6	(152)	(635)	-47	-195	*EST	21035-65-4

Table 1. Positive Ion Table - Continued

Marie Transcription of the Control o	Table	1. FUSIL	ive ion labi	e - Cont	mueu		
ION Neutral	Ionization potential eV	∆ _f H(kcal/mc	Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₅ H ₆ N ₂ O ₃ + CH ₃ O CH ₃ O	10.19 IP from 85ROT/I	(≤124) 3OC.	(≤519)	-111	-464	*EST	5176-82-9
C ₅ H ₆ N ₅ ⁺ (NH ₂ N N H H +	From proton affi	191 nity of ade	802 nine (RN 73-24	-5). PA = 27	23.5 kcal/mol, 93:	5. kJ/mol.	
C ₅ H ₆ N ₅ O +	+ From proton affin	(143) nity of gua	(599) nine (RN 73-40	-5). PA = ~2	223 kcal/mol, ~93	3 kJ/mol.	
C ₅ H ₆ O +							
Ů	8.4 IP from 86SPI/GI	(192) RU.	(803)	-2 ±1	-7±5	*EST	289-65-6
	≤9.34±0.02	(≤196)	(≤823)	-19	- 78	*EST	930-30-3
Оуснз	8.39±0.01 IP from 78LIA/A	(174) US, 77RO	(730) S/DRA. See als	19 o: 83ZYK/EI	-80 RC, 86SPI/GRU.	*EST	534-22-5
CH3	(8.64) IP from 86SPI/GI	(182) RU.	(763)	-17	-71	*EST	930-27-8

Table 1. Positive Ion Table - Continued

			e ion lable -				
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₆ OS ⁺					•		
S OCH3	(7.8) IP is onset of pho	(131) toelectron t	(547) eand (85BAJ/HU	~49 M).	-206	*EST	16839-97-7
C ₅ H ₆ OS ₂ +						·	
H ₃ C S 0	(≤8.5) IP from 83SCH/S	(≤177) CH.	(≤740)	-19	-80	*EST	49675-88-9
C ₅ H ₆ O ₃ + CH ₃ (CO) ₃ CH ₃	(≤9.52)	(≤115)	(≤482)	-104	-437	*EST	921-11-9
C ₅ H ₆ S ⁺	8.61±0.02	218	914	20.0±0.2	83.5±0.8	77PED/RYL	554-14-3
S CH ₃	(8.40)	(213)	(893)	19.7±0.2	82.6±0.8	77PED/RYL	616-44-4
S	(7.9) IP is onset of phot	(224) toelectron b	(940) and.	42±2	178±8	*EST	289-70-3
C ₅ H ₆ Si ⁺							
H _{Si}	(7.8) IP is onset of phot	(197) coelectron b	(824) and (84BOC/ROS	17 S).	71	83GOR/BOU	289-77-0
C ₅ H ₇ +					·		
$CH_2 = CHCHCH = CH_2$	(7.25) See also: 80WOL/	(220) HOL.	(922)	53	222	69GOL/BEN	14362-08-4
HC≡CC(CH ₃) ₂	(7.44) See also: 80WOL/	(234) HOL.	(981)	63	263	76LOS/TRA	56897-57-5

Table 1. Positive Ion Table - Continued

***************************************	Table	. FUSILIY	e ion labie	- Contini	ieu .		
ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Net		Neutral reference	CAS registry number
C ₅ H ₇ +							
	7.00 Proton affinity of 0 leads to $\Delta_{\mathrm{f}}H(\mathrm{Ion})$					70FUR/GOL 835. kJ/mol)	54846-63-8
C ₅ H ₇ N ⁺	· ·						
CH ₃	7.94±0.02	207.6	869.2	24.6±0.1	103.1±0.5	77PED/RYL	96-54-8
H N CH3	(7.78±0.01)	(197)	(825)	18±0.2	74±1	*EST	636-41-9
C ₅ H ₇ N ₂ +							
UN NH2	From proton affini 936. kJ/mol.	170 ty of 2-pyri	711 dinamine (RN	504-29-0). PA	= 223.8 kcal/	mol,	
NH ₂	From proton affini 925. kJ/mol.	179 ty of 3-pyri	747 dinamine (RN	462-08-8). PA	= 221.0 kcal/	mol,	
H ₂ N NH	From proton affini (962) kJ/mol.	(169) ty of 4-pyrid	(706) Jinamine (RN	504-24-5). PA	= (230) kcal/	mol,	
C ₅ H ₇ N ₃ +	(≤9.5) IP from 83GLE/SP		(≤1263)	83	346	*EST	86402-31-5
H3C CH3	(≤9.5) IP from 83GLE/SP		(≤1257)	81	340	*EST	77202-09-6

Table 1. Positive Ion Table - Continu	Table - Continue	Table	Ion	Positive	Table 1.	
---------------------------------------	------------------	-------	-----	----------	----------	--

	Table	1. POSILI	ve Ion Table	e - Continu	nea	****	
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Nekcal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C ₅ H ₇ N ₃ +	(≤9.02)	(≤268)	(≤1123)	60	253	*EST	24108-34-7
N-N-CH3	(≤9.15)	(≤274)	(≤1145)	63	262	*EST	21134-90-7
C5H7O + (CH ₃) ₂ C = CHCO	$\Delta_{\mathbf{f}}H$ (Ion) from a	(138) ppearance p	(577) otential deterr	nination (85AL	.A/ATT).		44391-34-6
H ₂ CH ₃	From proton affir 86SAN/BAL). P.				OU/ROL, 86	MAU/LIE,	
O H ₂ CH ₃	From proton affii PA = 204.0 kcal/			930-27-8) (85H	OU/ROL).		
C ₅ H ₇ S ⁺							
H ₂ CH ₃	From proton affir PA = 205.4 kcal/s			(RN 554-14-3) (86MAU).		
C ₅ H ₈ +							
$CH_2 = C = CHCH_2CH_3$ (Z)- $CH_2 = CHCH = CHCH_2$	8.63±0.03	218	1030 914	33.6±0.2 19.4±0.2	140.7±0.6 81.1±1.0	77PED/RYL	591-95-7 1574-41-0
(E)-CH ₂ = CHCH = CHCH ₂	IP from 81MAS/N 3 8.59±0.02 IP from 81MAS/N	216	905	18.2±0.1	76.3±0.6	77PED/RYL	2004-70-8
CH ₂ =CHCH ₂ CH=CH ₂	(9.62±0.02)	(247)	(1034)	25.3±0.2	105.7±0.6	77PED/RYL	591-93-5
$CH_3CH = C = CHCH_3$	(8.7) IP is onset of photon	(232)	(972)		133.1±0.7	77PED/RYL	591-96-8

Table 1. Positive Ion Table - Continued

			Continued				
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
$\frac{C_{5H_{8}}^{+}}{CH_{2} = C(CH_{3})CH = CH_{2}}$							
	8.84±0.01 See also: 81MAS/	221.8 /MOU.	927.9	17.9±.2	75±1	77PED/RYL	78-79-5
C ₃ H ₇ C≖CH	10.05 IP from 81HOL/I	266 FIN.	1114	34.4±1	144±4	79ROG/DAG	627-19-0
C ₂ H ₅ C≡CCH ₃	9.44±0.01	248	1039	30.6±1	128±4	79ROG/DAG	627-21-4
(CH ₃) ₂ CHC≡CH	9.97 IP from 81HOL/I	262 FIN.	1098	32.5	136	69BEN/CRU	598-23-2
	9.01±0.02 See also: 81KIM//	216 KAT.	905	8.6	36	82ALL/DOD	142-29-0
CH ₂	9.16±0.02	241	1008	29.6±.2	124±1	78LEB/TSV	1120-56-5
Сн₌сн₂	(8.7)	(236)	(988)	35.6±.2	149±1	77PED/RYL	693-86-7
	(8.7±0.1)	(238)	(997)	37.8	158	82WIB/WEN	185-94-4
	(9.65)	(272)	(1139)	49.7	208	82WIB/WEN	311-75-1
	9.26 See also: 86GLE/I	258 KRE.	1078	44.2±0.2	185.1±0.7	77PED/RYL	157-40-4

Table 1. Positive Ion Table - Continued

		1. 1 03111	ve ion labie	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₅ H ₈ Br ₂ +							
Br	10.06	(218)	(913)	-14	-58	*EST	10230-26-9
Br Br	(10.02±0.02)	(217)	(909)	-14	-58	*EST	33547-17-0
C5H8F3O2 + CF3C(OH)O(n-C3H7)		-74	-311				
	From proton affir	nity of CF ₃ C	COO(n-C ₃ H ₇)	(RN 383-66-4)	•		
C ₅ H ₈ N ₂ +							
CH ₃	(≤8.38)	(≤224)	(≤936)	30	127	*EST	1739-84-0
	8.45±0.04	244	1022	49±0.7	207±3	80ENG	2721-32-6
C ₅ H ₈ N ₂ O ⁺							
	(9.2) IP is onset of photo	(243) coelectron b	(1015) and.	30.55±0.3	127.8±1.4	83BYS	22509-00-8
2 xx 0 ±							
$C_5H_8O^+$ (E)- $CH_3CH_2CH = CHCHC$	(9.70)	(194)	(810)	-30	-126	83HOL	764-39-6
$CH_3CH = C(CH_3)CHO$	(9.60)	(188)	(787)	-33	-139	83HOL	497-03-0
$C_2H_5COCH = CH_2$	(9.50)	(186)	(781)	-33	-136	83HOL	1629-58-9
$(E)-CH_3CH=CHC(=O)C$	CH ₃ (9.39)	(175)	(732)	-42	-174	84BOU/HOP	625-33-2
$CH_2 = C(CH_3)C(=0)CH_3$	(9.50)	(177)	(741)	-42	-176	84BOU/HOP	814-78-8

Table 1. Positive Ion Table - Continued

		·					
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₅ H ₈ O ⁺							· · · · · · · · · · · · · · · · · · ·
(E)- $CH_3OCH = CHCH = C$	_						
	(8.03)	(222)	(931)	37	156	*EST	10034-09-0
\bigcirc	8.34±0.01	162	679	-29.9±0.4	-125.2±1.5	77PED/RYL	110-87-2
~ 0	9.25±0.01 See also: 82BIE/A	167 SB.	698	~46±0.5	−194±2	<i>11</i> PED/RYL	120-92-3
CH3	9.46	190	794	-28±0.2	−119±1	83FUC/SMI	765-43-5
$C_5H_8OS^+$ (Z)- $CH_3C(=S)CH=C(OF)$	H)CH ₃ (8.4) IP is onset of photo	(160) oelectron b	(670) and (81JOR/CA	-33 R).	-140	*EST	73059-87-7
(Z)-CH ₃ C = (SH)CHC(= C		(≤168) AR.	(≤702)	-33	-140	*EST	65581-04-6
S	(8.90±0.05)	(168)	(704)	-37±0.7	-155±3	77PED/RYL	1072-72-6
C ₅ H ₈ O ₂ + C ₂ H ₅ CH = CHCOOH	(10.14)	(144)	(601)	-90±2	-377±8	*EST	626-98-2
$(CH_3)_2C = CHCOOH$	(9.63)	(124)	(519)	-98	-410	*EST	541-47-9
$CH_3CH = C(CH_3)COOH$	(9.50)	(121)	(507)	-98	-410	*EST	13201-46-2
$CH_2 = C(C_2H_5)COOH$	(10.06)	(139)	(582)	-93	-389	*EST	3586-58-1
CH ₂ =C(CH ₃)CH ₂ COOH	(9.52)	(128)	(536)	-92	-383	*EST	53774-20-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₈ O ₂ +							
$CH_3CH = CHCH_2COOH$							
	(9.41)	(126)	(527)	-91	-381	*EST	1617-32-9
$CH_2 = CHCOOC_2H_5$	(>10.3) IP from 82MOR/	(>147) MER.	(>617)	-90	-377	*EST	140-88-5
$CH_2 = C(CH_3)COOCH_3$							
	(9.7) IP is onset of pho	(141) toelectron t	(588) pand(78VAN/0	-83 OSK).	-348	80VIL/PER	80-62-6
сн₃сосн₂сосн₃	8.85±0.02 Enol form, CH ₃ C	112 COCH = C(0	470 DH)CH ₃ , is pr	-92±0.2 eferred.	-384±1	79HAC/PIL	123-54-6
$CH_2 = C(CH_3)OC(=O)C$	•						
	9.1 IP is onset of pho	126 toelectron b	529 and (78VAN/	-83 OSK). See also	-349 o: 82LEV/LIA.	77PED/RYL	591-87-7
~~							
	≤9.54 IP from 82ZVE/V	(≤163) ⁄IL.	(≤682)	-57	-238	*EST	5417-32-3
соон	(10.35)	(154)	(645)	-85	-354	*EST	3721-95-7
C ₅ H ₈ Si ⁺				·			
H Si H	(9.1) IP is onset of photo	(238) toelectron b	(997) and (84BOC/I	28 ROS).	119	*EST	81200-77-3
C ₅ H ₉ +							
$CH_2 = CHCHCH_2CH_3$	(7.30)	(193)	(810)	25	106	76LOS/TRA	17829-37-7
CH ₃ CHCH = CHCH ₃	(7.07) Heat of formation PA = (201.8) kcal			(22) sy of (E)-1,3-pe	(92) ntadiene (RN 2	76LOS/TRA 2004-70-8).	51685-67-7
$CH_3CH = CC_2H_5$	From proton affin	200 ity of 2-pen	838 syne (RN 627-2	21-4). PA = (1	96) kcal/mol, (820) kJ/mol.	
$(CH_3)_2CCH = CH_2$	(7.13) Heat of formation PA = (200.4) kcal		-	-		76LOS/TRA RN 78-79-5).	29791-12-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (I		-	Neutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/m	ol kJ/mol	reference	number
$C_5H_9^+$ $(CH_3)_2CHC = CH_2$	From proton affin (828) kJ/mol.	(200) ity of 3-me	(838) thyl-1-butyne (RN 598-23-	2). PA = (198)	kcal/mol,	
$CH_3CH = C(CH_3)CH_2$		190	797				60288-51-9
	Heat of formation	of ion from	n appearance p	otential me	asurements (841	LOS/HOL).	
	7.21 Value of $\Delta_f H(\text{Ion})$ determinations (76 (84LIA/LIE). PA leads to $\Delta_f H(\text{Neuron})$	SOL/FIE; = 183.4 kg	85SHA/SHA) al/mol, 767.5 k	, and from p J/mol. IP fro	roton affinity of	cyclopentene	3889-74-5
(CH3)H+	From proton affin 841 kJ/mol.	(193) ity of 1-me	(807) thylcyclobutend	e (RN 1489-	50-7). PA = 201	l kcal/mol,	53249-17-5
(CH=CH ₂)H+	From proton affin PA = 197.6 kcal/n			RN 693-86-7).		
CH ₃ CH ₃	From proton affini 849 kJ/mol.	(213) ity of 3,3-di	(890) imethylcyclopro	opene (RN 3	907-06-0). PA =	= 203 kcal/mol,	63974-90-3
C ₅ H ₉ Br ⁺							
Br	(9.94±0.02)	(213)	(891)	-16	-68	*EST	137-43-9
C ₅ H ₉ BrO ⁺ (CH ₃) ₂ CB _r COCH ₃	(9.35) IP from 84BOU/D	(154) AG.	(646)	-61	-256	*EST	
C ₅ H ₉ I +							
1	9.07	(206)	(861)	-3	-14	*EST	1556-18-9

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry			
C ₅ H ₉ N ⁺		4000	44.4.500							
n-C ₄ H ₉ NC	(11.1)	(280)	(1173)	24±0.5	102±2	*EST	2769-64-4			
(CH ₃) ₂ NCH ₂ C≡CH	(8.17) See also: 81LOG	(242) /TAK.	(1013)	54±1	225±5	*EST	7223-38-3			
	(8.0) IP is onset of pho	(201) otoelectron b	(845) pand.	17	73	74PIH/TAS	694-05-3			
CH3	(≤8.21±0.05)	(≤216)	(≤907)	27±0.5	115±2	*EST	554-15-4			
	(7.9) IP is onset of pho	(224) stoelectron b	(939) and (81MUL/	42 PRE).	177	*EST				
	(8.0) IP from 81MUL/	(227) PRE.	(949)	42	177	*EST				
C5H9NO + n-C4H9NCO	(10.14±0.05)	(186)	(776)	-48	-202	*EST	111-36-4			
tert-C ₄ H ₉ CNO	≤9.55±0.005	(≤223)	(≤931)	2	10	*EST	27143-81-3			
NOH	(8.92±0.03) IP from 79GOL/F	(193) KUL.	(809)	-12	-52	*EST	1192-28-5			
CH ₃	≤9.17 IP from 85TRE/R	≤161 AAD.	≤674	-50	-211	77PED/RYL	872-50-4			
CH ₃	(8.3) IP is onset of photon	(165) toelectron ba	(691) and.	-26	-110	*EST	68165-06-0			

Table 1. Positive Ion Table - Continued

			on Table -	Contin	ucu		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol k	J/mol I	Δ _f H(Ne ccal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C ₅ H ₉ NO ₂ ⁺					_		
COOH	(8.3) IP is onset of phot		•	87±1	-366±4	78SAB/LAF	609-36-9
C ₅ H ₉ NO ₃ ⁺ CH ₃ CONHCH(CH ₃)COO	ЭН			***************************************			****
3 (3)	(9.2) IP is onset of phot	(62) (26 oelectron band	-	150).	-628	*EST	97-69-8
но д соон	(≤9.1) IP from 83CAN/H	(≤87) (≤3 AM.	62) –	123	-516	77PED/RYL	51-35-4
С ₅ Н ₉ О ⁺	THE STREET PLANTAGE OF THE STREET						
CH ₃ C(OH)C(CH ₂)CH ₃		121 50	7				
	From proton affini PA = 202.4 kcal/m		O)C(=CH ₂)CH	I ₃ (RN 81	.4-78-8) (84BO	U/HOP).	
(E)-СН ₃ СНСНС(ОН)СН							
	From proton affini PA = 206.7 kcal/m		CH = CHC(= 0)	CH ₃ (RN	I 625-33-2) (841	BOU/HOP).	
ОН	From proton affini 832. kJ/mol.	121 S06 ty of cyclopenta		2-3). PA	= 198.8 kcal/n	nol,	
· .	From proton affini PA = 206.9 kcal/m		o-4H-pyran (RN	110-87-2) (86BOU/HA.	N).	
CH₃	From proton affinit PA = 215.6 kcal/me		,5-dihydrofuran	(RN 1487	7-15-6) (86BOU	I/DJA).	

Table 1.	Positive	Ion Table	-	Continued

	Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number					
C ₅ H ₉ O ⁺												
	From proton affin PA = 207.0 kcal/r			ofuran (RN 5:	57-31-3) (86BC	U/DJA).						
C, CH3	From proton affin PA = 205.1 kcal/r			ne (RN 765-4	3-5).							
С ₅ H₉O₂ ⁺ Сн ₃ С(он)СнС(он)Сн	From proton affin 869. kJ/mol.	66 ity of CH ₃ 6	277 COCH = C(OH	I)CH ₃ (RN 12	23-54-6). PA =	207.8 kcal/mol,						
С ОН	From proton affin PA = 202.9 kcal/r			carboxylate (RN 2868-37-3).							
C ₅ H ₉ O ₃ P +												
POCH3	(9.2) IP is onset of phot	(76) oelectron b	(317) and. (77COW/	–136 (GOO).	-571	*EST	1449-91-8					
C ₅ H ₁₀ +							· · · · · · · · · · · · · · · · · · ·					
1-C ₅ H ₁₀	9.52±0.02 See also: 83HOL/I	214 221.5	897 <i>926.9</i> A 84BRA/BAI	-5.1±0.1 2.0	-21.4±0.4 8.4	84WIB/WAS	109-67-1					
2-(Z)-C ₅ H ₁₀	9.036±0.005 See also: 86TRA.	202.0	845.3	-6.3±0.1	-26.5±0.4	84WIB/WAS	627-20-3					
2-(E)-C ₅ H ₁₀	9.036±0.005	200.8 208.0	840.3 <i>870.1</i>	-7.5±0.1 -0.4	-31.5±0.4 -1.7	84WIB/WAS	646-04-8					
(ON) GUGU OV	See also: 84BRA/F		004	(5.00	27.4.0.4		540 45 1					
(CH ₃) ₂ CHCH = CH ₂	9.52±0.02 See also: 84BRA/F	213 <i>220.3</i> BAE.	891 <i>921.6</i>	-6.5±0.2 0.7	-27.4±0.6 3.1	77PED/RYL	563-45-1					
$C_2H_5C(CH_3)=CH_2$	9.13±0.03	202 209.3	845 875.8	-8.5±0.2 -1.2	-35.6±0.7 <i>-5.1</i>	77PED/RYL	563-46-2					
	See also: 86TRA, 8											

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potential eV		((Ion) ol kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry					
C ₅ H ₁₀ + (CH ₃) ₂ C = CHCH ₃	8.68±0.01 See also: 86TRA,	190 <i>197.4</i> , 84BRA/I	795 825.8 BAE.	-10.1±0.1 -2.8	-42.1±0.6 -11.6	77PED/RYL	513-35-9					
\bigcirc	10.51±0.05 See also: 81MAU	224 <i>231.8</i> J/SIE, 81K	936 <i>969.8</i> IM/KAT, 86TR	-10.6	78.4±0.8 44.2 E.	77PED/RYL	287-92-3					
CH ₃	(9.60)	(221)	(923)	-0.7	-3	*EST	598-61-8					
C2 ^{H5}	(9.50)	(218)	(912)	-1	-5	77PED/RYL	1191-96-4					
CH ₃ CH ₃	(9.08) See also: 81PLE/	(207) VIL.	(868)	-2	-8	77PED/RYL	1630-94-0					
нзс Снз	(9.76±0.02)	(225)	(942)	0	0	77PED/RYL	930-18-7					
н ₃ ссн ₃	(9.73±0.02)	(223)	(934)	-1	-5	77PED/RYL	2402-06-4					
C ₅ H ₁₀ Br ₂ + Br(CH ₂) ₅ Br	(≤10.23)	(≤207)	(≤868)	-28	-119	*EST	111-24-0					
C ₅ H ₁₀ CIN ⁺	(8.5) IP is onset of phot	(208) coelectron	(871) band.	12	51	*EST	2156-71-0					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne- kcal/mol		Neutral reference	CAS registry number
C ₅ H ₁₀ N ⁺ n-C ₄ H ₉ CNH		174	728				
	From proton affi	inity of n-C ₄ I	1 ₉ CN (RN 110)-59-8). PA =	194.0 kcal/mc	ol, 812. kJ/mol.	
t-C ₄ H ₉ CNH		169	709				
	From proton affi 819. kJ/mol.	inity of t-C ₄ H	1 ₉ CN (86MAF	VTOP, 86MAU	J/KAR). PA	= 195.7 kcal/mol,	
t-C ₄ H ₉ NCH		178	744				
	From proton affi 868 kJ/mol.	nity of t-C ₄ H	₉ NC (RN 718	8-38-7) (86MA	.U/KAR). PA	x = 207.5 kcal/mol	,
C ₅ H ₁₀ NO ⁺							
		103	433				
N OCH3	From proton affi 945. kJ/mol.	nity of 2-met	hoxy-1-pyrroli	ne (RN 5264-35	5-7). PA = 2	25.9 kcal/mol,	
N OH	From proton affi	98	412 hvl-2-pvrrolidi	none (RN 872-	50-4).		
Î CH3	PA = 216.8 kcal	-		none (141072-	30- 1 7.		
C ₅ H ₁₀ NO ₂ +						· · · · · · · · · · · · · · · · · · ·	
(\(\bigcup_{N} \) cooh \(\) H ⁺	From proton affi PA = 220.2 kcal			6-9).			
C ₅ H ₁₀ NO ₃ + CH ₃ C(OH)NHCH ₂ COOC	CH ₃						
	From proton affi	8 nity of CH ₃ C	34 ONHCH ₂ CO	OCH ₃ . PA =	217.7 kcal/mc	ol, 911. kJ/mol.	
C ₅ H ₁₀ NO ₄ + L-HOOC(CH ₂) ₂ CH(NH ₃))СООН						
		29	121 OC(CH-)-CH	(NIH.)COOT	(DN 617 65 7	DA - 214 5 1	al/mol
	906. kJ/mol.	may or L-HO	OC(CH ₂) ₂ CF	и(мн ₂)СООН	(ICIN 617-65-2	2). $PA = 216.5 \text{ kca}$	ai/moi,
C ₅ H ₁₀ N ₂ +							
⟨_N > CH ₃	(≤8.78)	(≤264)	(≤1108)	62	261	*EST	6794-96-3

Table 1. Positive Ion Table - Continued

	- Tubic	1. 1 03111	ve ion Table	Contin			
ON Neutral	Ionization potential eV	Δ _f H(Id kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₁₀ N ₂ S +							
H3CN NCH3	≤7.95 See also: 80AND/	(≤208) ⁄DEV.	(≤869)	24	102	*EST	13461-16-0
HN N-C2H5	(7.7) IP is onset of pho	(194) toelectron t	(813) pand (80AND/DI	17 EV).	70	*EST	29704-02-7
5H ₁₀ N ₄ +							
NCN = C(N(CH ₃) ₂)(NHCF	(8.2) IP is onset of photon	(227) toelectron b	(950) pand (80KLA/BU	38 T).	159	*EST	17686-53-2
C ₅ H ₁₀ O ⁺	······································						
n-C ₄ H ₉ CHO	9.74±0.04 See also: 81HOL/	169 FIN.	709	-55.1±0.5	-230.5±2	77PED/RYL	110-62-3
sec-C ₄ H ₉ CHO	(9.59±0.01)	(165)	(689)	-56	-236	*EST	96-17-3
iso-C ₄ H ₉ CHO	9.70±0.02 See also: 81HOL/	(167) FIN.	(699)	-57	-237	*EST	590-86-3
tert-C ₄ H ₉ CHO	9.50	(161)	(673)	-58	-244	*EST	630-19-3
n-C ₃ H ₇ COCH ₃	9.38±0.01 See also: 84OLI/C	154.4 GUE.	645.9	-61.9±0.2	-259.1±0.8	77PED/RYL	107-87-9
(C ₂ H ₅) ₂ CO	9.31±0.01 See also: 81HOL/	153.0 FIN.	639.9	-61.7±0.2	-258.4±0.7	77PED/RYL	96-22-0
iso-C ₃ H ₇ COCH ₃	9.30±0.01	151.8	634.9	-62.7±0.2	-262.4±0.8	77PED/RYL	563-80-4
CH ₂ =CHCH ₂ CH ₂ CH ₂ OH	(9.42±0.05) IP from 83HOL/L	(176) .OS.	(737)	-41	-172	*EST	821-09-0
$CH_2 = CHC(CH_3)_2OH$	(≤9.90)	(≤198)	(≤830)	-30	-125	84GUB/GER	115-18-4
CH ₂ =CHCH ₂ CH(OH)CH	3 (9.38±0.05) IP from 83HOL/L	(171) .OS.	(717)	-45	-188	*EST	625-31-0
CH ₂ =CHCH(OH)CH ₂ CH	3 9.40±0.05 IP from 83HOL/L	(173) .OS. See als	(725) o: 84ZWI/HAR.	-43	-182	*EST	616-25-1

Table 1. Positive Ion Table - Continued

YOM							· · · · · · · · · · · · · · · · · · ·
ION Neutral	Ionization potential eV		on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₁₀ O +							
$CH_2 = CHOCH(CH_3)_2$	4.5.50						
	(≤8.90)	(≤164)	(≤685)	-42±1	−174±5	81TRO/NED	926-65-8
\circ	9.25±0.01 See also: 81KIM/	160 ⁄KAT.	669	−53.3±0.2	-223.0±0.7	77PED/RYL	142-68-7
ОН	9.72 IP from 85TRA.	166	695	-58.0±0.3	-242.6±1.2	77PED/RYL	96-41-3
C ₅ H ₁₀ OS ⁺							
CH ₃ COCH ₂ SCH ₂ CH ₃	(≤8.72) IP from 84OLI/C	(≤153) GUE.	(≤638)	-49	-203	*EST	20996-62-7
C ₅ H ₁₀ O ₂ +		***************************************					···, · · · · · · · · · · · · · · · · ·
n-C ₄ H ₉ COOH	(≤10.53)	(≤126)	(≤526)	-117±0.5	-490±2	77PED/RYL	109-52-4
iso-C ₄ H ₉ COOH	(≤10.51)	(≤119)	(≤499)	-123±1	-515±6	77PED/RYL	503-74-2
tert-C ₄ H ₉ COOH	(10.08) IP from 81HOL/	(110) FIN.	(460)	-122	-512	*EST	75-98-9
HCOO(CH ₂) ₃ CH ₃	10.50±0.02	(139)	(583)	-103	-430	*EST	592-84-7
CH ₃ COOCH ₂ CH ₂ CH ₃	10.04±0.03	(123)	(515)	-109	-454	*EST	109-60-4
СН ₃ СООСН(СН ₃) ₂	9.99±0.03	115	482	-115.1±0.1	-481.5±0.6	77PED/RYL	108-21-4
C ₂ H ₅ COOC ₂ H ₅	(10.00±0.02)	(120)	(501)	-111±0.5	-464±2	77PED/RYL	105-37-3
n-C ₃ H ₇ COOCH ₃	10.07±0.03	(124)	(520)	-108	-452	*EST	623-42-7
iso-C ₃ H ₇ COOCH ₃	9.86 IP from 83BUR/I	118 HOL3.	495	-109±0.2	-456±1	83FUC/SMI	547-63-1
	(≤9.75)	(≤190)	(≤797)	-34	-144	*EST	505-63-5

Table 1. Positive Ion Table - Continued

·	Table 1. Positive Ion Table - Continued								
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₅ H ₁₀ O ₂ +	(9.45)	(135)	(565)	-83±0.5	−347±2	77PED/RYL	505-65-7		
СНЗ	(≤10.03) IP from 84ASF/Z	(≤136) YK	(≤570)	−95.1±0.07	7397.8±2.9	77PED/RYL	626-68-6		
ОСН3	(≤10.04) IP from 84ASF/Z	(≤141) YK.	(≤592)	-90.1±0.7	−376.9±3.1	77PED/RYL	1120-97-4		
0 СН ₃	(9.2) IP is onset of pho	(120) toelectron t	(502) pand.	-92±0.2	−386±1	*EST	2916-31-6		
C ₅ H ₁₀ O ₂ S +	8.67±0.05 IP from 72CON/0	128 COL.	537	-72	-300	72CON/COL	2094-92-0		
C ₅ H ₁₀ O ₃ P ⁺	From proton affin (RN 1449-91-8). I				yclo[2.2.2]octa:	ne			
C ₅ H ₁₀ S + CH ₂ = CHCH ₂ SC ₂ H ₅	(8.51±0.01)	(200)	(839)	4±0.7	18±3	77PED/RYL	5296-62-8		
S	(8.2) IP is onset of photon	(174) coelectron b	(730) and (80SAR/	–15.2±0.2 WOR, 82LEV/L		77PED/RYL	1613-51-0		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	l Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₅ H ₁₀ S ₅ +						· ·	
\$_\$_\$	(7.6) IP is onset of ph	(197) otoelectron t	(823) pand (81BOC	22 /SCH).	90	*EST	2372-99-8
C ₅ H ₁₁ +							
1-C ₅ H ₁₁	(7.85) Δ _f H(Neutral) ba personal commu		(812) H] = 100.5 k	13 cal/mol. IP esti	56 mated by J.L. I	*EST Holmes,	2672-01-7
СН ₃ СН ₂ СН ₂ СНСН ₃	(7.1) Cited ionization formation of ion Experimental va	and neutral.	$\Delta_{\mathbf{f}}H$ (Neutra		50 C-H] = 99 kcal	*EST /mol.	2492-34-4
(CH ₃) ₂ CCH ₂ CH ₃	6.6 $\Delta_{ m f} H ({ m Ion})$ from 1 (75SOL/FIE, 760 is $\Delta_{ m f} H ({ m Ion})$ - $\Delta_{ m f} H$	GOR/MUN).	. Δ _f H(Neutra	al) based on D[C-H] = 95.5 kg	_	4348-35-0
(CH ₃) ₃ CCH ₂	7.88±0.05 IP from 84SCH/	(190) HOU. Δ _f <i>H</i> (1	(795) Neutral) base	8 d on D[C-H] =	33 100.5 kcal/mo	*EST I.	3744-21-6
C ₅ H ₁₁ Br +							
n-C ₅ H ₁₁ Br	10.09±0.02	202	844	-30.8±0.3	-129.1±1.4	77PED/RYL	110-53-2
(CH ₃) ₃ CCH ₂ Br	10.04	196	822	-35	-147	81HOL/FIN	630-17-1
C ₅ H ₁₁ ClHg ⁺		· · · · · · · · · · · · · · · · · · ·					** * ** *** *** **** *****************
n-C ₅ H ₁₁ H _g Cl	≤9.99 IP from 81BAI/O	(≤200) CHI2.	(≤835)	-31	-129	*EST	544-15-0
iso-C ₅ H ₁₁ HgCl	≤9.95 IP from 81BAI/0	(≤197) CHI2.	(≤823)	-33	-137	*EST	17774-08-2
C ₅ H ₁₁ I +							
n-C ₅ H ₁₁ I	9.201	(195)	(816)	-17	-72	*EST	628-17-1
(CH ₃) ₂ C(C ₂ H ₅)I	(8.93)	(184)	(769)	-22	-93	*EST	594-38-7
CH ₂ ICH ₂ CH(CH ₃) ₂	9.192	(193)	(807)	-19	-80	*EST	541-28-6
C ₅ H ₁₁ N ⁺ C ₂ H ₅ CH=NC ₂ H ₅	(8.7) IP is onset of pho	(201) otoelectron ba	(839) and.	0	0	69BEN/CRU	18328-91-1
$(CH_3)_2C = NC_2H_5$	(8.83) See also: 79AUE	(195) /BOW.	(816)	-9±2	−36±9	*EST	15673-04-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (Io	on)	$\Delta_f H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₅ H ₁₁ N ⁺		·					
$(CH_3)_2NCH_2CH = CH_2$							
	7.84	195	813	14	57	70BEN/O'N	2155-94-4
	See also: 81LOC	/TAK.					
Н							
$\langle N \rangle$	8.05±0.05	174	728	-11.7±0.4	-48.9±1.5	77PED/RYL	110-89-4
	See also: 82ROZ	/HOU.					
	(≤8.41±0.02)	(≤193)	(≤809)	-0.5±0.5	-2±2	*EST	120-94-5
N	$\Delta_{\mathbf{f}}H(\text{Ion})$ from h			ologues, 178kcal	/mol; 746 kJ/m		
I CH ₃	corresponding II	P, 7.8 eV.					
,CH₃							
CH ₃	(≤8.68±0.02)	(≤201)	(≤842)	1	5	*EST	23132-47-0
, i							
l CH₃							
C ₅ H ₁₁ NO +						······	
(CH ₃) ₂ NCH ₂ COCH ₃							
	(7.71)	(135)	(567)	-42	-177	81LOG/TAK	15364-56-4
	IP from 81LOG/	TAK. See al:	so: 84OLI/GU	JE.			
C ₅ H ₁₁ NO ₂ +							
$H_2N(CH_2)_4COOH$	(≤9.4)	(≤107)	(≤447)	-110±.7	-460±3	83SKO/SAB	660-88-8
C II CVAIII \COOV							
n-C ₃ H ₇ CH(NH ₂)COOH	(8.53)	(97)	(264)	1102	_450+10	*ECT	6600 40 4
	(8.53)	(87)	(364)	-110±2	-459±10	*EST	6600-40-4
L-iso-C ₃ H ₇ CH(NH ₂)COC	ЭН						
	(8.71)	(92)	(385)	-108.8±0.2	-455.1±1.0	77PED/RYL	72-18-4
(CH ₃) ₂ NCH ₂ COOCH ₃							
(6113)21161126006113	(7.96)	(98)	(411)	-85	-357	81LOG/TAK	7148-06-3
	IP from 81LOG/		··/	- "			2 •
C ₅ H ₁₁ NO ₂ S ⁺							
L-CH ₃ SCH ₂ CH ₂ CH(NH ₂	ЭСООН						
J 2 2 (***2	(8.3)	(92)	(387)	-99±1	-414±4	81SAB/MIN	59-51-8
	IP is onset of pho						
C ₅ H ₁₁ N ₂ O ₃ +							
L-H ₂ NCO(CH ₂) ₂ CH(NH ₂	₃)СООН						
		73	304	W.A. W. V. C	v /p.v =0.0 - : -	n n	
		nity of L-H ₂ l	NCO(CH ₂) ₂ C	CH(NH ₂)COOF	I (RN 585-21-7	7). $PA = 218.4 \text{ kca}$	l/mol,
	914. kJ/mol.						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Ic		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₅ H ₁₁ O +							
i-C ₃ H ₇ C(OH)CH ₃		102	427				
	From proton affin 841. kJ/mol.	ity of i-C ₃ H	I ₇ COCH ₃ (RI	N 563-80-4). PA	A = 201.1 kca	ıl/mol,	
	041. kJ/IIIOI.						
n-C ₄ H ₉ CHOH		118	493				
	From proton affin	ity of n-C ₄ F	¹ 9CHO (RN 1	.10-62-3). PA =	= 192.6 kcal/1	mol, 806. kJ/mol.	
(CH ₃) ₂ COC ₂ H ₅		(104)	(435)				
	From appearance	potential de	etermination (82MAC).			
(C ₂ H ₅) ₂ COH		102	429				
. 2 3,2	From proton affin	ity of (C ₂ H	5) ₂ CO (RN 96	5-22-0). PA = 3	201.4 kcal/mc	ol, 843. kJ/mol.	
C ₂ H ₅ OCHCH ₂ CH ₃		(114)	(476)				
Oznsochenzenz	From proton affin		(476) OCH = CHCH	I₃ (86BOU/DJ	A). $PA = (2$	210.) kcal/mol.	
	(880.) kJ/mol.			3 (/ (-	·· , ···	
C ₂ H ₅ O(H)CH ₂ CHCH ₂							
021130(11)01120110112		(132)	(552)				
	From proton affin	ity of C ₂ H ₅	OCH ₂ CH = C	Н ₂ .			
(113	472				
(()) H+	From proton affin	ity of tetrah	ydropyran (Ri	N 142-68-7). PA	$\Lambda = 199.7 \text{kca}$	al/mol,	
(0)	835.5 kJ/mol.						
		440					
() _H +	From proton affin	110 ity of 2-meth	461 vitetrahvdrof	uran (RN 96-47	-9) PA = 20	03.6 kcal/mol	
(CH₃)"	852. kJ/mol.	,	.,,	(14170 //	-,	00.0 1.04.7 11.04,	
C ₅ H ₁₁ O ₂ +							
HC(OH)(O-n-C ₄ H ₉)							
	Dan and a control of the	68	285	NI 500 04 50 D	4 104.01	-141	
	From proton affine 815. kJ/mol.	ily of ACOC)(n-C ₄ H ₉) (R	N 392-84-7). P	A = 194.8 KC	ai/moi,	
	,						
$n-C_3H_7C(OH)(OCH_3)$							
	From proton affini	57 ity of CoHaC	241 COOCH2 (RN	[623-42-7) P△	= 200 1 keel	1/mal. 837 k1/mal	
	- 10m proton aitim	,31170		. Jao tu-iji IA		,,, 037, RJ/IIIUI.	
$CH_3C(OH)(O-C_3H_7)$							
	From proton affini	57 ity of CH ₂ C(237 OOCaHa (RN	1109-60-4\ PA	= 200 6 kcal	l/mol 839 kT/mol	
	- 10m proton ailim	, 0. 0.130	- 0 03127 (Idi	. 202 50-7j. IA	- 200.0 Redi	,o., 057. RJ/IIIUI.	
i-C ₃ H ₇ C(OH)OCH ₃							
	From proton offi-:	55 trofi.C-H-	231 -COOCH - (P.	NI 547 62 TN D	A 201 6 I	ol/mol 0/2 1-1/1	
	From proton affini		COOCH3 (R		- 201.0 KC	ai/IIIOI, 043. KJ/MOI.	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol k.	J/mol	$\Delta_{\mathbf{f}}H$ (Nekcal/mol		Neutral reference	CAS registry number
C ₅ H ₁₁ O ₃ P +							
CH ₃ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(8.7) IP is onset of photon	(22) (9. coelectron band		178).	-746	*EST	33892-95-4
C ₅ H ₁₂ + n-C ₅ H ₁₂	10.35±0.01	204 85 211 88			-146.5±0.4 -114.2±0.4	77PED/RYL	109-66-0
	See also: 81MAU,						
iso-C ₅ H ₁₂	≤10.22	≤199 ≤8 ≤207 ≤8		-36.7±0.1 - <i>28.4</i>	-153.8±0.5 -118.8	77PED/RYL	78-78-4
	IP from 81TRA.	See also: 81KIM	I/KAT.				
neo-C ₅ H ₁₂	≤10.21±0.04	≤195 ≤8 ≤203 ≤8		-40.0±0.1 - <i>32.4</i>	-167.4±0.7 -135.6	77PED/RYL	463-82-1
	See also: 81KIM/F	CAT.					
C ₅ H ₁₂ Cl ⁺ (CH ₃) ₃ CCICH ₃	From equilibrium	(137) (5° constant deterr		A/HOJ).			
C ₅ H ₁₂ N ⁺							
(CH ₃) ₂ CNHC ₂ H ₅	From proton affin (960.) kJ/mol.		34) = NC ₂ H ₅ (RN	15673-04-	8). PA = (229	2.5) kcal/mol,	
CH ₃ CH ₂ CHN(CH ₃) ₂		142 59	6				
	From proton affin 960. kJ/mol.			RN 6163-5	56-0). PA = 22	29.4 kcal/mol,	
(N)H+	From proton affin	128 53 ity of piperidine		. PA = 22	26.4 kcal/mol, 9	47. kJ/mol.	
(\(\sum_{N} \) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	From proton affini 957. kJ/mol.	136 57 ity of N-methylp		120-94-5).	. PA = 228.7 k	ccal/mol,	

From proton affinity of $(CH_3)_2NCOOC_2H_5$ (RN 687-48-9). PA = 213.7 kcal/mol,

894. kJ/mol.

 $(CH_3)_2NC(OH)OC_2H_5$

Table 1. Positive Ion Table - Continued

	Table	I. Posit	ive Ion Table	e - Contin	uea 			
ION Neutral	Ionization potential eV	Δ _f H(Δ _f H(Ne kcai/mol		Neutral reference	CAS registry number	
C ₅ H ₁₂ NO ₂ + L-i-C ₃ H ₇ CH(NH ₃)COOH		40	167					
	From proton affin PA = 217.0 kcal/i)COOH (RN 7	2-18-4).			
C ₅ H ₁₂ NO ₂ P ⁺								
0 P N(CH ₃) ₂	7.8 IP from 81ARS/Z	(50) VE.	(208)	-130	-545	*EST	17454-25-0	
C ₅ H ₁₂ NO ₂ S + L-CH ₃ SCH ₂ CH ₂ CH(NH ₃)СООН	·						
J _ J _ J		45	190					
	From proton affin PA = 221.4 kcal/r			H(NH ₂)COOI	I (RN 59-51-8).			
C ₅ H ₁₂ N ₂ +								
CH3	6.66 IP from charge tra Reference standar					*EST	38704-89-1	
C ₅ H ₁₂ N ₂ O ⁺		,			. 			
((CH ₃) ₂ N) ₂ CO	≤8.64	(≤142)	(≤595)	-57	-238	*EST	632-22-4	
C ₅ H ₁₂ N ₂ S +								
((CH3)2N)2CS	(7.5)	(184)	(769)	11±0.5	45±2	82INA/MUR2	2782-91-4	
	IP is onset of phot	oelectron	band. See also:	85ROT/BOC.				
C ₅ H ₁₂ O ⁺								
n-C ₅ H ₁₁ OH	10.00±0.03 IP from 77ASH/B	10.00±0.03 160 668 -70.9±0.4 -296.7±1.6 77PED/RYL 71-41-0 IP from 77ASH/BUR. See also: 80BAC/MOU.						
CH ₃ CH ₂ CH(CH ₃)CH ₂ OF	Ŧ							
	(9.86) IP from 81HOL/F	(155) IN.	(649)	-72.2±0.3	-302.0±1.4	77PED/RYL	137-32-6	
n-C ₃ H ₇ CH(OH)CH ₃								
, ,	(9.78±0.03) IP from 77ASH/B	(151) UR, 84B0	(630) DW/MAC.	-75.0±0.2	-313.8±0.8	77PED/RYL	6032-29-7	
(С ₂ H ₅) ₂ СНОН	9.78 IP from 81HOL/F	150 IN, 84BO	628 W/MAC. See a		−315.5±0.9 IR.	77PED/RYL	584-02-1	
(CH ₃) ₂ CHCH(OH)CH ₃								
V3/2(0)3	(10.01) IP from 84BOW/N	(155) MAC.	(650)	-75.4±0.3	−315.7±1.1	77PED/RYL	598-75-4	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential Δ _f H(Ion) eV kcal/mol kJ/mol			Δ _f H(Neutral) kcal/mol kJ/mol		Neutral reference	CAS registry number
С ₅ H ₁₂ O ⁺ С ₂ H ₅ C(CH ₃) ₂ ОН	9.80 IP from 84BOW/N	147 MAC, 82I	615 LEV/LIA.	-79.1±0.3	330.8±1.3	77PED/RYL	75-85-4
n-C ₄ H ₉ OCH ₃	(9.54) IP from 81HOL/F	(158) IN.	(662)	-61.7±0.3	-258.1±1.1	77PED/RYL	628-28-4
n-C ₃ H ₇ OC ₂ H ₅	(9.45±0.1) IP cited in 81HOL	(153) /FIN.	(640)	-65.0±0.2	-272.2±1	77PED/RYL	628-32-0
tert-C ₄ H ₉ OCH ₃	(9.24) IP from 84BOW/N	(145) MAC. See	(608) : also: 80BAC/N	−67.8±0.2 ¶OU.	-283.6±1	77PED/RYL	1634-04-4
C ₅ H ₁₂ O ₂ ⁺ л-С ₃ H ₇ CH(CH ₃)ООН	(9.35±0.03) IP from 77ASH/B	(159) UR.	(666)	-56	-236	*EST	14018-58-7
СН ₃ О(СН ₂) ₃ ОСН ₃	(9.3) IP is onset of phot	(126) oelectron	(526) a band (83BIE/N	−89 MOR).	-371	*EST	17081-21-9
n-C ₅ H ₁₁ OOH	(9.50±0.03) IP from 77ASH/B	(167) UR.	(698)	-52	-219	*EST	74-80-6
C ₅ H ₁₂ O ₃ + CH ₃ C(OCH ₃) ₃	(9.65) IP from 82HOL/L	(82) OS2,	(343)	-140±0.5	-588±2	77PED/RYL	1445-45-0
C ₅ H ₁₂ S +							
n-C ₃ H ₇ SC ₂ H ₅	(8.50±0.05)	(171)	(715)	-25.0±0.2	-104.7±0.7	77PED/RYL	4110-50-3
(CH ₃) ₃ CSCH ₃	(8.38±0.05)	(164)	(687)	-29.0±0.2	-121.3±0.7	77PED/RYL	6163-64-0
$C_2H_5S(iso-C_3H_7)$	(8.35±0.01)	(165)	(689)	-28±0.6	117±2	77PED/RYL	5145-99-3
C ₅ H ₁₂ S ₂ + C ₂ H ₅ SCH ₂ SC ₂ H ₅	(8.22±0.02)	(179)	(750)	-10	-43	*EST	4396-19-4
C ₅ H ₁₂ Si ⁺ CH ₂ = CHSi(CH ₃) ₃	(9.5) IP is onset of phot	(190) oelectron	(794) band (81KHV/	-29 ZYK, 82LEV/L	-123 .IA).	*EST	754-05-2
Si(CH3)2	8.83±0.07 See also: 82DYK/J	184 OS, 81 K 0	769 OE/MCK, 81GU	-19.8 JS/VOL2.	-82.8	81GUS/VOL2	2295-12-7

Table 1. Positive Ion Table - Continued

ION	Ionination astartial	A 77/1	n=1	A TYAT.		NI1	CAC ===================================
Neutral	Ionization potential	∆ _f H(Io kcal/mol	on) kJ/mol 	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
$C_5H_{12}Sn^+$ $CH_2 = CHSn(CH_3)_3$	(≤9.7)	(≤246)	(≤1028)	22±3	92±13	77PED/RYL	754-06-3
C ₅ H ₁₃ N + n-C ₅ H ₁₁ NH ₂	(8.67) IP from 79AUE/	(174) BOW.	(726)	-26	-110	*EST	110-58-7
tert-C ₅ H ₁₁ NH ₂	(8.46±0.1)	(165)	(689)	-30	-127	*EST	594-39-8
neo-C ₅ H ₁₁ NH ₂	(8.54±0.1)	(166)	(692)	-31	-132	*EST	5813-64-9
(C ₂ H ₅) ₂ (CH ₃)N	(7.50±0.1) IP from 79AUE/	(156) BOW.	(654)	-17	-7 0	*EST	616-39-7
(CH ₃) ₂ (i-C ₃ H ₇)N	(7.3) $\Delta_f H$ (Ion) from haseries. IP cited is	-		-	-76 SL.	*EST	996-35-0
С ₅ H ₁₃ N ₂ O ⁺ [(CH ₃) ₂ N] ₂ СОН	From proton affir PA = 221.1 kcal/			(RN 632-22-4) (86TAF/GAL).	
C ₅ H ₁₃ O ⁺							
neo-C ₅ H ₁₁ OH ₂	From proton affin PA = 193.6 kcal/			N 75-84-3) (78T	AF/TAA).		
C ₂ H ₅ OH(i-C ₃ H ₇)	From proton affii 851. kJ/mol.	94 nity of C ₂ H ₅	393 O(i-C ₃ H ₇) (RN 625-54-7). P	A = 203.5 kg	eal/mol,	
t-C ₄ H ₉ OHCH ₃	From proton affii 846. kJ/mol.	96 nity of t-C ₄ H	400 I ₉ OCH ₃ (RN	V 1634-04-4). PA	= 202.2 kcal	l/mol,	
C ₅ H ₁₄ N ⁺		1.11		······································			
n-C ₅ H ₁₁ NH ₃	From proton affir 916. kJ/mol.	121 nity of n-C ₅ F	504 H ₁₁ NH ₂ (RN	I 110-58-7). PA	= 218.9 kcal/i	mol,	
tert-C ₅ H ₁₁ NH ₃	From proton affir 930. kJ/mol.	112 nity of tert-C	468 5H ₁₁ NH ₂ (I	RN 594-39-8). P <i>t</i>	A = 222.3 kca	ıl/mol,	
neo-C ₅ H ₁₁ NH ₃	From proton affir 917.5 kJ/mol.	115 nity of neo-C	481 5H ₁₁ NH ₂ (I	RN 5813-64-9). P	A = 219.3 kc	eal/mol,	

212 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₅ H ₁₄ N ⁺ (C ₂ H ₅)(i-C ₃ H ₇)NH ₂	From proton affi	113 nity of (C₂H	474 (5)(i-C ₃ H ₇)NI	- H (RN 19961-2	7-4). PA = 2	27.4 kcal/mol,	
	951. kJ/mol.	· · · · -					
(CH ₃)(C ₂ H ₅) ₂ NH	From proton affi 962. kJ/mol.	119 nity of (CH ₃	498)(C ₂ H ₅) ₂ N (1	RN 616-39-7).	PA = 230.0 kg	cal/mol,	
(CH ₃) ₂ (i-C ₃ H ₇)NH		110	402				
	From proton affi 961. kJ/mol.	118 nity of (CH ₃	493) ₂ (i-C ₃ H ₇)N	(RN 996-35-0).	PA = 229.8	kcal/mol,	
C ₅ H ₁₄ N ₂ + (C ₂ H ₅)(CH ₃)NN(CH ₃) ₂							
	(8.18) Reported values are usually signifilarge geometry cl	icantly highe	r than the adia	batic value bed	cause of the	*EST nents	50599-41-2
((CH ₃) ₂ N) ₂ CH ₂	(7.74±0.05) See also: 81LOG	(174) /TAK.	(729)	-4.2±0.3	-17.6±1.4	77PED/RYL	51-80-9
C ₅ H ₁₄ N ₂ OP +							
CH3-N PN-CH3	+ From proton affi (RN 16606-18-1)	42 nity of 2,5-di (84MAU/NI	176 methyl-1,3,2-d EL). PA = 22	iazaphospholic 4.8 kcal/mol, 9	line-2-oxide 41. kJ/mol.		
C ₅ H ₁₄ N ₃ + [(CH ₃) ₂ N] ₂ CNH ₂	From proton affi PA = 241.0 kcal/			(RN 31081-16	-0) (86TAF/G	AL).	
C ₅ H ₁₄ Si ⁺ (CH ₃) ₃ SiC ₂ H ₅	(9.6)	(164)	(685)	-58	-241	*EST	3439-38-1
C ₅ H ₁₄ Sn ⁺ (CH ₃) ₃ SnC ₂ H ₅	(8.6) IP is onset of pho	(191) otoelectron b	(800) and.	-7±0.7	-30±3	77PED/RYL	3531-44-0
C ₅ H ₁₅ N ₂ + NH ₂ (CH ₂) ₅ NH ₃	From proton affii 996. kJ/mol.	110 nity of NH ₂ (461 CH ₂) ₅ NH ₂ (F	N 462-94-2). I	PA = 238.1 kc	al/moi,	

Table 1. Positive Ion Table - Continued

	Table .	1. 1 031	tive ion Tabi	e - Contii	ilucu		,
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C ₅ H ₁₅ N ₂ + (CH ₃) ₂ NH(CH ₂) ₃ NH ₂	From proton affin PA = 241. kcal/m			'H ₂ (RN 109-5.	5-7). Data re-6	evaluated.	
C ₅ H ₁₅ Si ₂ + (CH ₃) ₃ SiSi(CH ₃) ₂		117	489				
	$\Delta_{\mathrm{f}}H$ (Ion) from ap	pearance	potential deter	mination (84S	ZE/BAE, 84S2	ZE/BAE2). 0 K valu	es.
C ₅ H ₁₅ Ta ⁺ Ta(CH ₃) ₅	8.25 IP is onset of phot	241 oelectror	1007 n band (75GAL,	51±6 /WIL, 82LEV/	212±26 LIA).	82PIL/SKI	53378-72-6
C ₅ H ₁₆ NSi ⁺ (CH ₃) ₃ SiNH(CH ₃) ₂	From proton affin (946) kJ/mol.	(81) ity of (CF	(336) H ₃) ₃ SiN(CH ₃) ₂	(RN 18135-05	-2). PA = (22	6) kcal/mol,	
C ₅ IMnO ₅ + Mn(CO) ₅ I	(8.1) IP is onset of phot	(-13) oelectror	(-52) a band.	−199±1	-834±5	82CON/ZAF	14879-42-6
C ₅ N ₂ OS ₂ +							
NC S O	≤9.94 IP from 83SCH/SO	(≤294) CH.	(≤1229)	65	270	*EST	934-31-6
C ₅ N ₄ + C(CN) ₄	(13.94)	(482)	(2018)	161±2	673±9	82CHU/NGU	24331-09-7
C ₆ BrF ₅ ⁺ F F F F F F	9.57±0.02	51	211	−170±4	-712±17	77KRE/PRI	344-04-7
C ₆ ClF ₅ ⁺ F C ₁ F F F	(9.72±0.02)	(30)	(128)	-194±3	-810±11	77PED/RYL	344-07-0

Table 1. Positive Ion Table - Continued

	Table 1	1. Positi	ve Ion Tabl	e - Contin	ued 		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/moi	on) kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
C ₆ Cl ₄ O ₂ +	9.74 IP from 81SAT/S	180 EK.	754	-44.4±2.8	−185.7±11	77PED/RYL	118-75-2
C ₆ Cl ₆ ⁺ Cr Cl Cl	8.98 IP from 81SAT/SI	196.4 EK. See als	821.7 :o: 81RUS/KL	-10.7 A, 81KIM/KAT	-44.7	83PLA/SIM	118-74-1
C ₆ CrO ₆ ⁺ Cr(CO) ₆	8.142±0.017 See also: 82HUB/	~29 LIC, 85DA	-122 AS/NIS.	217.0±0.3	-908±1.2	77PED/RYL	13007-92-6
C ₆ F ₃ MnO ₅ + CF ₃ Mn(CO) ₅	8.8 IP is onset of pho	-128 toelectron	-537 band.	−331±1	-1386±4	82CON/ZAF	13601-14-4
C ₆ F ₄ O ₂ +	(10.7) IP is onset of pho	(52) toelectron	(216) band.	−195.0±9.9	-816±41	*EST	527-21-9
C ₆ F ₅ I ⁺ F F F	9.54 See also: 81BIE/A	87 ASB.	362	−133±3	-558±13	77PED/RYL	827-15-6
C ₆ F ₆ + CF ₃ C≡CC≡CCF ₃	(10.99±0.01)	(78)	(326)	-175	-734	77PRA/HUB	10524-09-1
F F	9.906 IP from 81BIE/AS at 300 K based on (reference standa	determina	tions of charge	transfer equilib	rium constant		392-56-3
F	10.08±0.05	62	260	-170	-713	77PRA/HUB	6733-01-3

Table 1. Positive Ion Table - Continued

		1. Fusitive 1011	Table - Comm			
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/m	Δ _f H(Ne		Neutral reference	CAS registry
$ \begin{array}{c c} \hline C_6F_{12}^+ \\ F_2 & F_2 \\ F_2 & F_2 \end{array} $	(13.2)	(-262) (-1093	5) -566±2	−2369±8	79PRI/SAP	355-68-0
C ₆ HCl ₅ ⁺ Cl	(8.9) IP is onset of pho	(195.7) (818.7) toelectron band (82		-40.0±8.7	85PLA/SIM2	608-93-5
C ₆ HCrO ₆ + HCr(CO) ₆	From proton affi	(-31) (-131) nity of Cr(CO) ₆ (R)	N 13007-92-6). PA =	(180) kcal/mo	l, (753) kJ/mol.	
C ₆ HF ₅ ⁺	(standard: C ₆ H ₅	CF ₃ , 9.685 eV)(78L	−193±2 Isfer equilibrium cons [A/AUS]. Value of 9. ment. See also: 81BII	64 eV reported		363-72-4
C ₆ HF ₅ O ⁺ F F F F	9.20±0.02	-17 -69	-229±0.5	-957±2	77PED/RYL	771-61-9
C ₆ HF ₆ ⁺ F F F F F	From proton affii 743. kJ/mol.	–38 –159 nity of C ₆ F ₆ (RN 39	2-56-3). PA = 177.7	kcal/mol,		
C ₆ HM ₀ O ₆ + HM ₀ (CO) ₆	From proton affin	-38 -160 aity of Mo(CO) ₆ (R	N 13939-06-5). PA =	(185) kcal/mo	ol, (774) kJ/mol.	
C ₆ HO ₆ V ⁺ HV(CO) ₆	From proton affir	(-33) (-138) hity of V(CO) ₆ (RN	20644-87-5). PA = (194.5) kcal/mc	ıl, (814) kJ/mol.	
C ₆ HO ₆ W ⁺ HW(CO) ₆	From proton affir	-30 -127 uity of W(CO) ₆ (RN	14040-11-0). PA = ((184) kcal/mol,	(770) kJ/mol.	

Table 1. Positive Ion Table - Continued

-			ve foil Table	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₂ + HC=CC=CC=CH	(9.50)	(375)	(1569)	155	652	*EST	3161-99-7
C ₆ H ₂ Cl ₄ ⁺ Cl Cl Cl	(8.9) IP is onset of pho	(199.1) toelectron t	(833.3) pand (81RUS/K	-6.1 LA3).	-25.4	85PLA/SIM	634-66-2
CICI	(9.0) IP is onset of pho	(199) toelectron t	(833) pand (81RUS/K	-8.3 LA3).	-34.9	85PLA/SIM	634-90-2
CICI	8.9 IP is onset of pho	197.4 toelectron t	826.1 pand (81RUS/K	-7.8 LA3, 81KIM/	-32.6 KAT).	83PLA/SIM	95-94-3
C ₆ H ₂ Cl ₄ O ₂ + Cl OH HO Cl	(8.30±0.05)	(104)	(437)	-87	-364	77PED/RYL	87-87-6
C ₆ H ₂ F ₄ +							
F F	9.53±0.01 Ionization potenti (standard: IP of C photoelectron spe	C ₆ H ₅ CF ₃ , 9.	685 eV)(78LIA	/AUS). Value	of ionization		551-62-2
F F	9.53±0.01 Ionization potenti (standard: ionization potenti spectroscopy, 9.56	ion potentia al from pho	al of C ₆ H ₅ CF ₃ , toionization, 9.5	9.685 eV)(78L 55 eV; from pl	tant determin JA/AUS). V		2367-82-0
FJCF	9.35±0.01 Ionization potenti (standard: ionizati from photoelectro	ion potentia	of C ₆ H ₅ CF ₃ ,	9.685 eV)(78L	JA/AUS). V		327-54-8

Table 1. Positive Ion Table - Continued

	Table				inued		
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₆ H ₂ F ₅ ⁺	From proton affin 753. kJ/mol.	-7 nity of C ₆ HI	-29 F ₅ (RN 363-72	-4). PA = 1	79.9 kcal/mol,		
C6H2N2S+	≤9.76 IP from 83BOC/R	(≤319) ROT.	(≤1337)	94	395	*EST	18853-40-2
NC CN	(≤10.20) IP from 83BOC/R	(≤331) ROT.	(≤1384)	96	400	*EST	18853-32-2
C ₆ H ₃ Cl ₂ NOS +	(≤9.46) IP from 82LOU/V	(≤197) ⁄AN.	(≤826)	-21	-87	*EST	
C ₆ H ₃ Cl ₃ + C ₁ C ₁ C ₁	9.18 IP from 81RUS/K	209.8 LA3.	877.6	-1.9	-8.1	85PLA/SIM	87-61-6
CI	9.04 IP from 81RUS/K	210 LA3	880	1.9	8.1	85PLA/SIM	120-82-1
CICICI	9.32±0.02 IP from 81RUS/K	215 LA(3), onse	899 et of photoelec	0 etron band (8	0 1KIM/KAT). Se	82SHA e also: 82MAI/TH0	108-70-3 D2.

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Tabl	e - Contin	uea		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
F F	(9.7) IP from 81BIE/A	(107) SB.	(448)	-117	-488	*EST	1489-53-8
F	9.30 ± 0.05 IP from charge tra $C_6H_5CF_3$, 9.685 e (81BIE/ASB, $77R$	V)(78LIA	AUS) and fro				367-23-7
F F	9.64 See also: 81BIE/A	(100) ASB.	(418)	-122±0.7	-512±3	*EST	372-38-3
GH3F4 ⁺	From proton affin 758. kJ/mol.	32 hity of 1,2,3,	134 4-C ₆ F ₄ H ₂ (Ri	N 551-62-2). P <i>t</i>	A = 181.1 kca	ıl/mol,	
F F H	From proton affin 756. kJ/mol.	28 ity of 1,2,3,	117 5-C ₆ F ₄ H ₂ (RI	N 2367-82-0). P	'A = 180.6 kc	al/moi,	
F H2 F	From proton affin 752. kJ/mol.	31 ity of 1,2,4,	131 5-C ₆ F ₄ H ₂ (RI	N 327-54-8). P <i>A</i>	A = 179.7 kca	i/mol,	
C ₆ H ₃ MnO ₅ + CH ₃ (CO) ₅ Mn	(8.4) IP is onset of phot	(14) oelectron t	(57) pand.	-180±1	−753±4	82CON/ZAF	13601-24-6
O ₂ N NO ₂	(10.96±0.02)	(268)	(1119)	15±0.5	62±2	77PED/RYL	99-35-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f <i>H</i> (Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₃ O ₅ Re + (CO) ₅ CH ₃ Re	8.5 IP is onset of pho	14 toelectron b	60 and.	-182±1	-760±6	82PIL/SKI	14524-92-6
$C_6H_4^+$ (Z)-HC=CCH = CHC=CH	(9.10±0.02)	(333)	(1394)	123	516	*EST	16668-67-0
(E)-HC≡CCH = CHC≡CH	(9.07±0.02)	(334)	(1400)	125	525	*EST	16668-68-1
	8.6 $\Delta_f H(ext{Ion})$ from 80	313 <i>316</i> 0ROS/STO2	1311 <i>1321</i> . Cited IP =	115 <i>118</i> ΔεΗ(Ion) - ΔεΗ	481 492 ((Neutral):	80POL/HEH	462-80-6
						S/DAN, 85DEW/ITE	•
C ₆ H ₄ Br ⁺	9.04 Δ _f H(Ion) from 77	298 'NUY/MES.	1247 IP is ∆ _f H(Io	89.6 on)-∆ _f H(Neutra	374. 9 I).	77NUY/MES	2973-43-5
C ₆ H ₄ BrNOS ⁺ N≤S ₀ Br	(≤8.91) IP from 82LOU/V		(≤851)	-2	-9	*EST	26516-62-1
C ₆ H ₄ BrN ₂ +	(8.18) Δ _f H(Ion) from 77	(276) NUY/MES.	(1155) IP is ∆ _f <i>H</i> (Io	87 n) - Δ _f H(Neutra	366 al).	*EST	
C ₆ H ₄ Br ₂ ⁺	8.8 IP is onset of phot		(981) und.	31.5	132	*EST	583-53-9
Br Br	8.85 IP is onset of phot	235 oelectron ba	985 ind.	31	131	83DEW/HEA	108-36-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential Δ _f H(Ion) eV kcal/mol kJ/mol				Veutral)	Neutral	CAS registry
C ₆ H ₄ Br ₂ +	eV	Kcal/III	OI KJ/IIIOI	kcai/mo	l kJ/mol	reference	number
Br	8.7 IP is onset of pho	(232) toelectro	(970) n band.	31	131	*EST	106-37-6
C ₆ H ₄ CIF ⁺							
CI CI	9.18±0.01 See also: 78LIA/A	(181) AUS.	(756)	-31	-130	*EST	348-51-6
, cı	9.21±0.01	(179)	(749)	-33	-140	*EST	625-98-9
CI	9.01±0.01 IP from 78LIA/A	(174) US.	(728)	-34	-141	*EST	352-33-0
C ₆ H ₄ CINOS ⁺	(8.8) IP is onset of phot	(188) oelectron	(787) a band (82LOU	(-15) /VAN).	(-62)		
C ₆ H ₄ ClNO ₂ + ONO ₂	(9.92±0.1)	(238)	(995)	9.1±2.0	38.1±8.4	*EST	121-73-3
NO ₂	9.96±0.1	(239)	(999)	9.1±2.0	38.1±8.4	*EST	100-00-5

Table 1. Positive Ion Table - Continued

TON			ve ion labi				
ION Neutral	Ionization potential eV	-	on) kJ/mol	Δ _f H(Ne kcai/moi		Neutral reference	CAS registry number
C ₆ H ₄ Cl ₂ ⁺	9.08±0.01 IP from charge t See also: 81RUS	=		7.9 nt determinatio	33.0 on (78LIA/AUS	84PLA/SIM S).	95-50-1
C CI	9.11±0.01 IP from charge t 82LEV/LIA, 811			6.7 nt determinatio	28.1 on(78LIA/AUS	84PLA/SIM). See also:	541-73-1
cr Cr	8.89±0.01 IP from 81RUS/ transfer equilibr					84PLA/SIM charge	106-46-7
C ₆ H ₄ Cl ₂ O +	(8.65±0.02)	(174)	(729)	-25	-106	82SHA	87-65-0
C ₆ H ₄ FNO ₂ + NO ₂ F	(≤9.86)	(≤199)	(≤833)	-28	-118	*EST	1493-27-2
NO ₂	9.88	(198)	(827)	-30	-126	*EST	402-67-5
F NO ₂	9.90	(197)	(824)	-31	-131	*EST	350-46-9
C ₆ H ₄ F ₂ +	(9.28±0.01) Ionization poten (standard: ioniza potential from R (81BIE/ASB) =	ition potentia lydberg series	of C ₆ H ₅ CF ₃	uilibrium const , 9.685 eV). Vai	lue of ionization		367-11-3

Table 1. Positive Ion Table - Continued

	Table 1	1. Posit	ive Ion Tabl	e – Conti	nued		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	(Ion) ol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number
C ₆ H ₄ F ₂ ⁺	9.33±0.01 Ionization potenti (standard: ionizat potential from Ry See also: 81BIE/A	ion poten dberg seri	tial of C ₆ H ₅ CF	quilibrium con 3, 9.685 eV). V	Value of ionizati	ion	372-18-9
F F	9.14±0.01 Ionization potenti (standard: ionizat: potential from Ryspectroscopy, 9.14	ion potent dberg seri	tial of C ₆ H ₅ CF es, 9.18 eV, fro	quilibrium coi 3, 9.685 eV). V	Value of ionizati	ion	540-36-3
C ₆ H ₄ F ₃ +							
F H ₂	From proton affin 757. kJ/mol.	62 aity of 1,3,5	261 5-C ₆ F ₃ H ₃ (RN	372-38-3). PA	A = 181. kcal/m	ol,	
F F	From proton affin 759. kJ/mol.	69 aity of 1,2,4	289 4-C ₆ F ₃ H ₃ (RN	367-23-7). P.A	A = 181.4 kcal/r	nol,	
C ₆ H ₄ F ₃ N ⁺							
CF ₃	(≤10.1)	(≤105)	(≤438)	-128	-536 .	*EST	3796-24-5
C ₆ H ₄ F ₃ NO ⁺				· · · · · · · · · · · · · · · · · · ·	1, 1, <u>1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1</u>		
CF3	(≤8.90)	(≤58)	(≤243)	-147	-616	*EST	
C ₆ H ₄ FeO ₄ +							
H ₂ C CO	(7.6) IP is onset of phot	(46) oelectron	(192) band.	-129±2	-541±10	82PIL/SKI	32799-25-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	l Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ H ₄ I ₂ +	8.45 IP is onset of ph	(252) otoelectron b	(1056) and.	58	241	*EST	624-38-4
C ₆ H ₄ MnO ₅ + CH ₃ MnH(CO) ₅	From proton aff	3 inity of CH ₃ N	11 Mn(CO) ₅ (RN	V 13601-24-6). I	PA = 183 kca	l/mol, 766 kJ/mol.	
C ₆ H ₄ NO ₂ +	(9.06) IP from 77NUY	(283) /MES.	(1183)	74	309	*EST	2395-99-5
C ₆ H ₄ N ₂ +	10.12	301	1260	67±0.5	281±2	84BIC/PIL	100-70-9
O CN	(10.0) IP is onset of pho	(297) otoelectron b	(1243) and.	66±0.5	278±2	84BIC/PIL	100-54-9
NC ON	(9.9) IP is onset of pho	(296) otoelectron ba	(1239) and.	68±0.2	284±1	84BIC/PIL	100-48-1
C ₆ H ₄ N ₂ O +	(8.96±0.02)	(256)	(1069)	49	204	*EST	2402-98-4
ON CN	(≤8.93±0.02)	(≤254)	(≤1064)	48	202	*EST	14906-64-0

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			Δ _f <i>H</i> (N	eutral)	Neutral	CAS registry	
Neutral	eV		l kJ/mol		kJ/mol	reference	number	
C ₆ H ₄ N ₂ O +	8.95±0.02	(255)	(1068)	49	204	*EST	14906-59-3	
	(9.37)	(288)	(1205)	72±0.5	301±2	80ARS	273-09-6	
C ₆ H ₄ N ₂ O ₄ + NO ₂ NO ₂	(≤10.71)	(≤267)	(≤1119)	21±0.5	86±2	76FER/PIA	528-29-0	
NO ₂	10.43±0.02	255	1065	14±0.2	59±1	76FER/PIA	99-65-0	
O _Z N NO ₂	10.3±0.1	251	1051	14±0.7	57±3	76FER/PIA	100-25-4	
C ₆ H ₄ N ₂ Se ⁺	(8.5) IP is onset of phot	(292) coelectron	(1223) band.	96	403	*EST	273-92-7	
C ₆ H ₄ N ₃ O ₂ +	(7.89) IP from 77NUY/N	(258) MES.	(1079)	76	318	*EST		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₆ H ₄ N ₄ +	(8.9) IP is onset of phot	(295) oelectron b	(1233) and (84GLE/SP <i>A</i>	89 A2).	374	*EST	255-53-8
С ₆ H ₄ O +				·,			
C=0	8.2 IP is onset of phot	(214) oelectron ba	(895) and (79SCH/SCH	25±1 I, 81BOC/F	104±6 IIR).	*EST	4727-22-4
С ₆ H ₄ O ₂ +	10.04±0.18 See also: 83BOC/I	202 MOH.	846	−29±1	−123±4	77PED/RYL	106-51-4
CC _o	(9.3) IP is onset of phot	(189) pelectron ba	(791) and.	−25±1	-106±4	*EST	583-63-1
C ₆ H ₄ O ₃ +	(9.0) IP is onset of phot	(119) pelectron ba	(498) and (81BEC/HOI	−88 ₹).	-370	*EST	81640-31-5
С ₆ Н ₅ +		AL/ARA, 7 4PAN/BAE	76BAE/TSA, 84L 2, 85PAN/BAE, 8	.IF/MAL, 86 5PAN/BAF	DROS/STO, 8 22, 86NIS/DA	1PRA/CHU, 84GEI S and 84BUR/HOL	
C ₆ H ₅ BCl ₂ ⁺	(9.3) IP is onset of photo	(151)	(631)		−266±2	77PED/RYL	873-51-8

Table 1. Positive Ion Table - Continued

	Table 1	l. Positiv	e Ion Table -	Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry number
C ₆ H ₅ Br ⁺							
Br	8.98±0.02 IP from 78LIA/AU	232 <i>237</i> US. 82LEV	971 993 /LIA. onset of pho	24.9±0.7 30.1±0.7 otoelectron	104.3±3.1 126.1±3.1 band in 81KIM/	77PED/RYL	108-86-1
	See also: 82VON/A						
C ₆ H ₅ BrHg ⁺							
—HgBr	(9.1) IP is onset of photo	(248) oelectron b	(1037) and (81BAI/CHI)	38	159	*EST	1192-89-8
C ₆ H ₅ Cl ⁺					······	·····	
CI	9.06±0.02 See also: 78LIA/A	222 US, 81RUS	929 5/KLA2, 82VON/ <i>E</i>	13.0±0.2 ASB, 83KL	54.4±0.9 A/KOV, 81KIM/	85PLA/SIM /KAT, 86FUJ/OH	108-90-7 IN.
C ₆ H ₅ ClHg ⁺							· · · · · · · · · · · · · · · · · · ·
—HgCI	9.14±0.04 See also: 81BAI/C	240.5 HI.	1006.2	29.7	124.3	85DEW/GRA	100-56-1
C ₆ H ₅ ClO ⁺			· · · · · · · · · · · · · · · · · · ·		*** **********************************		
OH CI	(8.65) IP from 85OIK/AE	(163) BE.	(682)	-37±2	-153±9	77PED/RYL	108-43-0
СІ	(≤8.69)	(≤165)	(692)	−35±2	-146±9	77PED/RYL	106-48-9
C CI	(8.9) IP is onset of photo	(194) pelectron ba			-46	*EST	78957-21-8
•	II is offset of photo	election of	ina (orboc _i rmi)				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₆ H ₅ Cl ₂ N ⁺ NH ₂ C1 C1	(7.60±0.02)	(182)	(763)	7	30	*EST	608-31-1
C ₆ H ₅ Cl ₃ Si ⁺ —SiCl ₃	(9.10) IP from 84VES/H	(115) AR.	(481)	-95	-397	*EST	98-13-5
C ₆ H ₅ F ⁺	9.200±0.005 See also: 81BIE/A	184.4 SB, 81KIM	771.6 I/KAT, 86FUJ		-116.0±1.4	77PED/RYL	462-06-6
C ₆ H ₅ FO ⁺	8.68±0.02 IP from 85OIK/A	(131) BE.	(548)	-69	-289	*EST	367-12-4
OH F	8.73±0.02 IP from 85OIK/A	(131) BE.	(547)	-71	-295	*EST	372-20-3
_Б ОН	(8.5) IP is onset of phot	(126) oelectron b	(529) pand.	-70	-291	*EST	371-41-5

C₆H₅F₂+

114 475

From proton affinity of 1,2-difluorobenzene (RN 367-11-3). PA = 181.8 kcal/mol, 761. kJ/mol.



110 460

From proton affinity of 1,3-difluorobenzene (RN 372-18-9) (82MAS/BOH). PA = 181.9 kcal/mol, 761. kJ/mol.

Table 1. Positive Ion Table - Continued

		·	ble - Contin			
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C ₆ H ₅ F ₂ +	From proton affin 758. kJ/mol.	111 465 ity of 1,4-difluorobenzo	ene (RN 540-36-3	3). PA = 181.2	2 kcal/moi,	
C ₆ H ₅ F ₃ N ⁺	From proton affin PA = 211.5 kcal/n	27 113 ity of 2-trifluoromethyl	pyridine (RN 368	3-48-9).		
CF ₃		25 104 ity of 3-trifluoromethyl	pyridine (RN 379	96-23-4).		
HN CF3	From proton affin PA = 212.8 kcal/n	25 104 ity of 4-trifluoromethyl nol, 890. kJ/mol.	pyridine (RN 379)6 - 24-5).		
C ₆ H ₅ F ₃ Si ⁺			·			
SiF ₃	(9.18) IP from 84VES/H.	(-50) (-207) AR.	-261	-1093	*EST	368-47-8
C ₆ H ₅ FeIO ₃ +	AND 44 MIN.					
Fe(CO) ₃ I	8.17 IP is onset of phot	106 444 oelectron band (82LO	-82±3 U/HAR).	-344±11	82PIL/SKI	12189-10-5
C ₆ H ₅ I +			,,			
I	8.685	240 1003	39.4±1.4	164.9±5.9	77PED/RYL	591-50-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry
C ₆ H ₅ NO ⁺	-						
© N=0	(8.09)	(235)	(982)	48±1	201±4	75CHO/GOL	586-96-9
C ₆ H ₅ NOS ⁺		,	No. of the state o				····
	(8.8) IP is onset of pho	(196) toelectron b	(819) and (82LOU/	~7 VAN).	-30	*EST	1122-83-4
C ₆ H ₅ NO ₂ +		***					
NO ₂	9.86±0.02	243 250	1019 <i>1045</i>	16.1±0.2 22	67.6±1 92	77PED/RYL	98-95-3
	See also: 83KLA/l 0 K values from 84				L/MIG, 73GC	L/KOR.	
C ₆ H ₅ NO ₃ +							
OH NO ₂	(9.1) IP is onset of phot	(187) coelectron ba	(780) and.	-23	-98	*EST	88-75-5
OH NO2	(9.0) IP is onset of phot	(181) oelectron ba	(757) and.	-27	-111	*EST	554-84-7
0 ₂ N OH	(9.1) IP is onset of phot	(182) oelectron ba	(762) and.	-28	-116	*EST	100-02-7
C ₆ H ₅ N ₂ +							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
C ₆ H ₅ N ₂ +	From proton affini	225 ity of 2-pyrid	943 Iinecarbonitril	e. (RN 100-70-	9).		

208.1 kcal/mol, 871. kJ/mol.

230 LIAS ET AL.

Table 1. Positive Ion Table - Continued

Y0.							
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₆ H ₅ N ₂ +		**					
CN CN	From proton affi PA = 209.3 kcal/			rile (RN 100-54	-9).		
NC NH	From proton affi PA = 210.3 kcal/			rile (RN 100-48	-1).		
C ₆ H ₅ N ₃ +		····					
⊘ −N ₃	(8.4) IP is onset of pho	(286) stoelectron b	(1195) and.	92	385	29ROT/MUE	622-37-7
OT "	(9.20±0.05)	(295)	(1236)	83	348	61ZIM/GEI	95-14-7
C ₆ H ₅ O +		·	1, ,				
Ö	(8.56) $\Delta_{\rm f} H({\rm Ion}) \ {\rm from \ aj} \\ 80 {\rm DEW/DAV. \ So}$						2122-46-5
C ₆ H ₅ S +	(8.63±0.10)	(254)	(1063)	55±2	230±8	82MCM/GOL	4985-62-0
С ₆ Н ₆ +							
$CH_2 = C = CHCH = C = CH_2$; (8.53)	(295) <i>(299)</i>	(1234) (1251)	98 <i>102</i>	411 <i>428</i>	82ROS/DAN	29776-96-3
$HC=CCH_2CH=C=CH_2$	(9.40)	(316)	(1321)	99	414	82ROS/DAN	33142-15-3
	ID from ean or	(320)	(1339)	103	432		
	IP from 82ROS/D	MIN (ODSEL C	n photoelectr	on vana).			

Table 1. Positive Ion Table - Continued

ION	Neutral	Ionization potential eV	Δ _f H(Id kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H	6 ⁺		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	
	HC≡CCH = CHCH = CH ₂							
		(9.20)	(299)	(1253)	87	365	82ROS/DAN	10420-90-3
		ID 6 02D 00.00	(303)	(1270)	91	382		
		IP from 82ROS/E	AIN.					
(CH ₂ = CHC≡CCH = CH ₂							
	2	(8.50±0.02)	(280)	(1172)	84	352	82ROS/DAN	821-08-9
			(284)	(1189)	88	369		
		See also: 85DEW,	TIE.					
	#C=CC=CC.**	(0.41)	(212)	(1206)	05	398	92D O C (D A N)	4447 21 6
,	HC≡CC≡CC ₂ H ₅	(9.41)	(312) <i>(316)</i>	(1306) (1323)	95 99	398 415	82ROS/DAN	4447-21-6
		IP from 82ROS/D		(1000)				
		·						
1	HC≡CCH ₂ C≡CCH ₃	(9.50)	(317)	(1328)	98	411	82ROS/DAN	10420-91-4
			(321)	(1345)	102	428		
		IP from 82ROS/D	AN (onset	of photoelecti	on band).			
I	HC≡CCH ₂ CH ₂ C≡CH	9.90	327	1369	99	414	82ROS/DAN	628-16-0
_			331	1387	103	432		
		See also: 82ROS/I	DAN.					
,	CH ₃ C≡CC≡CCH ₃	8.92±0.05	296	1238	90	377	82ROS/DAN	2809-69-0
`	Jige=ce=ceri3	6.92±0.03	299	1255	90 94	377 394	62ROS/DAN	2007-07-0
		See also: 82ROS/I						
	^	9.2459±0.0002	233.2	975.8	19.8±0.1	82.9±0.3	77PED/RYL	71-43-2
			237.2	992.6	24.0±0.2	100.4±1		·
	$\overline{\mathbf{v}}$	IP from 84GRU/V	VHE. IP at 2	298 K = 9.225		'AUS). See al	so: 81KIM/KAT,	
		81KIM/KAT, 84H	OW/GON.					
		(0.25)	(246)	(1020)	52.5	222.0	04DOT	407.20.1
	J-cn ₂	(8.36)	(246) (251)	(1030) (1048)	53.5 <i>57.8</i>	223.8 <i>241.9</i>	84ROT	497-20-1
	-		(201)	(1070)	51.0	W1417		
	CH ₂							
		(8.80)	(283)	(1184)	80.4	335.5	86ROT/LEN	5291-90-7
	n í		(286)	(1198)	<i>83</i>	349		

Table 1. Positive Ion Table - Continued

······································							
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No		Neutral reference	CAS registry
C ₆ H ₆ +					······		
CH ₂	(08.8)	(298) <i>(302)</i>	(1245) <i>(1263)</i>	95 <i>99</i>	396 <i>414</i>	82ROS/DAN	3227-90-5
H ₂ C CH ₂	IP from 82ROS/D						
	(9.0)	(294) (298)	(1232) <i>(1250)</i>	87 <i>91</i>	364 <i>382</i>	82ROS/DAN	5649-95-6
	IP from 82ROS/D				362		
	8.1	(274)	(1144)	87	363	82ROS/DAN	659-85-8
	IP from 82ROS/D	(278)	(1163)	91	381		
6 ^H 6 ^{Br +}							
H ₂ O	From proton affin	208 ity of C ₆ H ₅	871 Br (RN 108-86	5-1). PA = 18	2.4 kcal/mol, 7	63. kJ/mol.	
6H6Cl+							10 - 10 d Harris - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1
6H6CI+	From proton affin 760. kJ/mol.	196 ity of C ₆ H ₅	821 ;Cl (RN 108-90	-7). PA = 18	1.7 kcal/mol,		3-3-40-1
C ₆ H ₆ Cl +				-7). PA = 18	1.7 kcal/mol,		
6H ₆ Cl + H ₂ Cl 6H ₆ ClN + NH ₂ Cl				-7). PA = 18	1.7 kcal/mol,	*EST	95-51-2
H ₂ CI	760. kJ/mol.	ity of C ₆ H ₅	;CI (RN 108-90			*EST	95-51-2 108-42-9

Table 1. Positive Ion Table - Continued

	Tubic	1. 1 05111	ve ion rabi	e - Contin	<u> </u>		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₆ F ⁺	From proton affir 764. kJ/mol.	155 nity of C ₆ H	650 ₅ F (RN 462-06	6-6). PA = 182	.6 kcal/mol,		
C ₆ H ₆ FN ⁺	(≤8.18)	(≤164)	(≤683)	-25	-106	*EST	348-54-9
NH2	(≤8.32)	(≤165)	(£691)	-27	-112	*EST	372-19-0
F NH2	(≤8.18)	(≤163)	(≤680)	2 6	-109	*EST	371-40-4
C ₆ H ₆ Hg + (CH ₃ C≡C) ₂ Hg	8.98±0.07 IP is onset of pho	(323) toelectron b	(1351) pand (81FUR/	116 PIA).	485	*EST	64705-15-3
C ₆ H ₆ N ⁺	(8.26±0.1)	(247)	(1034)	57±2	237±8	82MCM/GOL	2835-77-0
C ₆ H ₆ NO +	From proton affin 857. kJ/mol.	209 hity of nitros	874 sobenzene (RN	l 586-96-9). P.A	x = 204.8 kcal	/mol,	
ни сно	From proton affin PA = (215.2) kcal			ehyde (RN 872	-85-5).		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₆ H ₆ NO ₂ +							
о N Он	From proton affin 809. kJ/mol.	189 lity of niti	789 robenzene (RN 9	98-95-3). PA =	= 193.4 kcal/m	ol,	
C ₆ H ₆ N ₂ +		·	<u> </u>				
HN	(9.36±0.03)	(294)	(1229)	78±1	326±5	*EST	4377-73-5
6H ₆ N ₂ O ₂ +		·					
NH ₂ NO ₂	8.27±0.01	206	862	15±1	64±4	77PED/RYL	88-74-4
NH ₂							
O _{NO2}	8.31±0.02	207	864	15±0.5	62±2	83NIS/SAK	99-09-2
IOY NH ₂	8.34±0.01	205	860	13±0.5	55±2	83NIS/SAK	100-01-6
02N	6.5420.01	203	800	13±0.5	33±2	OJINIO/JAK	100-01-0
GH ₆ N ₄ +							
OT N	(8.9) IP is onset of photo	(248) oelectron	(1037) band.	43	178	*EST	2004-03-7
C6H6O+	· · · · · · · · · · · · · · · · · · ·	·			***************************************		
C ₆ H ₆ O +	8.47	173	722	-23.0±0.2		78KUD/KUD	108-95-2
\bigvee	IP from 84FRA/FF	<i>175</i> RA. See al	<i>732</i> lso: 84FUK/YOS	<i>–20.4</i> S. 83KLA/KOV	<i>–85.2</i> 7.81KIM/KAT	r	

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C6H6OS+	(9.20±0.05)	(206)	(862)	-6	-26	*EST	88-15-3			
S CCH3	(9.32±0.05)	(209)	(875)	-6	-24	*EST	1468-83-3			
C ₆ H ₆ O ₂ +										
OH OH	(8.15) IP is onset of phot	(123) coelectron b	(514) and.	-65±1	-272±5	79KUD/KUD	120-80-9			
он	(8.2) IP is onset of phot	(123) coelectron b	(514) and.	-65.6±0.5	-274.7±2.1	79KUD/KUD	108-46-3			
но	7.95±0.03 IP from 85OIK/AI	121 BE.	505	−63±0.5	-262±2	79KUD/KUD	123-31-9			
	(9.77) IP is onset of phot	(205) oelectron ba	(859) and (85GLE/	-20 (AH).	-84	*EST	4505-38-8			
	(9.4) IP is onset of phot	(170) oelectron ba	(713) and (81BEC/I		-194	*EST	29798-87-6			
6H6O3 +	(≤9.00±0.05)	(≤110)	(≤463)	-97	-405	80BAL/LEB	611-13-2			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/moi kJ/moi	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₆ H ₆ O ₄ + H ₃ CO O	≤9.20	(≤107) (≤447)	-105	-441	*EST	5222-73-1				
C ₆ H ₆ S ⁺		111111111111111111111111111111111111111								
SH	8.30±0.02 See also: 82CAR/	218 913 /KIB, 81KIM/KAT.	26.9±0.2	112.4±0.8	77PED/RYL	108-98-5				
C ₆ H ₆ Se ⁺				<u> </u>	 	· · · · · · · · · · · · · · · · · · ·				
SeH	(≤7.7) IP is onset of pho	(≤217) (≤906) otoelectron band (81BAK/A	39 RM).	163	*EST	645-96-5				
C ₆ H ₇ +										
÷2	From proton affii	204 854 nity of benzene. (RN 71-43-2). PA = 181	.3 kcal/mol, 759.	kJ/mol.					
(НС≡ССН ₂ СН ₂ С≡СН)Н		269 1124 nity of HC≡C(CH ₂) ₂ C≡CH (ol, 819 kJ/mol.	(RN 628-16-0) (85LIA/AUS).						
(CH ₃ C≡CC≅CCH ₃)H	From proton affin PA = 196 kcal/m	260 1087 nity of CH ₃ C≌CC≡CCH ₃ (R ol, 819 kJ/mol.	N 2809-69-0)	(85LIA/AUS).						
C ₆ H ₇ BrN ⁺ (NH ₂ Br) H ⁺	From proton affir	183 767 nity of 3-BrC ₆ H ₄ NH ₂ (RN 5	91-19-5).							
C ₆ H ₇ Br ₃ Ti ⁺ H ₃ C B _r Ti B _r B _r	(8.6) IP is onset of pho	(80) (337) toelectron band (84TER/LC	−118 'U).	-493	*EST	1277-45-8				

Table 1. Positive Ion Table - Continued

	Table 1	1. Positive Ion Table	- Continued		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C ₆ H ₇ CIN ⁺ (NH ₂ C ₁ H ⁺	From proton affin 867. kJ/mol.	172 718 ity of 3-CIC ₆ H ₄ NH ₂ (RN	108-42-9). PA = 207.2 kca	l/mol,	
(CI NH2) HT	From proton affin 873. kJ/mol.	170 712 ity of 4-CIC ₆ H ₄ NH ₂ (RN	106-47-8). PA = 208.6 kca	l/mol,	
NH CH3	From proton affin (218.6) kcal/mol, ((163) (681) ity of 2-chloro-4-methylpy: 915.) kJ/mol.	ridine (RN 3678-62-4).		·
CI CH3	From proton affin PA = (219) kcal/n	(161) (675) ity of 2-chloro-6-methylpyr nol, (916) kJ/mol.	idine (RN 18368-63-3).		
CoH7CINO+	From proton affin PA = 217.8 kcal/n		1H)pyridinone (RN 17228-0	63-6).	
CI H OCH3	From proton affini PA = 215.9 kcal/m	129 538 ity of 2-chloro-6-methoxypy nol, 903. kJ/mol.	rridine (RN 17228-64-7).		
C ₆ H ₇ Cl ₃ Ti ⁺ CH ₃ CI Ti CI	(9.1) IP is onset of photo	(66) (276) Delectron band (84TER/LC	−144 −602 DU).	*EST	1282-31-1
C ₆ H ₇ FN ⁺ NH ₂ H ⁺	From proton affini 866. kJ/mol.	132 552 ty of 3-fluorobenzeneamin	e (RN 372-19-0). PA = 20°	7.0 kcal/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₇ FN ⁺ (F NH ₂) H ⁺	From proton affi 871. kJ/mol.	132 nity of 4-fluo	550 Drobenzeneami	ine (RN 371-40	0-4). PA = 208	3.1 kcal/mol,	
C ₆ H ₇ N ⁺	7.720±0.002 IP from 84SMI/F	198 IAG. See als	829 so: 83KLA/KO	20.8±0.2 V, 81KIM/KA	87.1±0.8 Г, 85MEE/SEI	77PED/RYL ζ, 85HAG/SMI.	62-53-3
N сн ₃	9.02±0.03 See also: 81KIM/	232 KAT.	969	23.7±0.2	99.2±0.7	77PED/RYL	109-06-8
Снз	9.04±0.03 See also: 81MOE	234 D/DIS2, 81KI	979 IM/KAT.	25.4±0.1	106.4±0.5	77PED/RYL	108-99-6
OH ₃	9.04±0.03	233	976	24.8±0.3	103.8±1.2	77PED/RYL	108-89-4
C ₆ H ₇ NO +	≤8.21±0.02	(≤194)	(≤811)	5	19	*EST	931-19-1
H3C NO	(≤8.20±0.02)	(≤195)	(≤817)	6	26	*EST	1003-73-2
H3C NO	8.12±0.02	(193)	(807)	6	24	*EST	1003-67-4

Table 1. Positive Ion Table - Continued

YOM									
ION Neutral	Ionization potential eV	Δ _f H(Io		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₆ H ₇ NO +									
©N OCH3	(8.7) IP is onset of pho	(189) toelectron b	(787) pand.	-12	-52	*EST	1628-89-3		
© OCH3	(9.34±0.02)	(211)	(885)	-4	-16	*EST	7295-76-3		
H ₃ CO N	(9.58±0.02)	(218)	(911)	-3	-13	*EST	620-08-6		
CH ₃	(8.2) IP is onset of photon	(169) coelectron b	(706) and. See also: 81	-20±2 DRE/BEC.	-85±10	*EST	694-85-9		
o N-CH ₃	(≤8.20±0.03)	(≤186)	(≤778)	-3±2	−13±8	*EST	695-19-2		
H ² C OH	(8.33)	(163)	(684)	−29±0.7	-120±3	82SUR/ELS	73229-70-6		
H ₃ C OH	(9.15±0.05)	(194)	(813)	−17±0.7	-70±3	82SUR/ELS	1121-78-4		
C ₆ H ₇ NO ₂ +									
OCH3	(7.5) IP is onset of phot	(151) oelectron ba	(631) and.	-22	-93	*EST	1122-96-9		

Table 1. Positive Ion Table - Continued

Ionization potential eV					Neutral reference	CAS registry number
(8.21±0.05)	(158)	(660)	-32	-132	*EST	20773-98-2
(8.40±0.05)	(171)	(714)	23	-96	*EST	14906-61-7
(7.6) IP is onset of phot	(203) oelectron b	(849) and (82ZVE/	28 ASH).	116	*EST	137-07-5
(8.24±0.03) See also: 81DRE/I	(223) BEC.	(933)	33	138	*EST	18438-38-5
(≤8.41±0.03)	(≤231)	(≤966)	37	155	*EST	18794-33-7
(≤8.73±0.03)	(≤238)	(≤997)	37	155	*EST	22581-72-2
(7.69±0.03) See also: 81DRE/E	(218) BEC.	(912)	41	170	*EST	2044-27-1
7.54±0.02	(239)	(999)	65	272	*EST	6887-59-8
	eV (8.21±0.05) (7.6) IP is onset of phot (8.24±0.03) See also: 81DRE/I (≤8.41±0.03) (≤8.73±0.03) (7.69±0.03) See also: 81DRE/I	eV kcal/mol (8.21±0.05) (158) (8.40±0.05) (171) (7.6) (203) IP is onset of photoelectron b (8.24±0.03) (223) See also: 81DRE/BEC. (≤8.41±0.03) (≤231) (≤8.73±0.03) (≤238) (7.69±0.03) (≤18) See also: 81DRE/BEC.	(8.21±0.05) (158) (660) (8.40±0.05) (171) (714) (7.6) (203) (849) IP is onset of photoelectron band (82ZVE/4 (8.24±0.03) (223) (933) See also: 81DRE/BEC. (≤8.41±0.03) (≤231) (≤966) (≤8.73±0.03) (≤238) (≤997) (7.69±0.03) (218) (912) See also: 81DRE/BEC.	eV kcal/mol kJ/mol kcal/mol (8.21±0.05) (158) (660) -32 (8.40±0.05) (171) (714) -23 (7.6) (203) (849) 28 IP is onset of photoelectron band (82ZVE/ASH). (8.24±0.03) (223) (933) 33 See also: 81DRE/BEC. (≤8.41±0.03) (≤231) (≤966) 37 (≤8.73±0.03) (≤238) (≤997) 37 (7.69±0.03) (218) (912) 41 See also: 81DRE/BEC.	eV kcal/mol kJ/mol kcal/mol kJ/mol (8.21±0.05) (158) (660) -32 -132 (8.40±0.05) (171) (714) -23 -96 (7.6) (203) (849) 28 116 IP is onset of photoelectron band (82ZVE/ASH). (8.24±0.03) (223) (933) 33 138 See also: 81DRE/BEC. (≤8.41±0.03) (≤231) (≤966) 37 155 (≤8.73±0.03) (≤238) (≤997) 37 155 (7.69±0.03) (218) (912) 41 170 See also: 81DRE/BEC.	(8.21±0.05) (158) (660) -32 -132 *EST (8.40±0.05) (171) (714) -23 -96 *EST (7.6) (203) (849) 28 116 *EST IP is onset of photoelectron band (82ZVE/ASH). (8.24±0.03) (223) (933) 33 138 *EST See also: 81DRE/BEC. (±8.41±0.03) (±231) (±966) 37 155 *EST (±8.73±0.03) (±238) (±997) 37 155 *EST (7.69±0.03) (218) (912) 41 170 *EST See also: 81DRE/BEC.

Table 1.	Positive	Ion Table	- Continu	ed

	Table	1. Posit	ive Ion Table	e - Cont	inued		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) l kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₆ H ₇ NSe ⁺	≤7.22 IP from 81DRE/I	(≤224) BEC.	(≤937)	57	240	*EST	2240-85-9
C ₆ H ₇ N ₂ O ₂ +							
(02N) H+	From proton affin PA = 207.0 kcal/	172 nity of 4-No mol, 866. k	719 D ₂ C ₆ H ₄ NH ₂ (J/mol.	RN 100-01 - 6) (84ROL/HOL	<i>T</i>).	
$ \begin{array}{c c} \hline C_6H_7N_4^+ \\ \begin{pmatrix} CH_3 \\ N \\ N \\ H \end{pmatrix} $ H ⁺	From proton affir (933) kJ/mol.	185 nity of 6-me	775 ethylpurine (RN	V 2004-03-7).	. PA = (223) ko	eal/mol,	
C ₆ H ₇ O +							
О ОН ОН	From proton affir	146 nity of C ₆ H	613 ₅ OH (RN 108-	95-2). PA =	· 196.3 kcal/mol,	821. kJ/mol.	
(HC≅CCH ₂) ₂ OH	From proton affir	(246) nity of (HC	(1031) =CCH ₂) ₂ O (RI	N 6921-27-3)). PA = 190.8 kg	cal/mol, 798. kJ/mol	
C ₆ H ₇ P ⁺							
PH ₂	(8.47±0.01) See also: 81CAB/	(226) COW2.	(945)	31	128	*EST	638-21-1
	<u> </u>						
$C_6H_8^+$ (E)- $CH_2 = C = CHCH = CH$	ICH ₃ (8.32)	(244)	(1020)	52	217	*EST	20130-95-4
(Z)-CH ₂ = CHCH = CHCH	I = CH ₂ 8.31±0.01	233	973	41	171	70BEN/O'N	2612-46-6
(E)-CH ₂ =CHCH=CHCH	= CH ₂ 8.28±0.02	(231) (237)	(965) <i>(991)</i>	40 46	166 192	*EST	821-07-8
$CH_3CH = C = CHCH = CH$	2 (8.56)	(250)	(1048)	53	222	*EST	33755-64-5

242 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₆ H ₈ +										
$CH_2 = C = C(CH_3)CH = C$										
	(8.54)	(249)	(1040)	52	216	*EST	25054-29-9			
$CH_2 = C = CHC(CH_3) = C$	CH ₂									
2 \ 3	(8.54)	(249)	(1040)	52	216	*EST	14763-81-6			
C ₂ H ₅ C≅CCH = CH ₂	(8.91±0.01)	(260)	(1090)	55	230	*EST	12701 54 5			
Oznisc=cen-ch2	(8.91±0.01)	(200)	(1090)	33	230	ESI	13721-54-5			
$CH_3C=CC(CH_3)=CH_2$										
	(8.72±0.01)	(253)	(1058)	52	217	*EST	926-55-6			
	8.25±0.02	<u>215.6</u>	902.3	25.4±0.1	106.3±0.5	77PED/RYL	592-57-4			
`)		<u>221.3</u>	<u>926.1</u>	31.1±0.1	130.1±0.5					
	See also: 81KIM/	KAT.								
^	8.82±0.02	229	959	25.8±0.5	107.9±2	77SHA/GOL	628-41-1			
	3.02±0.02	235	985	32.0±0.5	133.9±2	HSILAYOOL	028-41-1			
	See also: 81KIM/I									
СНЗ	8.40±0.05	(217)	(907)	23	97	*EST	96-39-9			
-										
сн ₃	8.45±0.05	(218)	(911)	23	96	*EST	3727-31-9			
<u></u>	0.4510.05	(210)	(711)	20	70	LUI	3141-31-7			
CH ₂	(8.40)	(223)	(931)	29	121	*EST	930-26-7			
~										
										
CH ₂	(5. 1)									
	(8.4) IP is onset of phot	(242) roelectron b	(1011) and	48	201	80GAJ	14296-80-1			
CH ₂	11 is offset of bilot	.corociron o								

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Ic	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₆ H ₈ +	(8.7) IP is onset of pho	(254) otoelectron b	(1063) and.	54	224	80GAJ	2045-78-5
C≖CH	(9.6) IP is onset of pho	(284) otoelectron b	(1188) and.	63	262	*EST	50786-62-4
	(8.5) IP is onset of pho	(280) stoelectron b	(1170) and.	84	350	*EST	27567-82-4
	(9.1) IP is onset of pho	(271) toelectron b	(1135) and.	61	257	80ROT/KLA	3097-63-0
	(≤9.43)	(≤272)	(≤1138)	54.5	228.0	85SVY/IOF	287-12-7
		· · · · · · · · · · · · · · · · · · ·		P			
C ₆ H ₈ Cl ₂ S ₂ + C ₁	(7.8) IP is onset of pho	(158) toelectron ba	(660) and (83JOR/M	-22 (CC).	-93	*EST	74796-12-6
C ₆ H ₈ F ₂ S ⁺							
SCF ₂	(9.34) IP from 80SAR/W	(129) /OR.	(538)	-87	-363	*EST	77471-71-7
C ₆ H ₈ N ⁺ (HC≡CCH ₂) ₂ NH ₂	From proton affin	262 hity of (HC≡0	1098 CCH ₂) ₂ NH (R	N 6921-28-4).	PA = 216.1 I	kcal/mol,	

904. kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number					
C ₆ H ₈ N ⁺	From proton affin	177 740 ity of C ₆ H ₅ NH ₂ (RN 62-5	3-3). PA = 209.5 kcal/mol,	876. kJ/mol.						
CH3	From proton affin 942. kJ/mol.	164 688 ity of 2-methylpyridine (R	N 109-06-8). PA = 225.0 kc	al/mol,						
CH ₃	From proton affin 938. kJ/mol.	167 698 ity of 3-methylpyridine (R	N 108-99-6). PA = 224.1 kca	al/moi,						
CH3 H+	From proton affin 942. kJ/mol.	165 692 ity of 4-methylpyridine (Ri	N 108-89-4). PA = 225.2 kca	al/mol,						
C ₆ H ₈ NO ⁺	From proton affin	131 547 ity of 2-HOC ₆ H ₄ NH ₂ . P <i>A</i>	л = 214.2 kcal/mol, 896. kJ/п	nol.						
OH NH ₂	From proton affin	130 545 ty of 3-(OH)C ₆ H ₄ NH ₂ (F	N 591-27-5). PA = 214.2 kg	cai/moi,						
NH OCH3	From proton affini 928. kJ/mol.	131 550 ty of 2-methoxypyridine (F	RN 1628-89-3). PA = 221.9	kcal/mol,						
OCH3	From proton affini 935. kJ/mol.	138 579 ty of 3-methoxypyridine (F	N 7295-76-3). PA = 223.6 P	ccal/mol, ,						

Table 1. Positive Ion Table - Continued

Table 1. 1 of the long table Continued										
ION Neutral	Ionization potential eV		on) kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry number			
C ₆ H ₈ NO ⁺										
HN OCH3	From proton affi 952. kJ/mol.	135 nity of 4-me	565 thoxypyridine	(RN 620-08-6). PA = 227.6	kcal/mol,				
CH ₃										
	From proton affi 921. kJ/mol.	125 nity of 1-me	524 thyl-2-pyridino	one (RN 694-8	35-9). PA = 2	20.2 kcal/mol,				
C ₆ H ₈ NS ⁺	-		5. History 1				- W			
SCH3	From proton affi PA = 222.0 kcal/			ine (RN 1843	8-38-5).					
H ₃ CS NH	From proton affi PA = (225.5) kca			ine (RN 2258	1-72-2).					
C ₆ H ₈ N ₂ + NH ₂	7.7 v									
NH ₂	7.2 See also: 81NEL/	(188) GRE.	(787)	22±1	92±5	*EST	95-54-5			
NH ₂	7.14	(186)	(777)	21	88	*EST	108-45-2			
H ₂ N NH ₂	6.87±0.05 See also: 81CAB/	(181) COW2.	(760)	23	97	*EST	106-50-3			
NHCH ₃	(8.26±0.05)	(220)	(924)	30	127	*EST	4597-87-9			

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive ion Tabl	e - Contin	iuea		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₆ H ₈ N ₂ +	(8.53±0.05)	(231)	(965)	34	142	*EST	18364-47-1
H3CN ON	(8.75±0.05)	(233)	(972)	31	128	*EST	1121-58-0
O NHNH2	Values of 7.64 and compound. Repo measurements are because of the lar	rted value: e usually si	s of IP's of hydi gnificantly high	razines determi er than the adi	ned by threshol abatic value	77PED/RYL	100-63-0
H ₃ C N CH ₃	(8.80)	(270)	(1128)	67±0.7	279±3	*EST	108-50-9
C ₆ H ₈ N ₂ O +	(7.67±0.05)	(188)	(787)	11	47	*EST	54818-70-1
NHCH3	(7.97±0.05)	(198)	(829)	14	60	*EST	54818-71-2
CH3HN NO	(7.45±0.05)	(185)	(775)	13	56	*EST	1122-92-5
C ₆ H ₈ O ⁺ HC≡CCOCH ₂ CH ₂ CH ₃	(10.00±0.04) IP from 86TUR/H	(233) AV2.	(975)	2.5	10.5	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₆ H ₈ O ⁺	9.23±0.05	(185)	(775)	-28±0.7	−116±3	*EST	930-68-7
	(≤9.42)	(≤185)	(≤773)	-33±0.7	-136±3	*EST	4096-34-8
CH3 CH3	(8.25±0.10) IP from 85GRU/S	(166) SPI.	(694)	-24	-102	*EST	
H ₃ C CH ₃	(8.39±0.10) IP from 85GRU/S	(166) SPI.	(694)	-28	-116	*EST	3710-43-8
нзс о снз	(8.25±0.10) IP from 85GRU/S	(165) SPI.	(690)	-25	-106	*EST	625-86-5
C2H5	(8.45±0.05)	(171)	(715)	-24	-100	*EST	3208-16-0
	(≤9.44±0.02)	(≤207)	(≤867)	-11	-44	*EST	6705-50-6
С ₆ H ₈ О ₂ +	9.52±0.05	(141)	(589)	-79	-330	*EST	504-02-9

248

Table 1. Positive Ion Table - Continued

			ve ion labi	e - Conti	nucu		
ION Neutral	Ionization potential eV	Δ _f H() kcal/mo	ion) i kJ/moi	-	leutral)	Neutral reference	CAS registry number
C ₆ H ₈ O ₂ S +							
	< 9.6 IP is onset of pho	(<187) toelectron	(<784) band (84AIT/0	-34 GOS).	-142	*EST	84451-42-3
C ₆ H ₈ P ₂ +							
PHY	≤8.78 IP from 81CAB/C	(≤237) COW2.	(≤990)	34	143	*EST	78550-67-1
C ₆ H ₈ S ⁺							
H ₃ C S CH ₃	(8.10) See also: 83BOC/	(199) ROT.	(832)	12	50	*EST	638-02-8
H ₃ C CH ₃	(≤8.55) IP from 83BOC/F	(≤209) ROT.	(≤875)	12	50	*EST	632-15-5
S C2H5	(8.67±0.05)	(215)	(898)	15	61	*EST	872-55-9
C ₆ H ₈ Si ⁺		····					
SiH3	(9.09)	(236)	(988)	27	111	*EST	694-53-1
С ₆ Н ₉ +					<u></u>	······································	
CH ₃ C≡CC(CH ₃) ₂	From appearance	216 potential r	904 neasurements ((84LOS/HOL).		77920-98-0
		191	800				
(·)	From proton affin (837) kJ/mol and (837) kJ/mol. Val is the same.	1,4-c-C ₆ H ₈	(RN 628-41-1)	(83GAU/HC	PA = (200)) kcal/mol,	

Table 1. Positive Ion Table - Continued

			ve foli faul	- Contin		<u> </u>	
ION Neutral	Ionization potential eV	Δ _f H(le kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
С ₆ H ₉ +	From appearance	190 potential n	795 neasurements	(84LOS/HOL)			72026-92-7
н ₃ с	From proton affin PA = (212) kcal/r			necyclobutene.	(RN 15082-1	3-0).	
сн ₃	From appearance	199 potential n	833 neasurements ((84LOS/HOL).			26827-04-3
C ₆ H ₉ Br ⁺							
Br	(9.5) IP is onset of phot	(235) oelectron b	(983) pand (84DEL/	16 ABE).	66	*EST	77379-00-1
C ₆ H ₉ ClHg ⁺							, , , , , , , , , , , , , , , , , , , ,
—HgCl	(8.8) IP is onset of phot	(212) oelectron b	(887) eand (81BAI/C	9 EHI).	38	*EST	10080-39-4
C ₆ H ₉ Cl ₂ P ⁺							
(CH ₃) ₃ CC=CPCl ₂	(≤9.58) IP from 81CAB/C	(≤211) OW.	(≤883)	-10	-4 1	*EST	77376-08-0
C ₆ H ₉ I +						· · · · · · · · · · · · · · · · · · ·	
$\stackrel{\frown}{\underset{\scriptscriptstyle \mathrm{I}}{\sum}}$	(8.8) IP is onset of phot	(233) oelectron b	(976) and (84DEL/A	30 ABE).	127	*EST	74725-75-0
C ₆ H ₉ N ⁺		<u> </u>			·		
(E)-(CH ₃) ₂ NCH = CHC≡Cl	H (7.7)	(260)	(1087)	82±1	344±6	*EST	2206-24-8

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry number		
C ₆ H ₉ N+ H ₃ C CH ₃	(7.54±0.02)	(184)	(767)	10	40	*EST	625-82-1		
H ₃ C CH ₃	(≤7.69)	(≤187)	(≤782)	9.5±0.2	39.8±0.8	77PED/RYL	625-84-3		
^H C ₂ H ₅	(7.97±0.05)	(197)	(823)	13	54	*EST	1551-06-0		
$\begin{array}{c c} \hline \\ C_6H_9N_2^+ \\ \hline \\ \begin{pmatrix} NH_2 \\ NH_2 \end{pmatrix} \\ H^+ \end{array}$	From proton affii 890. kJ/mol.	175 nity of 1,2-C	732 G ₆ H ₄ (NH ₂) ₂ (RN	95-54-5). P	A = 212.8 kcal/i	nol,			
NH2 NH2	From proton affii 930.5 kJ/mol.	164 nity of 1,3-C	688 6H ₄ (NH ₂) ₂ (RN	108-45-2) . 1	PA = 222.4 kcal/	mol,			
(H ₂ N H ⁴	From proton affir 903. kJ/mol.	173 nity of 1,4-C	723 ¹ 6H ₄ (NH ₂) ₂ (RN	106-50-3). 1	PA ≈ 215.9 kcal/	'mol,			
C ₆ H ₉ N ₃ +	≤9.4 IP from 83GLE/S	(≤267) PA.	(s1118)	50	211	*EST	33209-85-7		
H ₃ C N CH ₃	(≤8.84)	(≤274)	(≤1146)	70	293	*EST	24108-36-9		

Table 1. Positive Ion Table - Continue	Table 1.	Positive	Ion Table		Continue	ħ
----------------------------------------	----------	----------	-----------	--	----------	---

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(l	on) kJ/mol	•	(Neutral) nol kJ/mol	Neutral reference	CAS registry				
C ₆ H ₉ O +	From proton affin PA = 213.0 kcal/r			(RN 3710-43	-8) (85HOU/R	COL).					
H ₃ C CH ₃	From proton affin PA = 209.0 kcal/r			(RN 625-86-:	5) (85HOU/RC	DL, 86MAU).					
H ₃ C CH ₃	From proton affin PA = 207.1 kcal/r	-		(RN 20843-0	7-6) (85HOU/I	ROL).					
O.	From proton affin (86HOU/SCH). F				(RN 6705-50-6	i)					
C ₆ H ₉ O ₂ +					· · · · · · · · · · · · · · · · · · ·						
он Он Он	From proton affin PA = 203.9 kcal/n			ne (RN 765-8	37-7) (83MAU)).					
он он	From proton affin 882. kJ/moi.	76 ity of 1,3-cg	318 clohexanedion	ne (RN 504-0)2-9). PA = 2.	10.8 kcal/mol,					
C ₆ H ₁₀ +											
$CH_2 = C = CHCH_2C_2H_5$	(9.00±0.05)	(237)	(990)	29	122	*EST	592-44-9				
(E)-CH ₂ = CHCH = CHC ₂	,H ₅ 8.51 IP from 81MAS/M	(210) IOU.	(878)	14	57	*EST	20237-34-7				
(Z)-CH ₂ = CHCH ₂ CH = C	CHCH ₃ (9.04±0.05)	(227)	(950)	19	80	*EST	7318-67-4				
(E)-CH2 = CHCH2CH = C		(225)	(040)	40	74	******	7010 00 0				
	(8.98±0.05)	(225)	(940)	18	74	*EST	7319-00-8				

Table 1. Positive Ion Table - Continued

Table	I. Posit	ive ion Tabl	e - Contir	iued		
Ionization potential eV	-		•		Neutral reference	CAS registry
_	224	000	20.1.0.1	041.04	aanen ava	502 42 7
9.29±0.05	234	980	20.1±0.1	84.1±0.6	7/PED/RYL	592-42-7
(8.76±0.05)	(228)	(955)	26	110	*EST	592-49-4
=CHCH ₃						
(8.27) See also: 81MAS/	(203) MOU.	(850)	12	52	*EST	6108-61-8
= CHCH ₂						
8.24±0.02	(202) MOU.	(844)	12	49	*EST	5194-50-3
= CHCH ₃						
8.18±0.06	(199) MOU.	(832)	11	43	*EST	5194-51-4
(0.07, 0.05)	(22()	(00%)	27		*FOT	10/42 05 5
(9.06±0.05)	(230)	(987)	21	113	TES1	13643-05-5
(8.74±0.05)	(227)	(951)	26	108	*EST	7417-48-3
8.25	(201) 4OU, 82L	(839) .EV/LIA.	10	43	70BEN/O'N	926-56-7
8.42	(205) 1OU.	(859)	11	47	*EST	2787-43-1
CHCH ₂						
(8.38)	(204) 10U.	(852)	10	43	*EST	2787-45-3
CHCH						
8.43	(205) 1OU.	(856)	10	43	*EST	926-54-5
CH ₂ (9.16±0.05)	(228)	(956)	17	72	*EST	763-30-4
CH-						
(9.40±0.05)	(235)	(985)	19	78	*EST	1115-08-8
8.64±0.05	(222)	(930)	23	96	*EST	3043-33-2
-						
8.71 See also: 81MAS/N	211 MOU.	884	10±0.2	44±1	77PED/RYL	513-81-5
	Ionization potential eV CH2 9.29±0.05 (8.76±0.05) = CHCH3 (8.27) See also: 81MAS/ = CHCH3 8.24±0.02 See also: 81MAS/ = CHCH3 8.18±0.06 See also: 81MAS/ (9.06±0.05) (8.74±0.05) (8.74±0.05) CHCH3 8.42 IP from 81MAS/N CHCH3 8.42 IP from 81MAS/N CHCH3 8.43 IP from 81MAS/N CHCH2 (9.16±0.05) CH2 (9.40±0.05)	Ionization potential eV CH2 9.29±0.05 234 (8.76±0.05) (228) E=CHCH3 (8.27) (203) See also: 81MAS/MOU. E=CHCH3 8.24±0.02 (202) See also: 81MAS/MOU. E=CHCH3 8.18±0.06 (199) See also: 81MAS/MOU. (9.06±0.05) (236) (8.74±0.05) (227) 8.25 (201) IP from 81MAS/MOU, 82L CHCH3 8.42 (205) IP from 81MAS/MOU. CHCH3 (8.38) (204) IP from 81MAS/MOU. CHCH3 (8.38) (205) IP from 81MAS/MOU. CHCH3 (9.16±0.05) (228) CH2 (9.16±0.05) (222)	Ionization potential eV kcal/mol kI/mol CH2 9.29±0.05 234 980 (8.76±0.05) (228) (955) E = CHCH3 (8.27) (203) (850) See also: 81MAS/MOU. E = CHCH3 8.24±0.02 (202) (844) See also: 81MAS/MOU. E = CHCH3 8.18±0.06 (199) (832) See also: 81MAS/MOU. (9.06±0.05) (236) (987) (8.74±0.05) (227) (951) 8.25 (201) (839) IP from 81MAS/MOU, 82LEV/LIA. CHCH3 8.42 (205) (859) IP from 81MAS/MOU. CHCH3 (8.38) (204) (852) IP from 81MAS/MOU. CHCH3 8.43 (205) (856) IP from 81MAS/MOU. CHCH3 8.43 (205) (856) IP from 81MAS/MOU. CHCH4 (9.16±0.05) (228) (956) CH2 (9.16±0.05) (228) (985) 8.64±0.05 (222) (930)	Ionization potential eV kcal/mol kJ/mol kcal/mol cV kcal/mol kJ/mol kcal/mol cV kcal/mol kJ/mol kcal/mol cV kcal/mol kJ/mol kcal/mol cV kcal/mol cV kcal/mol kJ/mol kcal/mol cV kcal/mol cV kcal/mol cV kcal/mol cV kcal/mol cV kcal/mol cV cV kcal/mol cV	CH2 9.29±0.05 234 980 20.1±0.1 84.1±0.6 (8.76±0.05) (228) (955) 26 110 E-CHCH3 (8.27) See also: 81MAS/MOU. E-CHCH3 8.24±0.02 See also: 81MAS/MOU. E-CHCH3 8.18±0.06 (9.06±0.05) (236) (987) 11 43 8.25 (201) (839) 10 43 1P from 81MAS/MOU. E-CHCH3 8.42 (205) (859) 11 47 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (204) (852) 11 47 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (204) (852) 10 43 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (204) (852) 10 43 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (204) (852) 10 43 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (204) (852) 10 43 1P from 81MAS/MOU. E-CHCH3 8.43 (8.38) (205) (856) 10 43 1P from 81MAS/MOU. E-CHCH2 (9.16±0.05) (228) (956) 17 72 CH2 (9.40±0.05) (222) (930) 23 96 E-H2 8.71 211 884 10±0.2 44±1	Comparison Caph Can Ca

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
$C_6H_{10}^+$ $C_2H_5C(=CH_2)CH=CH_2$							
-	(8.79±0.02) See also: 81MAS/I	(216) MOU.	(904)	13	56	*EST	3404-63-5
C ₄ H ₉ C≡CH	(9.95±0.05) See 81HOL/FIN.	(258)	(1082)	29±0.2	122±1	79ROG/DAG	693-02-7
C ₃ H ₇ C≡CCH ₃	9.366±0.005	242	1012	26±0.5	108±2	79ROG/DAG	764-35-2
$C_2H_5C\equiv CC_2H_5$	9.323±0.005	240	1005	25±0.5	106±2	79ROG/DAG	928-49-4
(CH ₃) ₂ CHCH ₂ C≡CH	(9.83±0.05)	(254)	(1064)	28	116	*EST	7154-75-8
CH ₃ CH ₂ CH(CH ₃)C≡CH	9.79±0.05	253	1058	27±0.2	113±1	79ROG/DAG	922-59-8
(CH ₃) ₃ CC≡CH	(9.80±0.05) See also: 81CAB/0	(251) COW, 85OI	(1051) RL/BOG.	25±0.7	106±3	77KUP/SHI	917-92-0
(CH ₃) ₂ CHC≡CCH ₃	9.31±0.05	(238)	(995)	23	97	*EST	21020-27-9
	8.945±0.01 See also: 81KIM/K	205.2 AT.	858.4	-1.1±0.1	-4.6±0.5	77PED/RYL	110-83-8
Сн3	8.55±0.05	196	821	~1±0.2	-4±1	82ALL/DOD	693-89-0
СН3	8.95±0.01	208	871	2±0.5	7±2	79FUC/PEA	1120-62-3
CH ₂	8.55±0.01	200	837	3±0.5	12±2	82ALL/DOD	1528-30-9
СН-СН3	(8.70±0.05)	(221)	(925)	21	86	*EST	1528-21-8

Table 1. Positive Ion Table - Continued

			ve foil Table	Contin			
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₀ + CH=CH ₂	(≤9.44)	(≤242)	(≤1010)	24	99	*EST	2597-49-1
c CH2 CH2	(8.66±0.05)	(222)	(930)	22	94	82KOZ/MAS	4663-22-3
нзс снз	(8.58±0.05) See also: 81PLE/	(239) VIL.	(1001)	41	173	*EST	3664-56-0
\Diamond	(9.16±0.02)	(220.4)	(922.1)	9.2±0.1	38.3±0.4	77PED/RYL	285-58-5
	(9.0) IP is onset of pho	(237) toelectron t	(993) pand.	30	125	82WIB/WEN	186-04-9
	(9.7) IP is onset of pho	(239) toelectron b	(1000) pand (84DEL/PIG	15.3).	64.0	82WIB/WEN	285-86-9
	(8.9) IP is onset of pho	(236) toelectron b	(988) pand (82SPA/GLE	31±1 E).	129±4	77PED/RYL	5685-46-1
\Diamond	(9.1) IP is onset of photon	(250) coelectron b	(1045) and.	40	167	*EST	157-45-9

Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₀ Br ₂ +			· · · · · · · · · · · · · · · · · · ·				
Br	10.02±0.02	(206)	(863)	-25	-104	*EST	7429-37-0
Br Br	(9.94±0.02)	(204)	(855)	-25	-104	*EST	19246-38-9
C ₆ H ₁₀ F ₃ O ₂ + CF ₃ C(OH)O(n-C ₄ H ₉)	From proton affin 777. kJ/mol.	-79 ity of CF ₃ C	-332 OO(n-C ₄ H ₉)	(RN 367-64-6).	. PA = 185.8	ccal/mol,	
C ₆ H ₁₀ N ⁺							
H ₃ C H _C H ₃	From proton affin PA = 218.2 kcal/r	-		(RN 625-84-3)	(86MAU/LIE).	
C ₆ H ₁₀ N ₂ +				··			
	(7.79±0.04)	(218)	(913)	38	161	770TH/OLS	3310-62-1
C ₆ H ₁₀ N ₂ O +							
0 N	(≤9.30±0.03)	(≤237)	(≤990)	22.08±.44	92.38±1.84	83BYS	25926-96-9
C ₆ H ₁₀ N ₂ S +							
CH ₂ SCH ₃	(7.9) IP is onset of phot	(208) coelectron ba	(869) and (80KLA/E	26 UT).	107	*EST	75899-43-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	•	Ion) ol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry				
C ₆ H ₁₀ N ₂ S ₂ +	≤7.82 IP from 81HEN/	(≤236) ISA.	(≤986)	55	232	*EST	78134-03-9				
C ₆ H ₁₀ N ₃ O ₂ + HN CH ₂ -CH COOH	From proton affi	103 nity of L-hi	431 istidine. PA =	231.9 kcal/mo	l, 970. kJ/mol.						
C ₆ H ₁₀ O + (E)-n-C ₃ H ₇ CH = CHCHO	(9.65)	(187)	(782)	-36	-149	*EST	505-57-7				
$CH_3CH_2CH = C(CH_3)CHC$	O (9.54)	(181)	(758)	-39	-162	*EST	623-36-9				
$CH_3CH = C(C_2H_5)CHO$	(9.53)	(181)	(757)	-39	-162	*EST	19780-25-7				
$iso-C_3H_7COCH = CH_2$	(9.39)	(177)	(741)	-39	-165	*EST	1606-47-9				
(E)- $CH_3CH = CHC(=O)C$	(9.32)	(175)	(730)	-40	-169	*EST	2497-21-4				
$CH_3CH = C(CH_3)C(= O)C$	CH ₃ (9.35)	(172)	(719)	44	-183	*EST	565-62-8				
(CH3)2C = CHC(= O)CH3	9.08±0.03	(165)	(693)	-44	-183	*EST	141-79-7				
	9.14±0.01 See also: 86SPA/I	157 RAD.	656	-54±0.5	226±2	77PED/RYL	108-94-1				
СН ₃	(8.88) IP from 84ALA/F	(173) RYE.	(724)	-32	-133	*EST	2270-61-3				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₀ O +							
\bigcirc	(9.82) IP from 84ALA/F	(197) RYE.	(822)	-30	-125	*EST	286-20-4
	(≤9.57±0.02)	(≤177)	(≤740)	44	-183	74PIH/TAS	279-49-2
$C_6H_{10}OS^+$ $CH_3SC(CH_3) = CHC(=C$	(8.15) IP is onset of pho	(152) toelectron b	(636) eand (81JOR/C	−36 AR).	-150	*EST	60887-86-7
C ₆ H ₁₀ OSi +							
O Si—CH ₃	≤8.62 IP from 83ZYK/F	(≤165) ERC.	(≤689)	-34	-143	*EST	13271-68-6
C ₆ H ₁₀ O ₂ +					······································		
(E)-CH ₃ CH = CHCOOC ₂	H ₅ (≤10.11)	(≤143)	(≤599)	-90±0.5	-376±2	77PED/RYL	623-70-1
	(8.6) IP is onset of pho	(163) toelectron b	(683) and (84GLE/D	-35 POB).	-147	*EST	51272-66-3
Q:	8.4 IP is onset of phot	(159) toelectron b	(663) and.	-35	-147	*EST	280-53-5
C ₆ H ₁₀ O ₃ P ⁺							
	From proton affin PA = 213.8 kcal/r			aadamantane	(RN 281-33-4)		

Table 1. Positive Ion Table - Continued

	Table	1. Positive	Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(Ion kcal/mol		Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry
C ₆ H ₁₀ O ₄ + C ₂ H ₅ OCOCOOC ₂ H ₅	(9.8) IP is onset of pho		(206) nd.	-177±2	740±9	77PED/RYL	95-92-1
C ₆ H ₁₀ S +							
S—CH ₂	9.22 IP from 80SAR/V		(923)	8	34	*EST	50550-56-6
C ₆ H ₁₁ + CH ₃ CH = CHC(CH ₃) ₂	From proton affir (870.) kJ/mol.		(706) H = CHC(CH ₃) = CH ₂ . (RN	N 1118-58-7). I	PA = (207.9) kcal/n	nol,
$C_2H_5C(CH_3)CH = CH_2$	From proton affin	• •	(712) H = C(CH ₃)CI	I = CH ₂ . (R↑	N 4549-74-0). I	PA = (205.7) kcal/n	ıol,
$(CH_3)_2CC(CH_3) = CH_2$	From proton affin (846.) kJ/mol.		(728) C(CH ₃)C(CH	3) = CH ₂ . (R	N 513-81-5). F	^P A = (202.1) kcal/m	ool,
<u></u> .	From proton affin		(733) xene (RN 110-	18 83-8). PA =	77 (189) kcal/mo	81TSA ol,	3170-58-9
<u></u> -сн ₃	From proton affin 840. kJ/mol and 1- and from hydride 76GOR/MUN, 85	ities of methy methylcyclope and chloride t	entene (RN 69	3-89-0), PA	= 196.9 kcal/m	ol, 824. kJ/mol,	
CH ₃	From appearance		747) Isurements (81	HER/SIC).			
(CH ₃) _H +	From proton affin PA = (201) kcal/n	ity of 1,2-dime		ne. (RN 1501	-58-2).		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С ₆ H ₁₁ +	From proton affin 874. kJ/mol.	179 hity of 2-cycl	750 opropylprope	ne (RN 4663-2	2-3). PA = 2	09.0 kcal/mol,	
(CH=CH ₂)H+	From proton affin PA = (206) kcal/r			lopropane (RN	I 16906-27-7).		
(H ₃ C CH ₃)H ⁺	From proton affin PA = (214) kcal/r			propene. (RN	3664-56-0).		
C ₆ H ₁₁ Br ⁺	(9.85±0.01)	(200)	(835)	-27	-115	*EST	108-85-0
С ₆ H ₁₁ Cl+	(10.10±0.01)	(194)	(810)	-39±1	-164±4	77PED/RYL	542-18-7
C ₆ H ₁₁ ClHg ⁺	9.2 IP is onset of photo	(188) oelectron ba	(787) and (81BAI/C	-24 HI2).	-101	*EST	24371-94-6
C ₆ H ₁₁ F ₃ NO + CF ₃ C(OH)NH(n-C ₄ H ₉)	From proton affini 852. kJ/mol.	–54 ity of CF ₃ C0	-226 ONH(n-C ₄ H ₅) (RN 400-59-9	P). PA = 203.	6 kcal/mol,	

Table 1. Positive Ion Table - Continued

	Table	1. 1 05111	ve ion labe	Contin	ucu		
ION Neutral	Ionization potential eV	Δ _f H(l kcal/mo	lon) I kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C6H11I+	9.003	195	818	−12±1	−51±4	77PED/RYL	626-62-0
C ₆ H ₁₁ N ⁺ (E)-CH ₃ CH = CHCH = 1	(8.9)	(225)	(941)	20±1	82±6	*EST	3653-19-8
$(CH_2 = CHCH_2)_2NH$	IP is onset of pho (8.2) IP is onset of pho	(224)	(937)	35±1	146±6	*EST	124-02-7
СН3	(≤8.67±0.05)	(≤219)	(≤914)	19±2	78±10	*EST	694-55-3
	(7.9) IP from onset of p	(220) ohotoelectr	(919) on band (81M)	38 UL/PRE).	157	*EST	
	(7.7) IP is onset of pho	(215) toelectron	(900) band (81MUL/	38 PRE, 81MUL/	157 PRE2).	*EST	
	(7.6) IP is onset of pho	(220) toelectron	(919) band (81MUL/	44 PRE, 81MUL/	186 PRE2).	*EST	
GH ₁₁ NO +	(9.07±0.02)	(150)	(629)	-58.8±0.3	−246.2±1.2	77PED/RYL	105-60-2
◯ ►NOH	(8.97±0.03) IP from 79GOL/k	(186) XUL.	(779)	-21	86	*EST	100-64-1

Table 1. Positive Ion Table - Continued

			e ion table -	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₁ NO ⁺	≤8.92 IP from 85TRE/R	≤149 AD.	≤624	−57±0.7	-237±3	77PED/RYL	931-20-4
H3C-N=0	(8.3) IP from 80SAR/W	(155) /OR. See al	(648) so: 86SPA/RAD.	-37	-153	*EST	1445-73-4
$C_6H_{11}NOS^+$ $N = S$ 0	(≤10.0)	(≤169)	(≤707)	-62	-258	*EST	30980-11-1
C ₆ H ₁₁ O ⁺ (CH ₃) ₂ CCHC(OH)CH ₃	From proton affin PA = (210) kcal/n			CH ₃ (RN 14	41-79-7).		
(СН ₂ СНСН ₂) ₂ ОН	From proton affin 838. kJ/mol.	158	661	N 557-40-4)). PA = 200.4 k	cal/mol,	
ОН	From proton affini PA = 201.4 kcal/m			.94-1) (86S <i>i</i>	AN/BAL).		
() H+	From proton affini PA = 203 kcal/mo			oxa- (RN 2	79-49-2).		
С ₆ H ₁₁ O ₂ + сн ₃ с(он)сн ₂ сн ₂ сосн	From proton affini 892. kJ/mol.	64 ty of CH ₃ Co	269 OCH ₂ CH ₂ COCH	I ₃ (RN 110-	-13-4). PA = 21	83MAU 3.2 kcal/mol,	
C ₆ H ₁₁ P ⁺ (CH ₃) ₃ CC≡CPH ₂	≤9.05 IP from 81CAB/CO		(≤1028)	37	155	*EST	77376-07-9

Table 1. Positive Ion Table - Continued

ON	1	onization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$		$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral		eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
₆ H ₁₂ +								
1-C ₆ H ₁₂		9.44±0.04	207.7	869.0	-10.0±0.2	-41.8±1	81WIB/WAS	592-41-6
(Z)-2-C ₆ H ₁₂	2	(8.97±0.01)	(195.5)	(817.8)	-11.4±0.2	-47.7±1	81WIB/WAS	7688-21-3
(E)-2-C ₆ H ₁₂	:	(8.97±0.01)	(194.5)	(814.0)	-12.3±0.2	-51.5±1	81WIB/WAS	4050-45-7
(Z)-3-C ₆ H ₁₂	2	(8.95±0.01)	(195.2)	(816.7)	-11.2±0.2	-46.8±0.8	81WIB/WAS	7642-09-3
(E)-3-C ₆ H ₁₂	:	8.96±0.02	194.5	813.9	-12.1±0.2	-50.6±1	81WIB/WAS	13269-52-8
C ₂ H ₅ CH ₂ C($(CH_3) = CH_2$	(9.08±0.01)	(195)	(817)	-14.2±0.3	−59.4±1	77PED/RYL	763-29-1
C ₂ H ₅ CH(CH	H_3)CH = C H_2	(9.44) IP from 81HOL/I	(206) FIN.	(861)	-11.8±0.4	−49.5±1.5	77PED/RYL	29564-68-9
(CH ₃) ₂ CHC	$H_2CH = CH_2$	(9.45±0.01)	(206)	(861)	-12±0.5	-51±2	77PED/RYL	691-37-2
$(C_2H_5)_2C =$	CH ₂	(9.06±0.02)	(196)	(818)	-13.4±0.3	-56.0±1	77PED/RYL	760-21-4
(СН ₃) ₂ СНС	$(CH_3) = CH_2$	(9.07±0.01)	(194)	(812)	-15.1±0.2	-63.3±0.8	77PED/RYL	563-78-0
(СН ₃) ₃ ССН	= CH ₂	9.45±0.01	203	851	-14.5±0.2	-60.7±0.9	77PED/RYL	558-37-2
(Z)-CH ₃ CH	= C(CH ₃)C ₂ H ₅	(8.58) IP from 81HOL/F	(183) IN.	(766)	-14.9±0.4	-62.3±1	77PED/RYL	922-61-2
(Z)-(CH ₃) ₂ C	CHCH = CHCH	3 (8.98±0.01)	(193)	(809)	-13.7±0.2	−57.5±1	77PED/RYL	691-38-3
(E)-(CH ₃) ₂ C	CHCH = CHCH ₂	3 (8.97±0.01)	(192)	(804)	-14.7±0.3	-61.5±1	77PED/RYL	674-76-0
$(CH_3)_2C = C$	нс ₂ н ₅	(8.58) IP from 81HOL/F	(182) IN.	(761)	-16.0±0.3	-66.8±1	77PED/RYL	625-27-4
$(CH_3)_2C = C$	(CH ₃) ₂	8.27±0.01	174	729	-16.6±0.2	−69.3±0.8	77PED/RYL	563-79-1
\sim		9.86±0.03	198	828	~29.5±0.1	-123.3±0.3	77PED/RYL	110-82-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Ion kcal/mol		Δ _f H(Ne		Neutral reference	CAS registry
C ₆ H ₁₂ +	<u> </u>	- Confinor		Keul/IIIOI		Totoloned	
СН3	9.85±0.03 From charge tran		844 um constant		–105.9±0.4 Dhexane (76LI	77PED/RYL A/AUS).	96-37-7
H ₃ C CH ₃	(8.90) IP from 85LAD/I	, .	(825)	-8.0	-33.5	*EST	
$C_6D_{12}^+$ $D_2 \longrightarrow D_2$ $D_2 \longrightarrow D_2$ $D_2 \longrightarrow D_2$	9.89 From charge tran (82SIE/MAU; 82					preted.	1735-17-7
C ₆ H ₁₂ N ⁺ (CH ₂ CHCH ₂) ₂ NH ₂	From proton affir		735 CHCH ₂) ₂ N	H (RN 124-02-	7). PA = 224	.7 kcal/mol,	
C ₆ H ₁₂ NO +	From proton affir PA = 228.1 kcal/r	ity of 2,3,4,5-t		methoxypyridi	ne (RN 53687-	.79-9).	
СН3	From proton affin 917.5 kJ/mol.		376 dpiperidine-2	e-one (RN 931-	20-4). PA =	219.3 kcal/mol,	
С ₆ H ₁₂ NO ₃ + CH ₃ C(OH)NHCH(CH ₃)COOCH ₃ From proton affin PA = 224.5 kcal/r	ity of CH ₃ CO		усоосн ₃ . (RN 3619-02-1),	
C ₆ H ₁₂ N ₂ + CH ₃ CH ₃ CH ₃ CH ₃	(8.2) IP is onset of phot		941) d.	36±0.7	150±3	80ENG	54166-22-2

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(Ion) l kJ/moi		eutral) l kJ/mol	Neutral reference	CAS registry number				
C ₆ H ₁₂ N ₂ +		· · · · · · · · · · · · · · · · · · ·				······································					
	(7.87) IP from 82LEV/L	(219) IA. See al	(915) so: 84NEL.	37	156	*EST	5397-67-1				
	≤8.24	(≤210)	(≤878)	20	83	*EST	280-28-4				
	7.197±0.001 IP from 84SMI/H.	187 AG2.	784	21±2	89±7	71RAP/WES	280-57-9				
C ₆ H ₁₂ N ₂ O ₂ + (CH ₃) ₂ NCOCON(CH ₃) ₂	9.02 IP from 82LEV/L	(132) IA, 85RO	(554) Г/BOC.	-76	-316	*EST	1608-14-6				
C ₆ H ₁₂ N ₂ S +											
H3CN NCH3	(7.3) IP is onset of phot	(192) coelectron	(802) band.	23	98	*EST	16597-35-6				
$C_6H_{12}N_2S_2^+$ $(CH_3)_2NC(=S)C(=S)N(=S)N(=S)$	≤7.75	(≤222)	(≤930)	43	182	*EST	35840-78-9				
	IP from 81HEN/IS	SA.	·								
C ₆ H ₁₂ N ₃ OP ⁺	≤8.89 IP from 82COW/L	(≤190) .AT.	(≤794)	-15	-64	*EST	71771-37-4				
O N N N	≤8.19±0.10 IP from 82COW/L	(≤151) .AT.	(≤631)	-38	-159	*EST	53597-70-9				

Table 1. Positive Ion Table - Continued

		ie i. rusiu	, , , , , , , , , , , , , , , , , , ,		<u></u>		
ION Neutral	Ionization potenti		on) kJ/mol		(Neutral) nol kJ/mol	Neutral reference	CAS registry number
C ₆ H ₁₂ N ₃ P+	\$8.05±0.10 IP from 82CO	(≤227) W/LAT.	(≤952)	42	175	*EST	53597-69-6
C ₆ H ₁₂ N ₃ PS +	≤8.02±0.10 IP from 82CO	(≤205) W/LAT.	(≤857)	20	83	*EST	56796-56-6
N S N	≤8.43±0.10 IP from 82CO	(≤237) W/LAT.	(≤991)	43	178	*EST	
C ₆ H ₁₂ N ₄ +	(≤8.53) See also: 82CO	(≤244))W/LAT.	(≤1022)	47±0.7	199±3	77PED/RYL	100-97-0
C ₆ H ₁₂ O + n-C ₅ H ₁₁ CHO	9.67±0.05	164	686	-59	-247	78TRC	66-25-1
n-C ₃ H ₇ CH(CH ₃)CHO	(9.70)	(163)	(679)	-61	-257	*EST	123-15-9
(C ₂ H ₅) ₂ CHCHO	(9.54) IP from 81HO	(158) L/FIN.	(663)	-61	-257	*EST	97-96-1
С ₂ H ₅ CH(CH ₃)CH ₂ CHO	(9.68) IP from 81HO	(161) L/FIN.	(676)	-62	-258	*EST	15877-57-3
neo-C ₅ H ₁₁ CHO	9.61±0.01	(158)	(658)	-64	-269	*EST	2987-16-8
n-C ₄ H ₉ COCH ₃	9.35±0.02	150	624	-66±0.2	2 -278±1	77PED/RYL	591-78-6
n-C ₃ H ₇ COC ₂ H ₅	9.12±0.02 See also: 81HO	143 DL/FIN.	601	-67±0.2	-279±1	77PED/RYL	589-38-8
sec-C ₄ H ₉ COCH ₃	9.21±0.01 IP from 81HOI	(144) L/FIN, 82LEV	(602) /LIA, 84BO	69 U/FLA.	-287	*EST	565-61-7
iso-C ₄ H ₉ COCH ₃	9.30±0.01	(145)	(610)	-69	-287	*EST	108-10-1

266

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potential	Δ _f H(l kcal/mol	ion) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number					
C ₆ H ₁₂ O ⁺ tert-C ₄ H ₉ COCH ₃	9.11±0.02	141	589	−69.3±0.2	-289.8±0.9	77PED/RYL	75-97-8					
iso-C ₃ H ₇ COC ₂ H ₅	9.10±0.01	141	592	-68.3±0.2	-286.1±0.9	77PED/RYL	565-69-5					
ОН	(9.75) IP from 83RAB/S	(155.5) EL.	(650.7)	-69.3±0.2	-290.0±0.9	85WIB/WAS	108-93-0					
С ₆ H ₁₂ O ₂ + СН ₃ (СН ₂₎₄ СООН	≤10.12 IP from 81HOL/F	≤111 IN.	≤463	-122.8±0.4	-513.6±1.6	77PED/RYL	142-62-1					
СН3СОО(СН2)3СН3	10.0	114	479	-116.1±0.1	-485.6±0.5	77PED/RYL	123-86-4					
СН ₃ СООСН(СН ₃)С ₂ Н ₅	9.90 IP from 82GRE/M	109 ICC.	454	-120	-501	82GRE/MCC	105-46-4					
СН ₃ (СН ₂) ₃ СООСН ₃	(10.4±0.2)	(127)	(532)	-112.7±0.3	-471.5±1.4	77PED/RYL	624-24-8					
tert-C ₄ H ₉ COOCH ₃	(9.90±0.04)	(111)	(464)	-117±0.2	-491±1	77PED/RYL	598-98-1					
	(≤9.29)	(≤178)	(≤746)	-36	-150	*EST	6572-89-0					
H ₃ C CH ₃	≤9.84 IP from 84ASF/ZY	(≤124) ⁄K.	(≤519)	-103	-430	77PED/RYL	695-30-7					
CH3 CH3	(≤9.90) IP from 84ASF/ZY	(≤127) ′K.	(≤530)	~102±1	-425±4	77PED/RYL	766-20-1					
0 CH ₃ CH ₃	≤9.80 IP from 84ASF/ZY	(≤124) ′K.	(≤521)	-102	-425	*EST	766-15-4					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	n)	Δ _f H(Ne	utral)	Neutral	CAS registry	
Neutral	eV	kcai/mol		kcal/mol		reference	number	
C ₆ H ₁₂ O ₂ + H ₃ C - CH ₃ H ₃ C - CH ₃ CH ₃	(8.53)	(156)	(653)	-41	-170	78GRE/LIE	35856-82-7	
C ₆ H ₁₂ O ₂ Si +	≤9.59 IP from 81KHV/2	(≤39) ZYK.	(≤163)	-182	-762	*EST	61667-33-2	
C ₆ H ₁₂ O ₄ + 0HO ₁ - C ₂ H ₅	5 (≤10.4)	(≤10)	(≤40)	-230	-963	*EST		
C ₆ H ₁₂ S ₃ + CH ₃ S CH ₃ CH ₃	(8.0) IP is onset of pho	(178) toelectron b	(746) and.	-6	-26	*EST	2765-04-0	
(H ₃ C) ₂ (CH ₃) ₂	8.0 IP is onset of pho	(151) toelectron b	(633) and.	-33	-139	*EST	38348-31-1	
C ₆ H ₁₂ Se ₃ + H Se Se Se H ₃ C Se CH ₃	(7.7) IP is onset of phot	(211) toelectron b	(882) and (84BOC/AY	33 G).	139	*EST	15732-69-1	
C ₆ H ₁₂ Si +	≤9.0	(≤182)	(≤760)	-26	-108	*EST	16054-12-9	
C ₆ H ₁₃ + 1-C ₆ H ₁₃	7.92±0.06 $\Delta_f H$ (Neutral) bas	(191) ed on D[C-I	(800) H] = 100.5 kcal/n	8 nol.	33	*EST	2679-29-0	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne		Neutral reference	CAS registry
C ₆ H ₁₃ + 2-C ₆ H ₁₃	7.0 $\Delta_f H$ (Neutral) bas	(168) sed on D[C-	(704) H] = 99 kcal/mo	7 I.	29	*EST	2493-44-9
n-C ₃ H ₇ C(CH ₃) ₂	From hydride trai Heat of formation	_			and 76GOR/MU	N);	21058-26-4
(CH ₃) ₂ CHC(CH ₃) ₂	From hydride trai Heat of formation	-			and 76GOR/MUI	N);	24436-98-4
(C ₂ H ₅) ₂ (CH ₃)C	From proton affin 829. kJ/mol.	152 nity of CH ₃ C	638 CH = C(CH ₃)C ₂ F	H ₅ . (RN 922	:-61-2). PA = 19	8.2 kcal/mol,	23088-03-1
(H [†]	From proton affin	(167) hity of cycloh	(700) exane. (RN 110-8	32-7). PA =	= (169) kcal/mol,	(707) kJ/mol.	
C ₆ H ₁₃ ClHg ⁺ n-C ₆ H ₁₃ HgCl	≤9.96 IP from 81BAI/CI		(≤811)	-36	-150	*EST	17774-09-3
C ₆ H ₁₃ I + n-C ₆ H ₁₃ I	9.179	190	794	-22	-92	81HOL/FIN	638-45-9
$C_6H_{13}N^+$ $n-C_3H_7CH = NC_2H_5$	(9.00) See also: 79AUE/	(203) BOW.	(847)	-5	-21	*EST	1611-12-7
$(iso-C_3H_7)CH = NC_2H_5$	(8.7) IP is onset of phot	(192) toelectron b	(805) and.	-8	-34	*EST	1743-56-2
$n-C_3H_7N = CHCH_2CH_3$	(8.55±0.2)	(192)	(802)	- 5	-23	*EST	7707-70-2
$n-C_3H_7N = C(CH_3)_2$	(8.31±0.2)	(178)	(742)	-14±2	-60±8	*EST	22023-64-9
$iso-C_3H_7N = CHCH_2CH_3$	(8.50±0.2)	(186)	(780)	-10	-40	69BEN/CRU	28916-23-6
$(CH_3)_2$ NCH = CHC_2H_5	≤7.57 IP from 81MUL/P		(≤730)	0	0	*EST	14548-12-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
$C_6H_{13}N^+$ $(CH_3)_2NCH = C(CH_3)_2$	≤8.15 IP from 81MUL/	(≤189) PRE2.	(≤791)	1	5	*EST	6906-32-7
	(≤8.41±0.02)	(≤183)	(≤767)	-10	-44	*EST	111-49-9
NH ₂	(8.62±0.24) See also: 79AUE	(174) /BOW.	(727)	-25±0.2	-105±1	79STE	108-91-8
ÇH₃ N	7.74 See also: 82ROZ/	(166) ⁄HOU, 80SÆ	(697) AR/WOR, 86SP	–12±1 A/RAD, 86C	−50±4 AU/DIV.	*EST	626-67-5
CH3	7.76±0.05 See also: 82ROZ/	159 HOU.	664	-20.2±0.2	-84.4±1.0	77PED/RYL	109-05-7
сн3	7.94±0.05 See also: 82ROZ/	(164) HOU.	(685)	-19±0.4	-81±2	*EST	626-56-2
CH3	8.01±0.05 See also: 82ROZ/	(166) HOU.	(692)	-19±0.4	-81±2	*EST	626-58-4
C ₆ H ₁₃ NO +	(≤9.49)	(≤186)	(s777)	-33	-139	*EST	6982-39-4
CH ₃ CON(C ₂ H ₅) ₂	(8.60±0.02)	(130)	(543)	-69	-287	*EST	685-91-6

270

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e Ion Tab	le - Contin	ued		
ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ H ₁₃ NO ₂ + n-C ₄ H ₉ CH(NH ₂)COOH	(8.52)	(82)	(343)	-114±2	-479±10	*EST	327-57-1
sec-C ₄ H ₉ CH(NH ₂)COOH	I (8.66)	(83)	(349)	-116±2	-487±10	*EST	73-32-5
iso-C ₄ H ₉ CH(NH ₂)COOH	(8.51)	(80)	(333)	-117±0.7	-488±3	77PED/RYL	61-90-5
$C_6H_{13}N_2^+$ $\begin{pmatrix} N \\ N \end{pmatrix}$ H ⁺	From proton affir PA = 229.0 kcal/i			.2.2]octane (RN	280-57-9).		
C ₆ H ₁₃ O + t-C ₄ H ₉ C(OH)CH ₃	From proton affir 846. kJ/mol.	94 hity of t-C ₄ H	394 I ₉ COCH ₃ (I	RN 75-97-8). PA	. = 202.3 kca	ıl/mol,	
(O) H+	From proton affir	(161) nity of oxepa	(674) ne (RN 592-	90-5). PA = (20	02) kcal/mol,	(845) kJ/mol.	
C ₆ H ₁₃ O ₂ + t-C ₄ H ₉ C(OH)OCH ₃	From proton affin 848.5 kJ/mol.	46 hity of t-C ₄ H	191 1 ₉ COOCH ₃	(RN 598-98-1).	PA = 202.8	kcal/mol,	
С ₆ H ₁₃ О ₃ P ⁺	(8.34±0.1)	(11)	(45)	-182	-760	*EST	7735-82-2
H ₃ C OCH ₃	(8.69±0.1)	(19)	(78)	-182	-760	*EST	41821-91-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ H ₁₃ SSi + H ₅ C ₂ Ši CH ₃ H ₃ C	Δ _f H(Ion) from a	(162) ppearance p	(679) otential deter	mination (81GV	US/VOL).		79126-87-7
C ₆ H ₁₄ + n-C ₆ H ₁₄	10.13 From charge tran	194 <i>202</i> sfer equilibr	810 847	-31.1±0.1	-167.1±0.4 -130.1±0.4	74SCO	110-54-3
						s to $IP = 10.2 \text{ eV}$.	
(CH ₃) ₂ CH(CH ₂) ₂ CH ₃	(10.12)	(191) (201±0.2)	(802) (842±0.9)		-173.8±0.9 -134.6±0.9	74SCO	107-83-5
(С ₂ Н ₅) ₂ СНСН ₃	(10.08)	(191) <i>(201)</i>	(801) <i>(841)</i>		-171.3±0.9 -131.9±0.9	74SCO	96-14-0
(CH ₃) ₂ CHCH(CH ₃) ₂	(10.02)	(189) <i>(199)</i>	(791) (832)		-176.2±0.9 -135.1±0.9	74SCO	79-29-8
(СН ₃) ₃ ССН ₂ СН ₃	(10.06)	(188) <i>(198)</i>	(787) (827)		-183.9±0.9 -143.5±0.9	74SCO	75-83-2
C ₆ H ₁₄ Hg ⁺	***************************************						
(n-C ₃ H ₇) ₂ Hg	(≤8.29)	(≤200)	(≤836)	9±2	36±6	77PED/RYL	628-85-3
(iso-C ₃ H ₇) ₂ Hg	(≤8.03)	(≤195)	(≤815)	10±1	40±6	77PED/RYL	1071-39-2
C ₆ H ₁₄ N + n-C ₃ H ₇ CHNHC ₂ H ₅	From proton affin (943) kJ/mol.	(135) ity of n-C ₃ F		I ₅ (RN 1611-12	-7). PA = (22:	5.3) kcal/mol,	
(CH ₃) ₂ NC(CH ₃)CH ₂ CH ₃	From proton affin 992 kJ/mol.	129 ity of (CH ₃)	539 ₂ NC(CH ₃) =	CHCH ₃ (RN 5	2113-79-8). P <i>A</i>	A = 237 kcal/mol,	
(NH ₂) H ⁺	From proton affin 925.5 kJ/mol.	120 ity of cycloh	500 exanamine (R	N 108-91-8). P.	A = 221.2 kcal	l/mol,	

Table 1. Positive Ion Table - Continued

		1. 1 0511	ive ion Table	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₄ N ⁺ (CH ₃) H ⁺	From proton affir 961 kJ/mol.	124 uity of 1-m	519 ethylpiperidine	(RN 626-67-5).	PA = 229.71	scal/mol,	
C ₆ H ₁₄ NO ₂ + L-C ₂ H ₅ CH(CH ₃)CH(I	NH2)COOH					A State of the sta	ATTENTO, AND
2 3 - (3 - (From proton affin PA = 218.9 kcal/i			eh(NH ₂)COO	H (RN 73-32-5	i).	
L-(CH ₃) ₂ CHCH ₂ CH(1	NH ₃)COOH						
	From proton affin PA = 218.1 kcal/r			H(NH ₂)COO	H (RN 61-90-5	i).	
C ₆ H ₁₄ N ₂ + (E)-(C ₃ H ₇) ₂ NN	(8.1) IP is onset of photon	(199) toelectron	(833) band.	12±1	51±4	80ENG	55204-42-7
(Z)-iso-(C ₃ H ₇) ₂ NN	(≤8.24)	(≤210)	(≤879)	20	84	*EST	23201-84-5
(E)-(iso-C ₃ H ₇) ₂ NN	(8.0) IP is onset of phot	(193) coelectron	(808) band.	9±0.5	36±2	80ENG	15464-00-3
N-CH3	6.54 IP from charge tra Reference standar	_				*EST IEL). (A, 84NEL, 80SCH)	26163-37-1 THO.
NWCH312	(≤7.97) Reported values o usually significant change associated	ly higher t	han the adiabati	c value becaus	e of the large g		53779-90-1
C ₆ H ₁₄ N ₂ O ₂ + L-H ₂ N(CH ₂) ₄ CH(NH ₂		(74)	(308)	-125	-522	*EST	56-87-1
С ₆ Н ₁₄ О ⁺ n-С ₆ Н ₁₃ ОН	(9.89±0.03) IP from 77ASH/B	(153) UR.	(639)	-75.3±0.3	-315.1±1.4	77PED/RYL	111-27-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ _f H(N kcal/mol	eutral) I kJ/mol	Neutral reference	CAS registry number
C ₆ H ₁₄ O ⁺							
п-С ₄ Н ₉ СН(ОН)СН ₃	(9.80±0.03) IP from 77ASH/	(146) BUR.	(612)	-80	-334	84WIB/WAS	626-93-7
С ₂ H ₅ CH(OH)С ₃ H ₇	(9.63±0.03) IP from 77ASH/	(143) BUR.	(597)	-79	-332	*EST	623-37-0
n-C ₅ H ₁₁ OCH ₃	(≤9.67) IP from 80BAC/	(≤157) MOU.	(≤656)	-66	-277	*EST	628-80-8
(CH ₃) ₂ CHCH ₂ CH ₂ OCH ₃	•						
. 5.2 2 2 3	(≤9.65) IP from 80BAC/	(≤154) MOU.	(≤646)	-68	-285	*EST	626-91-5
(СН ₃) ₃ ССН ₂ ОСН ₃	(≤9.41) IP from 80BAC/I	(≤146) MOU.	(≤611)	-71	-297	*EST	1118-00-9
n-C ₄ H ₉ OC ₂ H ₅	9.36 IP from 81HOL/	146 FIN. See als	609 so: 82AUD/BC	-70 DU, 80BAC/M	-294 OU.	81HOL/FIN	628-81-9
sec-C ₄ H ₉ OC ₂ H ₅	(9.32) IP from 81HOL/I	(140) FIN. See als	(587) so: 82AUD/BC	-75 DU.	-312	81HOL/FIN	2679-87-0
(CH ₃) ₂ CHCH ₂ OC ₂ H ₅							
(3/222/3	(9.30) IP from 82AUD/I	(140) BOU.	(585)	-75	-312	*EST	627-02-1
tert-C ₄ H ₉ OC ₂ H ₅	(≤9.39±0.015)	(≤139)	(≤582)	(-77)	(-324)	*EST	637-92-3
(n-C ₃ H ₇) ₂ O	9.27±0.05 See also: 80BAC/	144 MOU.	601	−70±0.5	-293±2	77PED/RYL	111-43-3
(iso-C ₃ H ₇) ₂ O	9.20±0.05 See also: 80BAC/	136 MOU.	569	-76.2±0.4	-318.8±1.8	77PED/RYL	108-20-3
C ₆ H ₁₄ OS +	<u>.</u>						
(n-C ₃ H ₇) ₂ SO	(≤8.60)	(≤137)	(≤575)	-60.9±0.4	-254.9±1.5	77PED/RYL	4253-91-2
[(CH ₃) ₂ CH] ₂ SO	(≤8.46)	(≤134)	(≤562)	-61	-254	*EST	2211-89-4
C ₆ H ₁₄ O ₂ + n-C ₄ H ₉ CH(CH ₃)OOH	***						
,	9.25±0.03 IP from 77ASH/B	(152) UR.	(636)	-61	-256	*EST	24254-55-5
п-С ₆ Н ₁₃ ООН	(9.47±0.03) IP from 77ASH/B	(162) UR.	(677)	-57	-237	*EST	4312-76-9
(iso-C ₃ H ₇ O) ₂	(≤9.16)	(≤147)	(≤614)	-65	-270	74BAT/CHR	16642-57-2

Table 1. Positive Ion Table - Continued

	Table	I. Posit	ive ion Tabl	e - Contin	uea —		
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) ol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ H ₁₄ O ₂ + CH ₃ CH(OC ₂ H ₅) ₂	≤9.78 IP from 82ZVE/V	≤117 ⁄IL.	≤490	−108.4±0.¢	5 ~453.5±2.4	77PED/RYL	105-57-7
С ₆ H ₁₄ O ₃ + СН ₃ ОСН ₂ СН ₂ ОСН ₂ СН	2OCH ₃ ≤9.8 IP from 83BAK/A	(≤107) ARM.	(≤448)	-119	-498	*EST	111-96-6
C ₆ H ₁₄ O ₃ P + H ₃ C O P OCH ₃	From proton affir (RN 7735-82-2).				ioxaphosphorii	nane	·
H ₃ C - 0 PH	From proton affir (RN 41821-91-4).	•	•	•	ioxaphosphorin	ane	
C ₆ H ₁₄ S + (n-C ₃ H ₇) ₂ S	8.30±0.02	161	676	-29.9±0.2	~125.3±0.8	77PED/RYL	111-47-7
(i-C ₃ H ₇) ₂ S	8.0 IP is onset of pho	(150) toelectron	(630) spectrum. See		~141.9±0.9 OH.	77PED/RYL	625-80-9
C ₆ H ₁₄ S ₂ + (n-C ₃ H ₇ S) ₂	(≤8.62) Dialkyl disulfides upon ionization; a experimentally ob	diabatic id	onization poten	CSSC bond ang			629-19-6
(i-C ₃ H ₇ S) ₂	≤8.51 Dialkyl disulfides upon ionization; a experimentally ob	diabatic id	onization poten	-			4253-89-8
$C_6H_{14}Si^+$ $(C_2H_5)_2Si = CHCH_3$	Δ _f H(Ion) from ap	(201) pearance	(839) potential detern	nination (81GU	JS/VOL).		2372-29-4
Si(CH ₃) ₂	(9.0) IP is onset of phot	(164) coelectron	(686) band. See also:	-43±3 81GUS/VOL2	~182±12	77PED/RYL	1072-54-4

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{ m f}$ H (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₆ H ₁₄ Si +				1870			
H ₃ C—S——CH ₃	8.59±0.03 IP from 81GUS/V	(167) /OL2.	(699)	-31	-130	81GUS/VOL2	30681-90-4
H ₃ C-Si-CH ₃	(8.67±0.03) IP from 81GUS/\	(170) /OL2.	(709)	30	-127	81GUS/VOL2	2295-13-8
C ₆ H ₁₅ B + (C ₂ H ₅) ₃ B	9.6	(186)	(777)	-36±1	-149±6	77PED/RYL	97-94-9
C ₆ H ₁₅ BO ₃ + B(OC ₂ H ₅) ₃	(10.13)	(-6)	(-25)	-239±0.5	-1002±2	77PED/RYL	150-46-9
C ₆ H ₁₅ N ⁺							
n-C ₆ H ₁₃ NH ₂	(8.63±0.05) See also: 79AUE/	(167) BOW.	(700)	−32±0.7	-133±3	*EST	111-26-2
(n-C ₃ H ₇) ₂ NH	7.84±0.02	153	640	-27.7±0.1	-116.0±1.4	77PED/RYL	142-84-7
$(iso-C_3H_7)_2NH$	(7.73±0.03)	(144)	(602)	-34.4±0.1	-144.0±0.4	77PED/RYL	108-18-9
n-C ₄ H ₉ N(CH ₃) ₂	≤8.35 IP from 84NEL.	(≤172)	(≤722)	-20	-84	*EST	927-62-8
i-C ₄ H ₉ N(CH ₃) ₂	≤8.31 IP from 84NEL.	(≤170)	(≤711)	-22	-91	*EST	
t-C ₄ H ₉ N(CH ₃) ₂	≤8.08 IP from 84NEL.	(≤166)	(≤694)	-21	-86	*EST	918-02-5
(C ₂ H ₅) ₃ N	7.50 IP values of 7.11 a hydrogen affinity			-	cted value gives	77PED/RYL	121-44-8
C ₆ H ₁₅ NO ₃ ⁺ N(CH ₂ CH ₂ OH) ₃	(7.9) IP is onset of pho	(49) toelectron b	(205) and.	-133±0.7	-558±3	82MIN/SAB	102-71-6
C ₆ H ₁₅ N ₂ +							
CH ₃	From proton affin				(RN 26163-37-1)	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₅ N ₂ O ₂ + L-H ₃ N(CH ₂) ₄ CH(NH ₂)	соон		4.5		- 1114 y - 11 11 11 11 11 11 11 11 11 11 11 11 1		
	From proton affi PA = 230.3 kcal			NН ₂)СООН (RN 56-87-1).		
C ₆ H ₁₅ N ₃ + CH ₃	7.6 IP is onset of pho	185 otoelectron b	772 and (86BEC/I	9.4 HUN).	39	69BEN/CRU	108-74-7
C ₆ H ₁₅ O ⁺ (n-C ₃ H ₇) ₂ OH	From proton affi 846. kJ/mol.	93 nity of (n-C ₃	391 H ₇) ₂ O (RN 1	11-43-3). PA =	= 202.3 kcal/m	ol,	
(i-С ₃ Н ₇) ₂ ОН	From proton affi 862. kJ/mol.	84 nity of (i-C ₃ 1	350 H ₇) ₂ O (RN 10	08-20-3). PA =	206.0 kcal/mo	oi,	
C ₂ H ₅ OH(t-C ₄ H ₉)	From proton affi 859. kJ/mol.	83 nity of C ₂ H ₅	347 O(t-C ₄ H ₉) (I	RN 637-92-3). I	PA = 205.3 kc	al/moi,	
C ₆ H ₁₅ OSi ⁺ (CH ₃) ₂ COSi(CH ₃) ₃	From proton affi 925. kJ/mol.	40 nity of CH ₂ =	168 = C(CH ₃)OSi	(CH ₃) ₃ (RN 18	33-53-0). PA	= 221. kcal/mol,	
С ₆ H ₁₅ O ₂ + СН ₃ ОН(СН ₂) ₄ ОСН ₃	From proton affi 928. kJ/mol.	46 nity of CH ₃ C	194 О(СН ₂₎₄ ОСН	7 ₃ (RN 13179-9	5-9). PA = 22	21.8 kcal/mol,	
С ₆ H ₁₅ O ₃ + (СН ₃ ОСН ₂ СН ₂) ₂ ОН	From proton affi 918. kJ/mol.	27 nity of CH ₃ (114 OCH ₂ CH ₂) ₂ (OCH ₃ (RN 111	-96-6). PA =	219.4 kcal/mol,	
C ₆ H ₁₅ O ₃ P + (C ₂ H ₅ O) ₃ P	(8.4) IP is onset of pho	(0.6) otoelectron b	(2.5) and (81ARS/2	-193±1 ZVE, 81CHA/F	-808±5 TN, 82LEV/L	80TEL/RAB IA).	122-52-1
C ₆ H ₁₅ O ₃ PS ⁺ (C ₂ H ₅ O) ₃ PS	(8.49±0.02)	(-35)	(-148)	-231	-967	*EST	126-68-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(l kcal/mol	(on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₆ H ₁₅ O ₃ PSe + (C ₂ H ₅ O) ₃ PSe	(<7.9) IP from 81ZVE/	(<-27) VIL.	(<-113)	209	-875	*EST	2651-89-0
C ₆ H ₁₅ O ₄ P + (C ₂ H ₅ O) ₃ PO	(9.79) See also: 81CHA	(-58) /FIN.	(-242)	284±1	-1187±6	77PED/RYL	78-40-0
C ₆ H ₁₅ P + (C ₂ H ₅) ₃ P	8.15±0.11 See also: 77COW	(134) /GOO, 69B	(561) SOG/GRI, 79 <i>A</i>	-54 .UE/BOW.	-225	•EST	554-70-1
C ₆ H ₁₅ S ⁺ (n-C ₃ H ₇) ₂ SH	From proton affir 864. kJ/mol.	129 nity of (n-C	541 ₃ H ₇) ₂ S (RN 1	11-47-7). PA =	206.5 kcal/m	ol,	
(i-C ₃ H ₇) ₂ SH	From proton affir 877. kJ/mol.	122 nity of (i-C ₃	511 H ₇) ₂ S (RN 62	5-80-9). PA =	209.6 kcal/mc	ol,	
C ₆ H ₁₅ Sb ⁺ (C ₂ H ₅) ₃ Sb	(9.2±0.3)	(224)	(937)	12±3	49±11	82TN270	617-85-6
C ₆ H ₁₆ N ⁺ n-C ₆ H ₁₃ NH ₃	From proton affin 916. kJ/mol.	116 ity of n-C ₆ l	484 H ₁₃ NH ₂ (RN	111-26-2). PA =	= 218.9 kcal/r	noi,	
(n-C ₃ H ₇) ₂ NH ₂	From proton affin 952. kJ/mol.	110 ity of (n-C ₃	462 H ₇₎₂ NH (RN	142-84-7). PA	= 227.5 kcal/	mol,	
(i-C ₃ H ₇) ₂ NH ₂	From proton affin 963. kJ/mol.	101 ity of (i-C ₃ I	423 H ₇) ₂ NH (RN)	108-18-9). PA =	= 230.2 kcal/n	nol,	
(CH ₃) ₂ (tert-C ₄ H ₉)NH	From proton affin	109 ity of (CH ₃)	457) ₂ (tert-C ₄ H ₉).	N (RN 918-02-5). PA = 232.	0 kcal/mol,	
(C ₂ H ₅) ₃ NH	From proton affini	111 ity of (C ₂ H ₅	465 5) ₃ N (RN 121-	44-8). PA = 23	32.3 kcal/mol,	972. kJ/mol.	
С ₆ Н ₁₆ NO ⁺ NH ₃ (CH ₂₎₆ OH	From proton affini (966.5) kJ/mol.	(68) ty of NH ₂ (1	(285) CH ₂) ₆ OH (RI	N 4048-33-3). P.	A = (231.0) k	ccal/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Ne	-	Neutral	CAS registry
Mential	e v	kcal/mol	KJ/moi	kcal/mol	kJ/mol	reference	number
C ₆ H ₁₆ N ₂ + (CH ₃) ₂ NCH ₂ CH ₂ N(CH ₃))2						
	7.59±0.3 IP from 81LOG/I	170 TAK, 82LEV	713 V/LIA.	-4.7	-19.7	81LOG/TAK	110-18-9
$(C_2H_5)_2NN(CH_3)_2$							
	≤8.10 Reported values of usually significant change associated	ly higher tha	an the adiaba	tic value because	of the large		21849-74-1
(n-C ₃ H ₇)(CH ₃)NN(CH ₃)	•						
	(6.63) IP from charge tra standard: IP (C ₆ H					*EST eference	60678-65-1
(C ₂ H ₅)(CH ₃)NN(CH ₃)(C	₂ H ₅)						
	6.75 IP from charge tra See also: 82LEV/I			8 nt determination	35 ns (86RUM).	*EST	23337-93-1
C ₆ H ₁₆ N ₃ P ⁺							
CH3	(7.1) IP is onset of phot	(159) coelectron b	(666) and (82WOR	-4 /HAR).	-19	*EST	6069-38-1
C ₆ H ₁₆ OP +							
(С ₂ Н ₅) ₃ РОН	From proton affin 931. kJ/mol.	70 ity of (C ₂ H ₂	292 ₅) ₃ PO (RN 5	97-50-2) (85BOI	L/HOU). PA	= 222.6 kcal/mol,	
C ₆ H ₁₆ O ₄ P ⁺ HOP(OC ₂ H ₅) ₃	From proton affin	-135 ity of OP(O	-565 C ₂ H ₅) ₃ (RN	78-40-0). PA =	: (217) kcal/m	nol, (910) kJ/mol.	
С ₆ H ₁₆ P ⁺							
(C ₂ H ₅) ₃ PH	From proton affin (969.) kJ/mol.	80 ity of (C ₂ H ₂	336 ₅) ₃ P (RN 554	-70-1). PA = (7	231.7) kcal/mo	oi,	
C ₆ H ₁₆ Si ⁺							
$(C_2H_5)_3SiH$	9.5 See also: 81HOT.	171	716	-48±4	-201±15	77PED/RYL	617-86-7

Table 1	Pocitive	Ion Table	- Continued	ı
Tame 1.	PHSHIVE	HIM LAIME		

	onization potential	∆ _f H(Io		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol ————	reference	number
$C_6H_{16}Si_2^+$							
(H3C)2S:	(8.56±0.07) See also: 81KHV/	(125) /ZYK.	(525)	-72±3	~301±14	77PED/RYL	1627-98-1
C ₆ H ₁₆ Sn ⁺							
(C ₂ H ₅) ₃ SnH	(≤9.1)	(≤210)	(≤878)	0±2	0±8	80TEL/RAB	997-50-2
i-C ₃ H ₇ Sn(CH ₃) ₃	8.2 IP is onset of pho	(178) toelectron b	(744) and.	-11±1	~47±5	77PED/RYL	3531-46-2
C ₆ H ₁₇ NSi ⁺							
(CH ₃) ₂ NCH ₂ Si(CH ₃) ₃	7.61 See also: 81LOG/	(126) TAK.	(527)	- 49	~207	*EST	18182-40-6
C ₆ H ₁₇ N ₂ +							···
NH ₃ (CH ₂) ₆ NH ₂	From proton affin	106 nity of NH ₂ (442 CH ₂) ₆ NH ₂ (1	RN 124-09-4). I	PA = 237.7 kg	eal/mol,	
(n-C ₃ H ₇)(CH ₃)HNN(CH ₃) ₂)						
	From proton affin PA = 229.1 kcal/r	-		I(CH ₃) ₂ (RN 6	0678-65-1) (84	MAU/NEL).	
(CH ₃) ₂ NH(CH ₂) ₂ N(CH ₃) ₂							
	From proton affin PA = 240 kcal/mo			(CH ₃) ₂ (RN 11	0-18-9) re-eva	luated.	
C ₆ H ₁₇ N ₃ OP ⁺				·			
(CH ₃ O N(CH ₃) ₂) H ⁺	From proton affin tetramethyl-2-oxid	37 ity of 1,3,2-I le- (RN 7778	154 Diazaphospho 3-06-5) (85BC	olidine-2-amine, DL/HOU). PA	N,N',1,3- = 226.9 kcal/ı	nol, 949. kJ/mol.	
C ₆ H ₁₈ BN ₃ + B(N(CH ₃) ₂) ₃	7.60	116	487	-59	-246	82HOL/SMI	4375-83-1
C ₆ H ₁₈ NSi ⁺		=					·
(CH ₃) ₃ SiCH ₂ NH(CH ₃) ₂		85	354				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ H ₁₈ N ₃ OP + ((CH ₃) ₂ N) ₃ PO	7.82 IP is onset of pho	66 otoelectron b	277 and. (82LEV	-114 /LIA, 82WOR/I	–477 HAR). See als	69BEN/CRU so: 82COW/LAT.	630-31-9
C ₆ H ₁₈ N ₃ P + ((CH ₃) ₂ N) ₃ P	6.75 IP is onset of pho See also: 82COW		(517) and (82LEV/	-32 LIA, 82WOR/F	–134 IAR, 77COW	69BEN/CRU 7/GOO).	1608-26-0
C ₆ H ₁₈ N ₃ PS ⁺ SP[N(CH ₃) ₂] ₃	≤8.63±0.10 IP from 82COW/	(≤162) LAT.	(≤677)	-37	-156	*EST	3732-82-9
C ₆ H ₁₈ N ₃ P ₃ + H ₃ C P N P CH ₃ H ₃ C CH ₃	(8.35±0.05)	(64)	(268)	−129±5	-538±23	77PED/RYL	6607-30-3
C ₆ H ₁₈ OSi ₂ + ((CH ₃) ₃ Si) ₂ O	9.64±0.01 IP from 83MOL/	36 <i>(48)</i> PIK, 85SEE/	153 <i>(202)</i> MOL.	-186±1 -174	-777±6 -728	77PED/RYL	107-46-0
C ₆ H ₁₈ Si ₂ + (CH ₃) ₆ Si ₂	8.27±0.05 IP from 84SZE/B	110 <i>122</i> AE, 81SZE/	459 <i>513</i> KOR. See als	-81±2 -68±2 o: 81KHV/ZYF	−339±8 <i>−285±8</i> ζ, 85MOC/W	81WAL	1450-14-2
C ₆ H ₁₈ Sn ₂ + ((CH ₃) ₃ Sn) ₂	(7.8) IP is onset of pho	(173) toelectron b	(726) and (85GRA/	-6±2 BER, 81SZE/K	−27±8 OR). See als	77PED/RYL o: 85MOC/WOR.	661-69-8
C ₆ H ₁₈ W ⁺ (CH ₃) ₆ W	(8.3) IP is onset of pho	(376) toelectron b	(1572) and (82LEV/	185±8 LIA, 75GAL/W	772±35 IL).	82PIL/SKI	36133-73-0
C ₆ H ₁₉ NSi ₂ + ((CH ₃) ₃ Si) ₂ NH	≤8.55 IP from 83MOL/I	≤83 PIK3.	≤348	-114±1	-477±6	77PED/RYL	999-97-3
С ₆ H ₁₉ N ₃ P ⁺ HP(N(CH ₃) ₂) ₃	From proton affir 924. kJ/mol.	113 hity of P(N(C	472 CH ₃) ₂) ₃ (RN	1608-26-0). PA	= 220.9 kcal	/mol,	
С ₆ H ₁₉ OSi ₂ + ((СН ₃) ₃ Si) ₂ ОН	From proton affir (849) kJ/mol.		(-96) ₃) ₃ Si) ₂ O (RN	107-46-0). PA	= (203) kcal/	mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₆ MoO ₆ + Mo(CO) ₆	8.227±0.011 See also: 82HUB	-28 -29	-118 -121	-218 -219	-912 -915	77ROS/DRA	13939-06-5
	See also. 62110 b		·				
C ₆ N ₄ + (NC) ₂ CC(CN) ₂	11.77±0.01	440	1842	169±1	706±6	77PED/RYL	670-54-2
C ₆ O ₆ V ⁺ V(CO) ₆	7.52	-31	-128	-204±7	-854±29	67BID/MCI	20644-87-5
C ₆ O ₆ W ⁺ W(CO) ₆	8.20 IP from 82HUB/I	-23 LIC, 77ROS/	-96 DRA.	-212±1	-887±4	84ALT/CON2	14040-11-0
C7CIF5O+ CCCI F F F	(9.8) IP is onset of pho		(–13) and (81MEE,	-229 /WAH).	-959	*EST	2251-50-5
C ₇ F ₃ MnO ₆ ⁺ CF ₃ COMn(CO) ₅	(8.5) IP is onset of pho		(-688) and.	-360±1	−1508±6	82CON/ZAF	14099-62-8
C ₇ F ₈ + CF ₃ F F F	(9.9)	(-56)	(-232)	-284±2	~1187±8	77PED/RYL	434-64-0
C ₇ HF ₅ O ₂ + OCCOH FFFF	(9.2) IP is onset of phot		(-260) nd (81MEE/		−1148±4	77PED/RYL	602-94-8
C ₇ H ₃ F ₅ + CH ₃ F F F F	(9.4) Value of IP from c		(64) er equilibriui	−201.5±0.4 n constant dete	~842.9±1.8 rminations is	77PED/RYL 9.63 eV.	771-56-2

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued								
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) I kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number	
C ₇ H ₄ FN ⁺							*****	
ÇN F	(9.78)	(231)	(965)	5	21	*EST	394-47-8	
C K	(9.79)	(231)	(966)	5	21	*EST	403-54-3	
F CN	(9.74)	(229)	(957)	4	17	*EST	1194-02-1	
C ₇ H ₄ F ₄ ⁺				······································	· · · · · ·			
CF3	9.98 IP from 82CAB/C	(41) COW.	(171)	-189±0.3	-792±1	*EST	402-44-8	
C ₇ H ₄ N ₂ O ₂ +			····	/				
0 ₂ N CN	(10.29±0.1)	(286)	(1197)	49	204	*EST	619-24-9	
O ₂ N CN	(10.23±0.1)	(284)	(1189)	48	202	*EST	619-72-7	
C ₇ H ₄ S ₃ +	<u> </u>				· + ·			
S S	(7.9) IP is onset of phot	(242) oelectron	(1013) band.	60±1	251±5	72GEI/RAU	3354-42-5	
OL2 S	(8.14)	(246)	(1027)	57.8±0.4	242.0±1.7	77PED/RYL	934-36-1	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₅ BrO ⁺	(9.65) IP from 79MCL/I	(211) 'RA. See als	(882) so: 84GAN/LIV.	-12	~49	79MCL/TRA	618-32-6
Br—CH	≤9.22 IP from 85GAL/C	(≤209) GER.	(≤874)	-4	~16	*EST	1122-91-4
C ₇ H ₅ BrO ₂ ⁺	(9.72±0.2)	(155)	(648)	−69±1	−290±5	77PED/RYL	586-76-5
С7 H₅CIO +	9.59±0.02 IP from 85GAL/G	(205) ER, 77ROS	(856) 5/DRA.	-16	-69	*EST	104-88-1
Cocı	9.54 IP is onset of photo See also: 80GOF/Y			−25±1 ⁄,81MEE/W	−103±4 /AH).	75MOS/PRI	98-88-4
C ₇ H ₅ Cl ₂ +	Δ _f H(Ion) from chi		(824) er equilibrium co	onstant dete	rminations (85S)	HA/SHA).	
C7H5Cl3 ⁺ CCl3	≤9.60 IP from 81ZVE/EF		(≤915)	-3	-11	*EST	98-07-7

Table 1. Positive Ion Table - Continued

Ionization potential eV	Δ _f <i>H</i> (I kcal/mol		$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
		KJ/mol	kcal/mol		reference	number
9.78 IP from 79MCL/I	(153) TRA, 84G <i>A</i>	(639) \N/LIV.	-73	-305	*EST	455-32-3
≤9.60 IP from 85GAL/C	(≤167) GER.	(≤700)	- 54	226	*EST	459-57- 4
(9.91±0.2)	(111)	(466)	-117	-490	*EST	455-38-9
(9.91±0.2)	(111)	(461)	-118±1	-495±3	77PED/RYL	456-22-4
		<u></u>				
9.685±0.004 See also: 81BER/I	80.1 BOM.	335.4	-143.2±0.2	-599.0±0.9	77PED/RYL	98-08-8
					·	
(9.4) IP is onset of phot	(289) coelectron l	(1208) pand.	72±2	301±7	*EST	931-54-4
9.62 See also: 83KLA/F	274 KOV, 81KI	1147 M/KAT.	52	219	82CHU/NGU	100-47-0
_	IP from 79MCL/1 ≤9.60 IP from 85GAL/0 (9.91±0.2) 9.685±0.004 See also: 81BER/1 (9.4) IP is onset of photons.	IP from 79MCL/TRA, 84GA ≤9.60 (≤167) IP from 85GAL/GER. (9.91±0.2) (111) 9.685±0.004 80.1 See also: 81BER/BOM. (9.4) (289) IP is onset of photoelectron to the second	IP from 79MCL/TRA, 84GAN/LIV. ≤9.60 (≤167) (≤700) IP from 85GAL/GER. (9.91±0.2) (111) (466) (9.91±0.2) (111) (461) 9.685±0.004 80.1 335.4 See also: 81BER/BOM. (9.4) (289) (1208) IP is onset of photoelectron band.	See also: 81BER/BOM. ≤9.60 (≤167) (≤700) -54 IP from 85GAL/GER. (9.91±0.2) (111) (466) -117 (9.91±0.2) (111) (461) -118±1 9.685±0.004 80.1 335.4 -143.2±0.2 See also: 81BER/BOM.	See also: 81BER/BOM. ≤9.60 (≤167) (≤700) -54 -226 (9.91±0.2) (111) (466) -117 -490 (9.91±0.2) (111) (461) -118±1 -495±3 9.685±0.004 80.1 335.4 -143.2±0.2 -599.0±0.9 See also: 81BER/BOM.	### Sp.60 (\$167) (\$700) -54 -226 *EST ### Pfrom 85GAL/GER. (9.91±0.2) (111) (466) -117 -490 *EST (9.91±0.2) (111) (461) -118±1 -495±3 77PED/RYL 9.685±0.004 80.1 335.4 -143.2±0.2 -599.0±0.9 77PED/RYL See also: 81BER/BOM. (9.4) (289) (1208) 72±2 301±7 *EST IP is onset of photoelectron band.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₅ NO + C≡NO	(8.96±0.02)	(275)	(1148)	68	283	*EST	873-67-6
N = C = 0	(8.8) IP is onset of phot	(206) toelectron b	(862) and.	3	13	*EST	103-71-9
C ₇ H ₅ NO ₃ +	···						
о ₂ N—Сно	10.27±0.01 See also: 85GAL/6	(249) GER.	(1043)	12	52	*EST	555-16-8
С ₇ Н ₅ NO ₄ + соон	(10.31±0.2)	(143)	(600)	-94.3±0.3	−394.7±1.3	77PED/RYL	121-92-6
0 ₂ N COOH	10.18±0.2	141	589	-93.7±0.4	−392.2±1.5	77PED/RYL	62-23-7
C ₇ H ₅ N ₂ ⁺	8.11±0.01 IP from 84FUK/Y0	(238) OS.	(995)	51	213	*EST	
C ₇ H ₅ N ₃ O ₆ + CH ₃ NO ₂ NO ₂	(10.59±0.04)	(252)	(1054)	8±0.5	32±2	77PEL	118-96-7

Table 1. Positive Ion Table - Continued

			ive foil Tabl	e - Conti			
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	(Ion) ol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₇ H ₅ O +	From appearance	168±1 potential	705±6 measurements	(79MCL/TRA	4, 82BUR/HOI	.2. See also: 85TAJ,	2652-65-5 /TOB.
С ₇ H ₆ +	(8.29)	(275)	(1150)	84±2	350±10	*EST	27041-32-3
	(≤8.82)	(≤292)	(≤1223)	89±1	372±4	73BIL/CHO	4646-69-9
C ₇ H ₆ BrNS ⁺ NH ₂ C S Br	(8.5) IP from 81GRU.	(232)	(972)	36	152	*EST	30216-44-5
C7H6CI+	Δ _f H(Ion) from ch Δ _f H(C ₆ H ₅ CCl ₂ H				eterminations (8	SSHA/SHA);	
C ₇ H ₆ CINOS +	(8.5) IP is onset of phot	(166) oelectron	(694) band (82LOU/	-30 VAN).	-126	*EST	
CH3	(≤9.23) IP from 82LOU/V	(≤184) ′AN.	(≤769)	-29	-122	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₆ CINS ⁺ NH ₂ C C CI	8.8 IP from 81GRU.	(226)	(948)	24	99	*EST	15717-17-6
C ₇ H ₆ ClO ⁺	From proton affin 838. kJ/mol.	149 ity of 4-CIC	623 6H ₄ CHO (RN 1	04-88-1). P <i>A</i>	\ = 200.2 kcal	/mol,	
C7H6F+	$\Delta_{\mathrm{f}} H$ (Ion) from ch $\Delta_{\mathrm{f}} H$ (0-C $_{\mathrm{6}} \mathrm{H}_{\mathrm{4}} \mathrm{FCH}$						40880-01-1
CH ₂ *	Δ _f H(Ion) from chl Δ _f H(m-C ₆ H ₄ FCH						2599-73-7
F . Сн ₂	Δ _f H(Ion) from chl Δ _f H(o-C ₆ H ₄ FCH ₂						2194-09-4
C ₇ H ₆ FO ⁺							
· CHOH	From proton affini 822. kJ/mol.	113 ty of 3-FC ₆ 1	472 H ₄ CHO (RN 456	i-48-4). PA	= 196.4 kcal/n	nol,	
_Б СНОН	From proton affinit 833. kJ/mol.	110 ty of 4-FC ₆ E	462 H ₄ CHO (RN 459	-57-4). PA =	= 199.2 kcal/n	nol,	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne-		Neutral reference	CAS registry			
C ₇ H ₆ FeO ₃ + CO CO	8.04 IP is onset of phot	100 toelectron	417 band. See also:	-86±2 82GRE/KEL.	-359±9	82PIL/SKI	12078-32-9			
$C_7H_6INS + NH_2$ $C_8 S$	8.5 IP from 81GRU.	(246)	(1030)	50	210	*EST	81568-85-6			
C ₇ H ₆ N ⁺	From proton affin	222 hity of C ₆ H	929 I _S CN (RN 100-4	.7-0). PA = 19	95.9 kcal/mol,	320. kJ/mol.				
N = CH	From proton affin PA = 207 kcal/mo			44). (86MAU	/KAR).					
C ₇ H ₆ N ₂ +	(8.61±0.05)	(252)	(1053)	53	222	*EST	2237-30-1			
ÇN NH ₂	(8.17) IP is onset of phot	(240) toelectron	(1004) band (81MOD/	52 DIS).	216	*EST	873-74-5			
	(8.35)	(253)	(1060)	60.8±1.1	254.2±4.6	85FAO/AKA	271-44-3			
OT,	(8.0) IP is onset of phot	(228) toelectron	(957) band.	44±2	185±10	*EST	51-17-2			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₇ H ₆ N ₄ ⁺	(8.8) IP is onset of pho	(283) toelectron b	(1182) pand (84GLE/S	80 PA2).	333	*EST	6499-38-3
C ₇ H ₆ O +					 		
СНО	9.49±0.02 IP from 79MCL/I	210 TRA. See als	879 so: 83KLA/KOV	-9±0.5 /, 85GAL/G	-37±2 ER.	77PED/RYL	100-52-7
	8.90±0.02	215	903	10±0.7	44±3	77PED/RYL	539-80-0
С ₇ H ₆ O ₂ +	(9.86±0.02)	(191)	(797)	−36.8±0.2	-154.0±0.9	77PED/RYL	533-75-5
Соон	(9.47) IP from onset of pl		(620) n band (83KLA,		−294.1±1.6 also: 81MEE/W	77PED/RYL AH.	65-85-0
но сно	(9.32±0.02)	(159)	(666)	~56±2	-233±8	*EST	
CH ₃	9.78±0.02	188	789	~37.1±2.0	−155±9	*EST	553-97-9
(C)	(8.0) IP is onset of photo	(150) (electron bar	(629) nd.	~34±0.7	−143±3	77PED/RYL	274-09-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₇ H ₆ O ₂ +							
	(9.64) IP from 85GLE/	(232) JAH.	(971)	10	41	*EST	53735-22-1
o o	(8.4) IP is onset of pho	(175) otoelectron b	(731) and.	-19	-79	*EST	17994-26-2
C ₇ H ₇ +							
\bigcirc	6.24±0.01	203 <i>208</i>	849 <i>872</i>	59	247	82MCM/GOL	3551-27-7
	$\Delta_f H$ (Ion) from a Heat of formation 65±2 kcal/mol, 27	appearance po on of radical o	otential measi				
€ СН2.	7.20 ± 0.02 $\Delta_f H(ext{Ion})$ from c	215 219 chloride trans	899 917 fer equilibriu	49 <i>53</i> m constants (81	204 <i>223</i> SEN/KEB) is	81TSA	2154-56-5
C ₇ H ₇ Br +							
CH ₂ B _r	9.0 IP is onset of pho	(224) otoelectron b	(935) and.	16±0.5	67±2	76ASH	100-39-0
CH ₃	8.58±0.1 See also: 85BAI/	(213) MIS.	(890)	15	62	*EST	95-46-5
CH3 Br	8.79±0.02	(217)	(909)	15	61	*EST	591-17-3
H ₃ C Br	8.67±0.01 IP from 82LEV/	(217) LIA, 78LIA/4	(908) AUS, 77ROS/	17 DRA. See also:	71 85BAI/MIS.	*EST	106-38-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		$\Delta_{\mathbf{f}}H(\mathbf{N})$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₇ H ₇ BrO +							
H ₃ CO Br	(8.11)	(177)	(739)	-10	-43	*EST	104-92-7
C ₇ H ₇ BrS ⁺		···					
H ₃ CS——B _T	(7.5) IP is onset of photon	(201) toelectron b	(843) and (81BAK/A	28 .RM).	119	*EST	104-95-0
C ₇ H ₇ Cl ⁺	***************************************						
CH ₂ CI	9.14±0.01 See also: 81ZVE/I	215 ERM, 81KIN	899 M/KAT.	4±0.7	17±3	76ASH	25168-05-2
CH ₃	(8.83±0.02) See also: 85BAI/M	(208) IIS.	(871)	4	18	*EST	95-49-8
H ³ C CI	(8.83±0.02)	(208)	(870)	4	18	*EST	108-41-8
H ₃ C CI	8.69±0.02 See also: 85BAI/M		(856)	4	18	*EST	106-43-4
CI	≤8.77 IP from 83HOU/R		(≤1071)	54	225	*EST	2294-41-9
C ₇ H ₇ ClHg ⁺							
нзс	(8.7) IP is onset of photo	(223) (electron bar	(931) nd (81FUR/PLA	22 A).	92	*EST	539-43-5

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(Ic		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C7H7CIO+ CH2OH CI	(8.51) IP from 83RUS/FI	(166) RE.	(697)	-30	-124	83RUS/FRE	873-63-2				
CI CH ₂ OH	(8.58) IP from 83RUS/FI	(167) RE.	(698)	-31	-130	83RUS/FRE	873-76-7				
OCH ₃	(8.42) IP from 83RUS/FI	(169) RE.	(707)	-25	-105	83RUS/FRE	766-51-8				
сг Осн₃	(7.79) IP from 83RUS/FI	(153) RE.	(641)	-26	-111	83RUS/FRE	623-12-1				
C7H7F+	8.91±0.01 See also: 78LIA/A	(170) US.	(711)	-36	-149	*EST	95-52-3				
СНЗ	8.91±0.01	(170)	(710)	-36	-150	*EST	352-70-5				
H ₃ C F	8.79±0.01 See also: 78LIA/A	167 US.	700	-35.2±0.3	-147.5±1.2	77PED/RYL	352-32-9				
С ₇ H ₇ FO ⁺ F —осн ₃	8.41 IP from 85OIK/AE	(130) BE.	(544)	-64	-267	*EST	456-49-5				

Table 1. Positive Ion Table - Continued

			TON TABLE				
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₇ F ₃ N ⁺ (C _{F₃}) H ⁺	From proton affin 854. kJ/mol.	19 ity of 3-CF ₂	81 ₃ C ₆ H ₄ NH ₂ (P	N 98-16-8). P.	A = 204.2 kcai	l/mol,	
C ₇ H ₇ I +							
CH ₂ I	(8.6)	(223)	(933)	25±1	103±4	76ASH	620-05-3
CH ₃	(8.62±0.01) See also: 85BAI/M	(231) IIS.	(965)	32±1	133±6	77PED/RYL	615-37-2
CH3	(8.61±0.03)	(231)	(965)	32±1	134±6	77PED/RYL	625-95-6
н ₃ с О	(8.50±0.01) See also: 85BAI/M		(942)	29±1	122±6	77ROS/DRA	624-31-7
C ₇ H ₇ N ⁺	(8.6) IP is onset of photo		(1030) nd (81MOD/I	48 DIS2).	200	*EST	100-69-6
NO CH	(8.9) IP is onset of photo		(1061) nd (81MOD/L	48 DIS2).	202	*EST	100-43-6
	(≤9.11) (IP from 79AUE/BC		≤1129)	60	250	*EST	56911-25-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry			
C ₇ H ₇ N ⁺	(≤9.37)	(≤276)	(≤1156)	60	252	*EST	56911-27-4			
	IP from 79AUE	IP from 79AUE BOW. $\Delta_f H$ (Ion) estimated from hydrogen affinities of pyridine ions = 268 kcal/mol, 1121 kJ/mol. Corresponding IP = 9.02 eV.								
С ₇ H ₇ NO ⁺										
NH ₂	(9.43±0.02)	(227)	(949)	9.4±0.6	39.5±2.5	77PED/RYL	6264-93-3			
O C NH2	9.45	194	811	-24±0.2	~101±1	82TOR/SAB2	55-21-0			
O _N	(8.9)	(200)	(838)	- 5	-21	*EST	1122-62-9			
H ₃ C/ ^C	IP is onset of pho		-		21		1122-02			
0=C,	(9.1)	(204)	(852)	- 6	-26	*EST				
CH2	IP is onset of pho	toelectron b	and (81MOD	/DIS2).						
v	(9.3) IP is onset of pho	(208) otoelectron b	(871) and (81MOD)	–6 /DIS2).	-26	*EST	1122-54-9			
H ₃ C NO	(8.79±0.1)	(216)	(903)	13.2±1	55±4	*EST	623-11-0			
C7H7NOS+	· · · · · · · · · · · · · · · · · · ·									
OH ₃	(8.75) IP is onset of pho	(187) otoelectron b	(782) and (82LOU/	-15 VAN).	-62	*EST				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₇ H ₇ NOS ⁺ NSSO CH ₃	(≤8.84) IP from 82LOU/	(≤190) (≤795) VAN.	-14	-58	*EST	
C ₇ H ₇ NO ₂ + COOH	(7.6) IP is onset of pho	(104) (435) toelectron band (81ME	-71±0.5 E/WAH).	-298±2	77NAB/SAB	118-92-3
COOH NH ₂	(7.8) IP is onset of pho	(111) (463) toelectron band (81ME)	-69±1 E/WAH).	-289±4	77NAB/SAB	99-05-8
H ₂ N COOH	(7.8)	(110) (458) coelectron band (81ME)	−70±1 ∃/WAH). See als	-294±4 o: 84TOB/TAJ	77NAB/SAB	150-13-0
OTCH3 NO2	9.45±0.04 IP from 82LEV/L	231 965 IA, 82BAL/CAR. See a	13 lso: 73GOL/KOl	53 R.	77PED/RYL	88-72-2
NO2	(9.48±0.02)	(226) (946)	7	31	77PED/RYL	99-08-1
H ₃ C NO ₂	(9.4) IP is onset of photo	(224) (938) Delectron band.	7±1	31±4	77PED/RYL	99-99-0
C ₇ H ₇ NO ₃ + OCH ₃ NO ₂	(8.8) IP is onset of photo	(186) (779) belectron band.	-17	-70	*EST	91-23-6

Table 1. Positive Ion Table - Continued

			ve full fable	- Contin			
ION Neutral	Ionization potential eV	∆ _f H(l kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₇ NO ₃ ⁺ OCH ₃ NO ₂	(8.7) IP is onset of pho	(179) toelectron	(749) band.	-22	-90	*EST	555-03-3
0 ₂ N OCH ₃	(8.79)	(182)	(760)	-21	-88	*EST	100-17-4
C ₇ H ₇ NS ⁺	(8.8) IP from 81GRU.	(234)	(980)	31.3±0.3	131.0±1.3	82TUR/SAB2	2227-79-4
C ₇ H ₇ N ₂ +	From proton affin 840. kJ/mol.	218 aity of 3-cya	912 nobenzenamin	e (RN 2237-30	-1). PA = 200	.7 kcal/mol,	
· NH	From proton affin 914 kJ/mol.	208 aity of indaz	870 cole (RN 271-4-	4-3) (84FLA/M	IAQ). PA = 2	218 kcal/mol,	
OT H	From proton affin PA = 227 kcal/mo			51-17-2) (83C <i>l</i>	AT/ELG, 84FI	.A/MAQ).	
C ₇ H ₇ N ₂ O +	(7.28) IP from 77NUY/N	(178) MES.	(746)	11	44	*EST	17333-79-8

GAS-PHASE ION AND NEUTRAL THERMOCHEMISTRY

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(ext{Ion})$ $\Delta_f H(ext{Neutral})$ Neutral					CAS registry	
Neutral	eV	kcal/mol		kcal/mol		reference	number
С ₇ H ₇ O ⁺	From proton affin 838. kJ/mol.	157 ity of benza	655 ldehyde (RN	100-52-7). PA	= 200.2 kcal/	mol,	
ÇH ₂	From appearance	176 potential de	735 eterminations	(83RUS/FRE)			65108-16-9
HO CH ₂	From appearance p	174 potential de	728 eterminations	(83RUS/FRE).			65108-08-9
но ČH ₂	$\Delta_f H$ (Ion) from approton affinity of 4 a serious discrepan	-methylene	-2,5-cyclohexa	diene-1-one is			29180-18-5
. О ОСН3	(8.32) IP from 77NUY/M	(202) ES.	(845)	10	42	*EST	2396-03-4
ОН	From proton affinit 918 kJ/mol (RN 539						
7H ₇ O ₂ +							
7H7O2+	From proton affinit 829. kJ/mol.	97 y of benzoi	407 c acid (RN 65-	85-0). PA = 1	98.2 kcal/mol	,	

Table 1. Positive Ion Table - Continued

	Table.	1. FUSILIY	e ion labie	- Contin	ueu		
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₈ +							
HC=C(CH ₂) ₃ C=CH	(9.85) IP from 78TRA/N	(322) ICL.	(1346)	94.7	396	58BEN/BUS	2396-63-6
	8.29	235	982	43.7±0.2	182.8±1	77PED/RYL	544-25-2
	IP from 78TRA/N	<i>240</i> ACL.	1004	48.7	203.8		
	8.82±0.01	215	901	12.0±0.1	50.1±0.3	77PED/RYL	108-88-3
СНЗ	6.62±0.01	213 221	901 924	12.0±0.1	73.3	//FED/RIL	100-00-3
	See also: 82SEL/F						
	7.9 IP from 85BAL/H	223 IAS. See als	934 o: 82BUR/TER	41 , 82BAR.	172	85BAL/HAS	20679-59-8
_							
<u></u>	(8.6) IP from 82BAR.	(233)	(975)	35±3	146±13	82BAR	3217-87-6
\mathcal{A}							
	8.35 IP from 78TRA/M	250 ICL. See als	1046 so: 83HOU/ROI	57±1 N, 82BIE/AS	240±4 B, 85OHN/ISH.	80ROG/CHO	121-46-0
	8.8 IP from 85BAL/H	288 (AS.	1206	85	357	85BAL/HAS	67254-49-3
4							
	(7.8) IP is onset of phot	(260) coelectron b	(1086) and.	80±1	333±4	80ROG/CHO	278-06-8

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry			
C ₇ H ₈ +										
	(8.14)	(250)	(1045)	62	260	*EST	765-46-8			
C ₇ H ₈ Br +		· · · · · · · · · · · · · · · · · · ·								
CH ₃	From proton affin PA = 187.2 kcal/n	193 ity of 1,2-C nol, 783. kJ	809 ₆ H ₄ (CH ₃)Br /mol.	(RN 95-46-5) (8	82MAS/BOH).				
CH ₃	From proton affin PA = 188.8 kcal/n	191 ity of 1,3-C 10l, 790. kJ	801 6H ₄ (CH ₃)Br /mol.	(RN 591-17-3) ((82MAS/BOF	I).				
(H ₃ C Br) H	From proton affini PA = 187.2 kcal/n	196 ity of 1,4-C nol, 783. kJ/	818 ₆ H ₄ (CH ₃)Br (/mol.	(RN 106-38-7) ((82MAS/BOH	().				
C ₇ H ₈ Cl ⁺										
(CICH3)H+	From proton affini PA = 184.3 kcal/m	186 ity of 1,2-C _t iol, 771. kJ/	<i>777</i> ₅ H ₄ (CH ₃)Cl ('moi.	RN 95-49-8) (8	2MAS/BOH)					
(CH ₃) H ⁺	From proton affini PA = 188.9 kcal/m	181 ty of 1,3-C ₍ ol, 790. kJ/	758 ₅ H ₄ (CH ₃)Cl (mol.	RN 108-41-8) (1	82MAS/BOH).				
(H ₃ C) H+	From proton affini PA = 180.6 kcal/m	189 ty of 1,4-C ₆ ol, 756. kJ/	792 ;H ₄ (CH ₃)Cl (: mol.	RN 106-43-4) (8	32MAS/BOH]).				
C ₇ H ₈ Cl ₂ Si ⁺										
Si-CH3	(8.97) IP from 84VES/HA	(132) AR.	(551)	-75	-314	*EST	149-74-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry					
C ₇ H ₈ F ⁺ C ₇ H ₈ F ⁺ C ₇ H ₃	From proton affin PA = 187.0 kcal/r		95-52-3) (82MAS/BOH).							
CH ₃	From proton affin PA = 189.5 kcal/r		352-70-5) (82MAS/BOH).							
F CH3	From proton affin PA = 180.9 kcal/n		352-32-9) (82MAS/BOH).							
С ₇ H ₈ F ₂ Si ⁺	(8.97) IP from 84VES/H.	(29) (122) AR.	-178 -743	*EST	328-57-4					
C7H8I+	From proton affin PA = 188.4 kcal/n	209 875 ity of 2-IC ₆ H ₄ CH ₃ (RN 6 nol, 788. kJ/mol.	15-37-2) (82MAS/BOH).							
C ₇ H ₈ N ⁺ CH=CH ₂	From proton affin (934) kJ/mol.	(191) (798) ity of 4-vinylpyridine (RN	100-43-6). PA = (223.2) kg	eal/mol,						
H NOD	From proton affini PA = (225.9) kcal	(202) (846) ity of 3,4-cyclobutenopyric /mol, (945) kJ/mol.	line (RN 56911-27-4).							
H N	From proton affini (934) kJ/mol.	(200) (838) ity of 2,3-cyclobutenopyric	line. PA = (223.3) kcal/mo	ı,						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry
C ₇ H ₈ NO ⁺ O CCH ₃	From proton affin PA = 217.2 kcal/r			anone (RN 350	-03-8).		
HN CCH3	From proton affin PA = 217.4 kcal/n	-		anone (RN 1122	2-54-9).		
C ₇ H ₈ NO ₂ +	From proton affin PA = 196.8 kcal/n			I 99-99-0) (84R(OL/HOU).		
C ₇ H ₈ N ₂ O ₂ + NHCH ₃	(8.1) IP is onset of phot	(201) oelectron ba	(843) and.	15	61	*EST	100-15-2
С ₇ H ₈ O ⁺	(8.5) See also: 82DES/D	(172) DUT, 83RUS	(720) S/FRE. IP is o	-24.0	-100.4 lectron band	77PED/RYL (86BAL/JON).	100-51-6
он снз	8.14 IP from 83RUS/FF	158 RE.	661	-30	-124	79KUD/KUD	95-48-7
Он Снз	8.29 IP from 850IK/AE	160 BE, 83RUS/I	668 FRE.	−31.6±0.3	-132.3±1.2	<i>7</i> 9KUD/KUD	108-39-4
HO CH3	8.13 IP from 83RUS/FF	157 RE.	659	-29.9	-125.1	79KUD/KUD	106-44-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Ie	on)	$\Delta_{\mathbf{f}}H(N_{\mathbf{f}})$	eutral)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
С ₇ H ₈ O +	(8.24) IP from 83RUS/F	(188) RE.	(788)	-1.7	-7.1	83RUS/FRE	1121-65-9
OCH ₃	8.21±0.02 See also: 83KLA/I	173 KOV.	724	-16.2±0.3	-68.0±1.1	77PED/RYL	100-66-3
	(≤8.86)	(≤197)	(≤826)	-7	-29	*EST	694-98-4
	(≤9.25)	(≤210)	(≤877)	-4	-15	*EST	694-71-3
СНЗ	(8.9) IP is onset of phot	(251) oelectron b	(1049) and (84GLE/HA	45 AI).	190	*EST	3350-02-5
С ₇ H ₈ OS ⁺	(8.5) IP is onset of photo	(191) oelectron b	(800) and.	-5	20	*EST	1193-82-4
С ₇ H ₈ O ₂ + он	(7.50)	(115)	(482)	-58	-242	*EST	150-76-5
H ₃ C CH ₃	(9.03) IP from 85GRU/SI	(152) PI	(636)	-56	-235	*EST	1004-36-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₈ O ₂ + CH ₃	(8.51) IP from 85GRU/S	(135) SPI	(564)	-61	-257	*EST	675-09-2
	(9.4) IP is onset of photon	(168) toelectron t	(702) pand (85GLE/JA	-49 H).	-205	*EST	60582-65-2
	(9.26) IP is onset of phot	(161) toelectron b	(674) pand (80FRO/W)	-52 ES).	-219	*EST	27943-47-1
С ₇ H ₈ O ₂ S +	(9.5) IP is onset of phot	(159) coelectron b	(663) and (81MOH/JI		-253.4±3.0	77PED/RYL	3112-85-4
С ₇ H ₈ S ⁺	7.94±0.02	206	864	23.4±0.3	97.8±1.2	77PED/RYL	100-68-5
CH ₂ SH	(8.5) IP is onset of photo	(218) oelectron b	(914) and.	22±0.7	94±3	77PED/RYL	100-53-8
CH3	(≤8.31)	(≤211)	(≤881)	19	79	*EST	137-06-4
H ₃ C SH	(≤8.44)	(≤214)	(≤893)	19	79	*EST	108-40-7

Table 1. Positive Ion Table - Continued

			ve ion lable	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	$\Delta_{\mathbf{f}}H$ (Nekcal/mol		Neutral reference	CAS registry number
C ₇ H ₈ S +					,		
H ₃ C SH	(8.0) IP is onset of pho	(203) toelectron t	(851) pand.	19	79	*EST	106-45-6
C ₇ H ₈ Se ⁺							
SeCH3	(7.4) IP is onset of pho	(207) toelectron t	(867) pand (81BAK/AR	36 M).	153	*EST	4346-64-9
SeH CH ₃	≤8.4 IP from 81BAK/A	(≤225) \RM.	(≤940)	31	130	*EST	37773-21-0
C ₇ H ₉ +	***************************************				<u> </u>		
H ₂ CH ₃	From proton affin 794. kJ/mol.	188 ity of C ₆ H ₅	786 5CH ₃ (RN 108-88	-3). PA = 1	189.8 kcal/mol,		
○	From proton affir PA = 203.4 kcal/t	•		N 121-46-0) ı	(86HOU/SCH).		
C ₇ H ₉ Br ⁺							
Br	(8.7) IP is onset of photon	(261) toelectron b	(1091) pand (84ABE/DE	60 L).	252	*EST	59346-69-9
Br	(8.55) IP is onset of pho	(218) coelectron b	(912) pand (85DEL/PIC	21 i).	87	*EST	31991-53-4
							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(I- kcal/mol	on) kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry
C ₇ H ₉ I +	(8.6) IP is onset of pho	(273) toelectron t	(1143) pand (84ABE/DE	75 IL).	313	*EST	74725-76-1
C ₇ H ₉ N ⁺	8.64±0.05 See also: 79AUE/	219 BOW.	918	20±0.7	84±3	77CAR/LAY	100-46-9
NHCH3	7.33±0.02 See also: 84MAU,	189 /NEL, 83KI	792 -A/KOV.	20	85	78COL/BEN	100-61-8
CH3	7.44±0.02	(185)	(773)	13±0.2	55±1	*EST	95-53-4
NH2 CH3	7.50±0.02	(186)	(778)	13±0.4	54±2	*EST	108-44-1
CH3	(7.24±0.02)	(180)	(753)	13	54	*EST	106-49-0
CH ₃ CH ₃	(8.85 \pm 0.02) $\Delta_f H (Ion)$ predicte Corresponding IP				68.3 224 kcal/mol, 937	77PED/RYL kJ/mol.	583-61-9
CH ₃	(8.85±0.03)	(219)	(918)	15.3	63.9	77PED/RYL	108-47-4

Table 1. Positive Ion Table - Continued

Neutral reference 77PED/RYL nol, 933 kJ/mol. 77PED/RYL	CAS registry number 589-93-5
nol, 933 kJ/mol.	
nol, 933 kJ/mol.	
5 77PED/RYL	108-48-5
. 77PED/RYL nol, 937 kJ/mol.	583-58-4
77PED/RYL nol, 946 kJ/mol.	591-22-0
*EST	90-04-0
*EST	536-90-3
*EST	104-94-9
*EST	33399-46-1
	*EST *EST

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	•	Ion) l kJ/mol	Δ _f H(N	eutral) kJ/mol	Neutral reference	CAS registry
C ₇ H ₉ N ₂ O ₂ + NHCH ₃ H	+ From proton affi PA = 212.9 kcal/			line (RN 100	-23-2) (84ROL/F	IOU).	
С7H9O+	+ From proton affi 789. kJ/mol.	153 nity of C ₆ H	641 ₅ CH ₂ OH (RN)	100-51-6) (78	TAF/TAA). PA	= 188.5 kcal/mo	l,
ОСН ₃	From proton affin	149 nity of C ₆ H	624 5OCH3 (RN 10	0-66-3). PA	= 200.3 kcal/mol	, 838. kJ/mol.	
ОН	From proton affii (86HOU/SCH).			-	N 694-98-4).		
OH	From proton affir (86HOU/SCH). 1				N 694-71-3).		
$C_7H_{10}^+$ (CH ₂ =CH) ₃ CH	(≤9.5) IP from 83GLE/H	(≤265) IAI.	(≤1108)	46	191	*EST	26456-63-3
(E,E) -CH ₂ = CHCH = CH ϵ	CH = CHCH ₃ 7.96±0.02	(215)	(901)	32±1	133±4	*EST	17679-93-5
$C_2H_5C=CC(CH_3)=CH_2$	(8.66±0.01)	(247)	(1033)	47	197	*EST	23056-94-2
(E)-HC≡CC(C ₂ H ₅) = CHC	CH ₃ (8.70±0.01)	(247)	(1031)	46	192	*EST	14272-82-3
	≤8.31±0.03	≤214	≤896	22.5±0.2	94.2±0.9	77PED/RYL	4054-38-0

Table 1. Positive Ion Table - Continued

	Table 1. I Ostive Ion Table				Continued			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number	
C ₇ H ₁₀ ⁺	(8.85±0.03)	(232)	(970)	28	116	76JEN	7161-35-5	
CH3	8.2 IP is onset of pho	(206) toelectron b	(860) Pand (85GUI/PFI:	16 3).	69	*EST	4125-18-2	
CCH3	(8.83)	(257)	(1075)	53	223	82KOZ/MAS	51549-86-1	
	(≤8.69)	(≤227)	(≤951)	27	113	*EST	2566-57-6	
	(9.37)	(250)	(1046)	34	142	*EST	4927-03-1	
4	8.82±0.03 See also: 83HOU/	225 RON.	941	21±1	90±4	80ROG/CHO	498-66-8	
	8.72 IP is onset of phot	245.5 toelectron b	1027.1 and (85DEL/PIG	44.4 i).	185.8	85SVY/IOF	287-13-8	
\bigotimes	(8.7) IP is onset of pho	(260) toelectron b	(1089) and (84ABE/DE)	60 L).	250	*EST	51273-50-8	

Table 1. Positive Ion Table - Continued

X 0 3 7			ve ion Table -				
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₁₀ +							
	(8.72) IP is onset of pho	(221) toelectron b	(926) pand (85DEL/PIG	20±1).	85±4	80ROG/CHO	279-19-6
	(≤8.48)	(≤236)	(≤986)	40	168	*EST	52708-23-3
C ₇ H ₁₀ F ₂ +							
CF ₂	8.84 IP from 80SAR/W	(103) 'OR.	(433)	-100	-420	*EST	696-32-2
C ₇ H ₁₀ N ⁺							
(CH ₂ NH ₂) H +	From proton affin 907. kJ/mol.	169 ity of C ₆ H ₅	707 CH ₂ NH ₂ (RN 10	0-46-9). PA	. = 216.8 kcal/m	ol,	
(NHCH3) HT	From proton affin 912.5 kJ/mol.	168 ity of C ₆ H ₅	703 NHCH ₃ (RN 100-	61-8). PA	= 218.1 kcal/moi	l,	
(CH ₃) H+	From proton affini 893. kJ/mol.	165 ity of 3-CH ₂	690 3C ₆ H ₄ NH ₂ (RN 1	08-44-1). P	A = 213.4 kcal/i	nol,	
(H ₃ C NH ₂) H+	From proton affini 894. kJ/mol.	165 ty of 4-CH ₃	690 3C ₆ H ₄ NH ₂ (RN 1	06-49-0). P	A = 213.7 kcal/r	noi,	
CH ₃	From proton affini 946. kJ/mol.	156 ty of 2,3-din	652 nethylpyridine (R	N 583-61-9)	. PA = 226.2 kc	al/mol,	

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	- Continued		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry number
C ₇ H ₁₀ N ⁺ CH ₃ CH ₃ CH ₃	From proton affir 951. kJ/mol.	153 643 lity of 2,4-dimethylpyridine	e (RN 108-47-4). PA = 227.	.3 kcal/mol,	
H ₃ C CH ₃	From proton affir 946. kJ/mol.	156 651 hity of 2,5-dimethylpyridine	e (RN 589-93-5). PA = 226.	2 kcal/mol,	
H ₃ C N CH ₃	From proton affir 955. kJ/mol.	152 634 aity of 2,6-dimethylpyriding	e (RN 108-48-5). PA = 228.	2 kcal/mol,	
CH ₃ CH ₃	From proton affir 946. kJ/mol.	157 654 hity of 3,4-dimethylpyriding	e (RN 583-58-4). PA = 226.	0 kcal/mol,	
H ₃ C C ₃ H	From proton affir 943. kJ/mol.	158 661 hity of 3,5-dimethylpyriding	e (RN 591-22-0). PA = 225.	.5 kcal/mol,	
C ₂ H ₅	From proton affir 946. kJ/mol.	159 665 nity of 2-ethylpyridine (RN	I 100-71-0). PA = 226.2 kca	l/mol,	
C ₂ H ₅	From proton affir 937. kJ/mol.	162 679 hity of 3-ethylpyridine (RN	1 536-78-7). PA = 223.9 kca	l/mol,	
HN C2H5	From proton affir (940) kJ/mol.	(161) (672) nity of 4-ethylpyridine (RN	I 536-75-4). PA = (224.6) ko	cal/mol,	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Id kcal/mol		Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₇ H ₁₀ NO +							
OCH3 HT	From proton affir 898. kJ/mol.	137 nity of 2-CH	575 ₃ OC ₆ H ₄ NH ₂	₂ (RN 90-04-0).	PA = 214.3	7 kcal/mol,	
H ₃ CO NI	H ₂ From proton affin 910. kJ/mol.	132 ity of 3-CH	553 ₃ OC ₆ H ₄ NH ₂	2 (RN 536-90-3)). PA = 217.	.6 kcal/mol,	
(H3CO NH2)	H ⁺ From proton affin 897. kJ/mol.	137 ity of 4-CH	575 ₃ 0C ₆ H ₄ NH ₂	2 (RN 104-94-9)	. PA = 214.	3 kcal/mol,	
CH2OCH3	From proton affin PA = (226.0) kcal			methyl (RN 23	579-92-2).		
C ₇ H ₁₀ NS +					····		
NH2 SCH3	From proton affin	176 ity of 3-metl	735 nylthiobenzer	namine (RN 178	33-81-9). PA	. = 214.5 kcal/mol,	
C ₇ H ₁₀ N ₂ +							
NNCH3/2	7.75±0.15	(211)	(880)	32	132	*EST	5683-33-0
NO NICH3)2	(≤7.82)	(≤214)	(≤898)	34	144	84BIC/PIL	1122-58-3
C ₇ H ₁₀ N ₂ O +							
С ₇ H ₁₀ N ₂ O ⁺	(7.62±0.05)	(191)	(798)	15	63	*EST	3618-79-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{c}})$ kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
С ₇ H ₁₀ N ₂ O +	(7.85±0.05)	(197)	(824)	16	67	*EST	36100-40-0
(CH ₃) ₂ N	(7.0) IP is onset of pho	(178) toelectron b	(746) and.	17	71	*EST	1005-31-8
C ₇ H ₁₀ O ⁺	(9.1)	(249)	(1041)	39	163	*EST	1121-37-5
4	8.94±0.02 See also: 80FRO/	166 WES.	695	-40±0.7	-168±3	78STE2	497-38-1
	≤9.01±0.02	≤176	≤735	-32±0.7	−134±3	78STE2	10218-02-7
C ₇ H ₁₀ S + (CH ₂) ₂ CH ₃	(≤8.6±0.2)	(≤208)	(≤870)	10	40	*EST	1551-27-5
С ₇ H ₁₁ +	6.84 IP from 79HOU. PA = 199.9 kcal/r $\Delta_f H(t-C_4H_9^+), 1$ equilibria 185.8 kc radical = $\Delta_f H(C_1)$	nol, 836. kJ/ l85 kcal/mol :al/mol, 777.	mol. From hy , 773 kJ/mol (4 kJ/mol (858)	dride transfer e 76SOL/FIE, 85	quilibria relat SHA/SHA); f	DERIVED ol, 784 kJ/mol; tive to from chloride transf	30967-37-4 `er

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H((Ion) ol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry			
C ₇ H ₁₁ Br ⁺	9.55 IP is onset of pho	(209) toelectron	(874) s band (84DEL./	–11 ABE, 85HO	-47 N/HEI2).	*EST	13474-70-9			
C ₇ H ₁₁ Cl ⁺ (CH ₃) ₃ CCH = C = CHCl	9.05 IP is onset of pho	(228) toelectron	(954) band (85ELS/	19 VER).	81	*EST	65388-53-6			
C ₇ H ₁₁ CIN ⁺	From proton affin PA = (224.0) kca		-	lo[2.2.2]oct-:	2-ene					
C ₇ H ₁₁ I ⁺	(8.8) IP is onset of photon	(206) toelectron	(863) band (84DEL/	3 ABE).	14	*EST	930-80-3			
	(9.00) IP from 84HON/F	(210) IEI.	(878)	2	10	*EST	57173-48-5			
	9.00 IP from 84HON/F	(211) IEI.	(882)	3	14	*EST	30983-85-8			
C ₇ H ₁₁ N ⁺	(8.02)	(222)	(930)	37	156	*EST	13929-94-7			
NH	(≤8.35±0.05)	(≤218)	(≤913)	26	107	*EST	3693-58-1			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$		$\Delta_f H(Neutral)$		CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₇ H ₁₁ NO +			•		-		
ENJ O	(≤8.2) IP from 79AUE/I	(≤161) BOW.	(≤675)	-28	-116	*EST	3731-38-2

$C_7H_{11}N_2^+$



168 703

From proton affinity of N,N-dimethyl-2-pyridinamine (RN 5683-33-0). PA = 229.2 kcal/mol, 959. kJ/mol.



(174) (726)

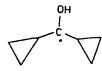
From proton affinity of N,N-dimethyl-3-pyridinamine (RN 18437-57-5). PA = (229.9) kcal/mol, (962) kJ/mol.



163 684

From proton affinity of N,N-dimethyl-4-pyridinamine (RN 1122-58-3). (86TAF/GAL, 77ARN/CHA). PA = 236.6 kcal/mol, 990. kJ/mol.

$C_7H_{11}O^+$



194 812

From proton affinity of dicyclopropylmethanone (RN 1121-37-5). PA = 210.7 kcal/mol, 881.5 kJ/mol.



123 514

From proton affinity of bicyclo[2.2.1]heptan-2-one (RN 497-38-1) (86HOU/SCH). PA = 202.6 kcal/mol, 848. kJ/mol.



134 561

From proton affinity of bicyclo[2.2.1]heptan-7-one (RN 10218-02-7) (86HOU/SCH). PA = 199.5 kcal/mol, 835. kJ/mol.

$C_7H_{12}^{+}$

(E)- $CH_3CH_2CH_2CH = CHCH = CH_2$

(8.47)

(204) (8

(852)

35

*EST

2384-92-1

IP from 81MAS/MOU.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₇ H ₁₂ +				· - · · · · · · · · · · · · · · · · · ·			
(E),(E)-CH ₃ CH ₂ CH	H = CHCH = CHCH ₃						
	≤8.17 IP from 81MAS/	(≤194) MOU	(≤812)	6	24	*EST	2384-94-3
	IF Holli ativiAs/	MOO.					
СНЗ	8.89±0.01	(196)	(822)	-9	-36	*EST	591-48-0
•	See also: 83BRO	BUS.					
(E)-(CH ₃) ₂ CHCH=	: CHCH = CH ₂						
5.2	≤8.47	(≤202)	(≤847)	7	30	*EST	32763-70-5
	IP from 81MAS/	мои.					
$(E)-C_2H_5C(CH_3) = 0$	CHCH = CH ₂						
\	(8.19)	(195)	(814)	6	24	*EST	4842-93-7
	IP from 81MAS/I	MOU.					
(E)- $CH_3CH = C(CH)$	a)C(CHa) = CHa						
(=, ==-3=== =(===	(8.28)	(194)	(813)	3	14	*EST	1625-49-6
	IP from 81MAS/I	MOU.					
$CH_2 = C(CH_3)C(C_2)$	H_)=CH_						
0112 0(0113)0(021	(8.65)	(205)	(860)	6	25	*EST	14145-44-9
	IP from 81MAS/N		` ,				
n-C ₅ H ₁₁ C≡CH	(10.04)	(256)	(1073)	25±0.7	104.2	70D O C /D A C	(20 71 7
931110-011	From plot of tren				104±3 would be pred	79ROG/DAG	628-71-7
					•		
n-C ₄ H ₉ C≡CCH ₃	(9.33±0.01)	(235)	(985)	20±0.5	85±2	79ROG/DAG	1119-65-9
n-C ₃ H ₇ C≡CC ₂ H ₅	(9.26±0.01)	(233)	(976)	20	83±2	79ROG/DAG	2586-89-2
	. ,	` ,	` ,			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2000 07 2
(tert-C ₄ H ₉)C≡CCH ₃	(0.276+0.10)	(225)	(004)	21	00	. 77.0m	
	(9.276±0.10) See also: 85ORL/	(235) BOG.	(984)	21	89	*EST	999-78-0
_		4.					
	45.00						
	(8.91±0.04)	(203)	(850)	-2.2±0.2	-9.4±0.9	77PED/RYL	628-92-2
CH ₂							
\	8.93±0.01	200	837		−25±4	79FUC/PEA	1192-37-6
	IP from 80SAR/W	OR. See also	o: 86SPA/RAI	D.			

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV		(Ion) ol kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C ₇ H ₁₂ +	8.67±0.02	189.6	793.3	-10.3±0.2	-43.2±0.7	77PED/RYL	591-49-1			
H ₃ C	(8.91±0.01)	(197)	(824)	-9	-36	*EST	591-47-9			
C 2H5	(8.53±0.01)	(192)	(801)	−5±0.7	-22±3	82ALL/DOD	2146-38-5			
C ₂ H ₅	8.88±0.01	202	843	-3	-14	82ALL/DOD	694-35-9			
\bigcirc	(9.03±0.02)	(209)	(873)	0.5±0.5	2±2	77PED/RYL	286-08-8			
4	9.77±0.03	213	894	−12±1	-49±4	80ROG/CHO	279-23-2			
C ₇ H ₁₂ BrN ⁺	(≤8.5) IP from 79AUE/B	(≤197) OW.	(≤823)	1	3	*EST				
C ₇ H ₁₂ CIN ⁺	(≤8.8) IP from 79AUE/B6	(≤192) OW.	(≤805)	-11	-44	*EST	42332-45-6			

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mo	Δ _f H(N ol kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number				
C ₇ H ₁₂ F ₂ N ⁺			· · · · · · · · · · · · · · · · · · ·							
$\left(\begin{array}{c} N \\ \end{array} \right)_{F_2} H^{\dagger}$		(43) (179) ity of 3,3-difluoro-1 /mol, (928.) kJ/mol	i-azabicyclo[2.2.2]oc i.	tane.						
C ₇ H ₁₂ N ⁺										
(N) HT	From proton affin PA = (228.5) kcal		2.2.2]oct-2-ene (RN :	13929-94-7).						
C ₇ H ₁₂ NO +										
(NO) H+	From proton affini PA = (221.9) kcal	(116) (486) ity of 1-azabicyclo[2 /mol, (928) kJ/mol.	2.2.2]octan-3-one (RI	N 3731-38-2).						
C ₇ H ₁₂ O +	· · · · · · · · · · · · · · · · · · ·									
	≤9.14	≤152 ≤634	-59.1±0.4	-247.5±1.8	77PED/RYL	502-42-1				
СНО	(9.6±0.1) IP from 82SPL/CA	(165) (691) L.	-56.2	-235.1	82SPL/CAL	2043-61-0				
C ₇ H ₁₂ OSi ⁺										
Si(CH ₃) ₃	(8.1) IP is onset of photo	(134) (563) electron band (832	−52 ZYK/ERC).	-219	*EST	1578-33-2				
Si-CH ₃	≤8.53 (IP from 83ZYK/ER	(≤151) (≤630) :C.	-46	-193	*EST	13271-69-7				

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mo	Neutral I reference	CAS registry number						
С ₇ H ₁₂ O ₂ +	(8.5) IP is onset of photon	(161) (673) toelectron band (84GLE/I	−35 −147 OOB).	*EST	68525-35-9						
C ₇ H ₁₂ SSi ⁺	(8.1) IP is onset of phot	(173) (726) toelectron band (83VES/H	–13 –56 (AR).	*EST	18245-28-8						
C ₇ H ₁₃ + (CH ₃) ₂ CCHC(CH ₃) ₂		(157) (655) nity of (CH ₃) ₂ C = CHC(CF 1/mol, (892.) kJ/mol.	H ₃) = CH ₂ . (RN 1000-8	36-8).	60602-30-4						
<ch3< td=""><td>From proton affin 832. kJ/mol.</td><td>157 655 nity of 1-methylcyclohexene</td><td>. (RN 591-49-1). PA :</td><td>= 198.8 kcal/mol,</td><td>16998-65-5</td></ch3<>	From proton affin 832. kJ/mol.	157 655 nity of 1-methylcyclohexene	. (RN 591-49-1). PA :	= 198.8 kcal/mol,	16998-65-5						
CH ₃	From appearance	(169) (708) potential measurements (8	31HER/SIC).		41771-02-2						
СНЗ	From appearance	(173) (722) potential measurements (8	31HER/SIC).		61838-22-0						
Ċ СН ₃	From appearance	(172) (720) potential measurements (8	31HER/SIC).		21029-96-9						
CH3 H+	From proton affin 829. kJ/mol.	158 660 uity of 1,2-dimethylcycloper	itene. (RN 765-47-9).	PA = 198.1 kcal/mol,							

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(l	ion) kJ/mol		Jeutral) l kJ/mol	Neutral reference	CAS registry			
C ₇ H ₁₃ BrN ⁺										
$\left(\begin{array}{c} N \\ \end{array} \right) H^+$	From proton affin (950.) kJ/mol.	139 nity of 3-br	583 omo-1-azabicycic	[2.2.2]octan	ne. PA = (227.1)) kcal/mol,				
C ₇ H ₁₃ CIN ⁺										
(N) CI H+	From proton affin PA = (225.8) kcal			[2.2.2]octan	e (RN 42332-45-(5).				
C ₇ H ₁₃ FN ⁺										
(From proton affin (954.) kJ/mol.	(160) ity of 3-flu	(670) oro-1-azabicyclo[3,2.1]octano	e. PA = (228.1)	kcal/mol,				
C ₇ H ₁₃ N ⁺										
H3C-N-CH2	(≤8.36) IP from 80SAR/W	(≤204) OR.	(≤855)	11	48	*EST	13669-28-8			
	(7.1) IP is onset of photo	(197) pelectron t	(823) pand (81MUL/PI	33 RE2).	138	*EST	81156-87-8			
	(6.9) IP is onset of photo	(192) pelectron b	(803) and (81MUL/PF	33 RE2).	137	*EST	81156-88-9			
	(7.4) IP is onset of photo	(170) Delectron b	(710) and.	-1.0±0.3	-4.2±1.2	77PED/RYL	100-76-5			
NH	(≤8.22±0.05)	(≤187)	(≤782)	-3	-11	*EST	280-38-6			

Table 1. Positive Ion Table - Continued

	Table	1. Positi	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H() kcal/mo	ion) l kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number						
C ₇ H ₁₃ N ⁺													
NH ₂	(8.33) IP from 79AUE/E	(185) SOW.	(776)	-7±0.2	−28±1	*EST	31002-73-0						
H NH ₂	(8.41) IP from 79AUE/E	(186) BOW.	(779)	-8±0.2	−32±1	*EST	7242-92-4						
C ₇ H ₁₃ NO +													
NOH	(8.88±0.03) IP from 79GOL/R	(179) IUL.	(749)	-26	-108	*EST	2158-31-8						
C-H +													
C ₇ H ₁₄ + 1-C ₇ H ₁₄	(9.44)	(202.8)	(848.9)	-14.8	-61.9	84WIB/WAS	592-76-7						
2-C ₇ H ₁₄	(8.84±0.02) IP from 77ASH/B	(187) UR.	(782)	-17	-7 1	84WIB/WAS	592-77-8						
3-C ₇ H ₁₄	(8.92) IP from 81HOL/F	(189) IN.	(790)	-17	-71	84WIB/WAS	14686-14-7						
$(CH_3)_3CCH_2CH = CH_2$	9.40±0.01	197	823	-20.0±0.2	-83.8±0.8	77PED/RYL	762-62-9						
$n-C_4H_9C(CH_3) = CH_2$	(9.04±0.01)	(190)	(796)	-18	-76	*EST	6094-02-6						
$(CH_3)_2CHCH_2C(CH_3) =$	CH ₂ (9.03±0.01)	(188)	(787)	-20.0±0.3	-83.8±1.4	77PED/RYL	2213-32-3						
(CH3)3CC(CH3) = CH2	(9.02±0.01)	(187.5)	(784.4)	-20.4±0.3	-85.5±1.4	77PED/RYL	594-56-9						
(Z)-(CH3)2CHCH2CH = 0	CHCH ₃ (8.92±0.01)	(187)	(782)	-19	-78	*EST	13151-17-2						
(E)-(CH ₃) ₂ CHCH ₂ CH = 0	CHCH ₃ (8.92±0.01)	(186)	(779)	-20	-82	*EST	7385-82-2						
(E)- $C_2H_5CH(CH_3)CH = 0$	CHCH ₃ (8.91±0.01)	(186)	(778)	-20	-82	*EST	3683-22-5						
$C_3H_7CH = C(CH_3)_2$	(8.62) IP from 81HOL/F	(179) IN.	(748)	-20	-84	*EST	2738-19-4						

Table 1. Positive Ion Table - Continued

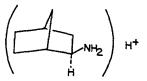
			ve ton tan	c - Contin			
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₇ H ₁₄ +	· · · · · · · · · · · · · · · · · · ·						
$C_2H_5C(CH_3) = C(CH_3)_2$	(8.21±0.01)	(168)	(702)	-21	-90	*EST	10574-37-5
(Z) - $(CH_3)_3$ CCH = CHCH ₃	3 (8.92±0.01)	(188)	(788)	-17.4±0.3	-72.6±1.4	77PED/RYL	762-63-0
$(E)-(CH_3)_3CCH = CHCH_3$	3 (8.91±0.01)	(184)	(771)	-21.3±0.3	-88.8±1.1	77PED/RYL	690-08-4
	9.97 300 K ionization e to cyclohexane and		-	er equilibrium c		77PED/RYL	291-64-5
—сн ₃	9.64 IP from charge tra Reference IP's, flu			nt determination			108-87-2
СH3	(9.92±0.05) IP from 81HER/S	(198) IC.	(828)	-30.9±0.3	−129.5±1.3	77PED/RYL	1192-18-3
CH3	(9.95±0.05) IP from 81HER/SI	(197) C.	(823)	−32.7±0.3	−136.7±1.1	77PED/RYL	822-50-4
c ₂ H ₅	(10.12±0.02)	(203)	(850)	-30.3±0.2	-126.7±0.9	77PED/RYL	1640-89-7

 $C_7H_{14}N^+$



132 551

From proton affinity of 1-azabicyclo[2.2.2]octane (RN 100-76-5). (86TAF/GAL). PA = 233.1 kcal/mol, 975. kJ/mol.



137 574

H+ From proton affinity of bicyclo[2.2.1]heptan-2-amine,endo (RN 31002-73-0). PA = (221.7) kcal/mol, (927.) kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) ol kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number			
C ₇ H ₁₄ N ⁺	From proton affir (RN 7242-92-4).									
$C_7H_{14}N_2^+$	(≤8.63)	(≤208)	(≤872)	9.4±0.8	39.3±3.6	80ENG	2721-31-5			
NH2	(≤8.0) IP from 79AUE/E	(≤188) BOW.	(≤785)	4	17	*EST	6238-14-8			
N CH3	≤8.02 IP from 82LEV/L	(≤215) IA. See al	(≤898) so: 84NEL.	30	124	*EST	6523-29-1			
$\binom{N}{N}$	≤7.43	(≤192)	(≤802)	20	85	*EST	283-47-6			
$\left\langle \begin{array}{c} N \\ N \end{array} \right\rangle$	≤7.75	(≤191)	(≤800)	12	52	*EST	281-17 -4			
	(7.63) IP from 82LEV/L	(204) IA. See al	(853) so: 84NEL.	28	117	*EST	5721-43-7			
C ₇ H ₁₄ N ₂ S +	(7.5) IP is onset of phot	(177) coelectron	(742) band (80AND/	4 DEV).	18	*EST	30826-80-3			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	· · · ·	∆ _f H(Ne	t=o1)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₇ H ₁₄ O +					······································		
n-C ₆ H ₁₃ CHO	(9.65±0.02)	(159)	(667)	-63±1	-264±4	77PED/RYL	111-71-7
(CH ₃) ₂ CHCH(C ₂ H ₅)CH	0						
	(9.44) IP from 81HOL/F	(149) IN.	(624)	-69	-287	*EST	26254-92-2
n-C ₅ H ₁₁ COCH ₃	9.30±0.01	142	596	-72	-301	75TRC	110-43-0
n-C ₄ H ₉ COC ₂ H ₅	(9.22±0.04) IP is average of va	(141) llues from 8	(590) 1HOL/FIN, 86	-71 TRA/MCA.	-299	75TRC	106-35-4
(n-C ₃ H ₇) ₂ CO	9.10±0.04	138	578	-72	-300	75TRC	123-19-3
(CH ₃) ₂ CHCH ₂ CH ₂ COCI	H ₃ (9.28±0.01)	(140)	(587)	-74	-308	*EST	110-12-3
СН ₃ (СН ₂) ₂ СН(СН ₃)СО(CH ₃ (9.20±0.02) IP is average of va	(139) lues from 8	(581) 1HOL/FIN, 86	-73 TRA/MCA.	-307	*EST	2550-21-2
neo-C ₅ H ₁₁ COCH ₃	(9.23±0.01)	(137)	(571)	-76	-319	*EST	590-50-1
C ₂ H ₅ C(CH ₃) ₂ COCH ₃	(9.02±0.01)	(133)	(555)	-75	-315	*EST	20669-04-9
(iso-C ₃ H ₇) ₂ CO	8.95±0.01	132	552	-74.4±0.3	-311.3±1.1	77PED/RYL	565-80-0
CH3	(9.8±0.2)	(140)	(588)	-86	-358	85WIB/WAS	590-67-0
C ₇ H ₁₄ O ₂ +							
H ₃ C CH ₃	≤9.63 IP from 84ASF/ZY	≤111 YK.	<u>≤</u> 463	-111	-466	77PED/RYL	696-79-7
OCH ₃	(8.6) IP is onset of photo	(113) oelectron ba	(472) and.	-86	-358	*EST	61011-51-6
OCH ₃	(8.7) IP is onset of photo	(115) celectron ba	(481) and.	-86	-358	*EST	29887-56-7

Table 1. Positive Ion Table - Continued

ON			ive ion Table				0.16
Neutral	Ionization potential eV	∆ _f H(kcal/mc	lon) ol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₁₄ O ₂ +							
H3C CH3	8.9	(139)	(583)	-66	-276	*EST	22431-90-9
Ž	IP is onset of pho		, ,	-00	-270	131	22431-90-9
H ₃ C CH ₃							
C ₇ H ₁₅ +				· · · · · · · · · · · · · · · · · · ·			
7 ⁿ 15 ' 1-C ₇ H ₁₅		(183)	(766)	4	15	*EST	
	From appearance D[C-H] = 100.5 k		measurements	(82MAC). ∆ _f F	I(Neutral) ba	sed on	
2-C ₇ H ₁₅	(6.95)	(162)	(678)	2	8	*EST	
	From appearance $\Delta_f H$ (Neutral) bas				$\Delta_{\mathbf{f}}H(\text{Ion})$ - $\Delta_{\mathbf{f}}$	∆ _f H(Neutral).	
(CH ₃) ₂ CCH ₂ CH ₂ CH ₂ CH	3						
	From appearance	147	615	841 OS/HOL)			40626-78-6
	Trom appearance	Potomiai		0.200,1102).			
$(CH_3)_2CCH_2CH(CH_3)_2$		148.4	620.9				35443-14-2
	From hydride tran Δ _f H(tert-C ₄ H ₉ +	nsfer equil	ibrium constan	determination	s relative to		
(C ₂ H ₅) ₃ C		150.6	630.1				28013-53-8
	From hydride trar \(\Delta_f H (\text{tert-C}_4 H_9 \) +			determination	s relative to		
(CH ₃) ₃ CC(CH ₃) ₂		144.5	604.5				24436-96-2
	From hydride trar A _f H(tert-C ₄ H ₉ +			determination	s relative to		
7H ₁₅ CIN +							
		(115)	(481)				
CH ₃ CH ₂ CI H ⁺	From proton affin PA = (227.6) kca		olidine, 2-chlor	omethyl-1-meth	nyl- (RN 4966	55-74-9).	
C ₇ H ₁₅ N ⁺							
(E)- $C_2H_5C(N(CH_3)_2) = C$	HCH ₃ (≤7.61)	(≤173)	(≤724)	-2	-10	*EST	32317-47-8
	IP from 81MUL/F		()	-			·· · ·
\bigcap		4	4450	46		*77	con c c
N CH3	(7.63) IP from 82ROZ/F	(157) IOU.	(658)	-19	- 78	*EST	671-36-3
Снз							

Table 1. Positive Ion Table - Continued

	Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₇ H ₁₅ N ⁺	(7.76) IP from 82ROZ/F	(160) HOU.	(669)	-19	-80	*EST	695-35-2				
CH ₃	(7.79) IP from 82ROZ/F	(161) HOU.	(672)	-19	-80	*EST	695-15-8				
H3C N CH3	(7.93) IP from 82ROZ/F	(155) IOU.	(648)	-28	-117	*EST	766-17-6				
CH ₃	(8.05) IP from 82ROZ/F	(160) HOU.	(670)	-26	-107	*EST	1193-12-0				
C ₇ H ₁₅ N ₂ ⁺	From proton affin PA = (231.8) kcal			o[2.2.2]octane ((RN 6238-14-8	3).					
(N-CH ₃) H+	From proton affin (84MAU/NEL). 1				ane (RN 6523-	-29-1).					
С ₇ H ₁₅ O ⁺ (i-С ₃ H ₇) ₂ СОН	From proton affin 857. kJ/mol.	87 ity of (i-C ₃ I	363 H ₇) ₂ CO (RN	565-80-0). PA	= 204.9 kcal/r	nol,					
C ₇ H ₁₆ ⁺ n-C ₇ H ₁₆	9.92±0.05 This value of IP fr determinations (70			-34.8±0.1	-187.5±0.5 -145.7±0.5	74SCO	142-82-5				

326 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₁₆ N ⁺ (CH ₃) ₂ NC(C ₂ H ₅) ₂		105	504				
	From proton affir PA = 236.4 kcal/i			H_5) = CHC H_3	(RN 78733-73-	0).	
C ₇ H ₁₆ N ₂ +							
NN(CH ₃) ₂	(6.83) IP from 86RUM.	(170) See also: 84	(710) NEL.	12	51	*EST	49840-60-0
NC2H5 NC2H5	(≤8.06) See also: 84NEL.	(≤198)	(≤828)	12	50	*EST	22825-58-7
CH ₃ N CH ₃ CH ₃ CH ₃	(7.2) IP is onset of phot	(196) coelectron be	(822) and (82WOR	30 /HAR).	127	*EST	33709-65-8
С 7H₁₆O ⁺ n-С ₇ H ₁₅ OH	(9.84±0.03) IP from 77ASH/B	(147) UR.	(614)	-80.2±0.4	-335.5±1.5	77PED/RYL	111-70-6
СН ₃ (СН ₂₎₄ СНОНСН ₃	(9.70±0.03) IP from 77ASH/B	(139) UR.	(582)	-85	-354	84WIB/WAS	543-49-7
CH ₃ (CH ₂) ₃ CHOHCH ₂ C	H ₃ 9.68±0.03 IP from 77ASH/B	139 UR.	580	-85	-354	84WIB/WAS	589-82-2
CH ₃ (CH ₂) ₂ CHOH(CH ₂)	2 ^{CH} 3 (9.61±0.03) IP from 77ASH/B	(137) UR.	(573)	-85	-354	84WIB/WAS	589-55-9
n-C ₅ H ₁₁ OC ₂ H ₅	(≤9.49) IP from 80BAC/M		(≤602)	-75	-314	*EST	17952-11-3
(i-C ₃ H ₇)O(t-C ₄ H ₉)	(≤9.20) IP from 79AUE/B cited vertical value	OW. Autho			-339 s lower than	*EST	17348-59-3

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number			
С ₇ H ₁₆ O ₂ + n-С ₇ H ₁₅ ООН	(9.48±0.03) IP from 77ASH/E	(150) BUR.	(626)	-69	-289	*EST	764-81-8			
n-С ₅ Н ₁₁ СН(СН ₃)ООН	(9.30±0.03) IP from 77ASH/B	(148) SUR.	(621)	66	-276	*EST	762-46-9			
C ₇ H ₁₇ N ⁺ (C ₂ H ₅) ₂ (n-C ₃ H ₇)N	(7.67) IP from 79AUE/E of tertiary amine i						4458-31-5			
C ₇ H ₁₇ O ⁺ (i-C ₃ H ₇)OH(t-C ₄ H ₉)	From proton affin (874.) kJ/mol.	(76) ity of (i-C ₃ I	(317) H ₇)O(t-C ₄ H ₉)) (RN 17348-59	-3). PA = (2	208.8) kcal/mol,				
С ₇ H ₁₇ O ₂ + СH ₃ OH(CH ₂) ₅ OCH ₃	From proton affin 928. kJ/mol.	40 ity of CH ₃ C	167 O(CH ₂)5OCH	3 (RN 111-89-7	'). PA = 221	8 kcal/mol,				
C ₇ H ₁₈ N ⁺ n-C ₇ H ₁₅ NH ₃	From proton affin 916. kJ/mol.	111 ity of n-C ₇ F	463 I ₁₅ NH ₂ (RN :	111-68-2). PA	= 219.0 kcal/	mol,				
(CH ₃) ₂ (neo-C ₅ H ₁₁)NH	From proton affin	108 ity of (CH ₃)	450 ₂ (neo-C ₅ H ₁₁)N (RN 10076-	31-0). PA =	229.9 kcal/mol,				
(C ₂ H ₅) ₂ (n-C ₃ H ₇)NH	From proton affini	(106) ity of (C ₂ H ₃	(445) 5) ₂ (n-C ₃ H ₇)N	I (RN 4458-31-5	5). PA ≈ (23	32.0) kcal/mol,				
C ₇ H ₁₈ N ₂ + (CH ₃) ₂ N(CH ₂) ₃ N(CH ₃) ₂	(7.6) IP is onset of photo	(168) oelectron sp	(704) ectrum (81LI		-29	*EST	110-95-2			
(C ₂ H ₅) ₂ NN(CH ₃)(C ₂ H ₅)	(8.02) Reported values of usually significantly geometry change a	y higher tha	n the adiabation	c value because	of the large		50599-43-4			

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$		$\Delta_{\rm f}H({ m N}$	eutral)	Neutral	CAS registry	
Neutral	eV	-	ol kJ/mol	-	l kJ/mol	reference	number
C ₇ H ₁₈ N ₂ + (n-C ₄ H ₉)(CH ₃)NN(CH ₃) ₂	(4.40)			_			
	(6.63) IP from charge tra See also: 80NEL/	_		3 nt determinat	12 ion (84MAU/NI	*EST EL).	52598-10-4
(t-C ₄ H ₉)(CH ₃)NN(CH ₃) ₂	44.00	4					
	(6.80) IP from charge tra	(159) ansfer equ	(667) uilibrium consta	3 nt determinati	11 ion (84MAU/NI	*EST EL).	60678-73-1
C ₇ H ₁₈ Si ⁺ (CH ₃) ₃ CSi(CH ₃) ₃							
(6113/366)(6113/3	(9.34±0.06)	(170)	(713)	-45	-188	72TRI/ALL	5037-65-0
C ₇ H ₁₈ Si ₂ + CH ₂ = CHSi(CH ₃) ₂ Si(CH ₃)							
	(≤8.56) IP from 81KHV/Z	(≤138) ZYK.	(≤577)	60	-249	*EST	1112-06-7
C ₇ H ₁₈ Sn ⁺		· · · · · ·					
$(C_2H_5)_3(CH_3)Sn$	(≤8.95)	(≤152)	(≤638)	-54±1	−226±4	80TEL/RAB	2097-60-1
(CH ₃) ₃ (tert-C ₄ H ₉)Sn	(8.0)	(168)	(705)	-16±1	-67±6	77PED/RYL	3531-47-3
	IP is onset of phot	toelectron	n band.				
C ₇ H ₁₉ NSi ⁺ (CH ₃) ₃ SiN(C ₂ H ₅) ₂							
	(7.68) IP from 83MOL/P	(97) PIK3.	(406)	-80±2	−335±8	80TEL/RAB	996-50-9
C ₇ H ₁₉ N ₂ +			· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
H ₃ N(CH ₂₎₇ NH ₂	From proton affin 996. kJ/mol.	100 ity of H ₂ I	419 N(CH ₂) ₇ NH ₂ (I	RN 646-19-5).	PA = 238. kcal	l/mol,	
(CH ₃) ₂ NH(CH ₂) ₃ N(CH ₃) ₂		116	484				
	From proton affin 1017. kJ/mol.			CH ₃) ₂ (RN 1	10-95-2). PA =	243. kcal/mol,	
(n-C ₄ H ₉)(CH ₃)NHN(CH ₃) ₂	}	120	590				
	From proton affini PA = 230.0 kcal/n			(CH ₃) ₂ (RN :	52598-10-4). (84	IMAU/NEL).	
(t-C ₄ H ₉ (CH ₃)NHN(CH ₃) ₂							
	From proton affin PA = 229.3 kcal/n			(CH ₃) ₂ (RN 6	0678-73-1). (841	MAU/NEL).	

Table 1. Positive Ion Table - Continued

			ve ion lable	- Conun			
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₇ H ₂₀ NSi ⁺ (CH ₃) ₃ Si(CH ₂) ₂ NH(CH ₃)	From proton affir PA = 231.8 kcal/			H ₃) ₂ (RN 2	3138-94-5). (84M.	AU/NEL).	
C ₈ C ₀₂ O ₈ + OC	(8.12±0.22)	(-96)	(-402)	-283±2	−1185±8	82PIL/SKI	10210-68-1
C8F ₁₂ Mo ₂ O ₈ + CF ₃ -C	8.07 3 IP is onset of pho	(–818) toelectron l	(-3421) pand (82BAN/PE	-1004 L).	-4200	*EST	36608-07-8
C ₈ F ₁₈ O ⁺ (n-C ₄ F ₉) ₂ O	12.68 IP from 83MOL/I	-658.5 PIK.	-2755.2	-950.9±1	-3978.6±3	77PED/RYL	308-48-5
C ₈ H ₂ + CH=CC=CC=CC≥CH	(9.09±0.02)	(416)	(1741)	207	864	*EST	6165-96-4
C8H3F5+ F CH=CH2	(9.18±0.02)	(35)	(145)	-177	-741	*EST	653-34-9
C ₈ H ₄ Cl ₂ OS ⁺	≤9.00 IP from 82BEN/D	(≤205) our.	(≤857)	-3	-11	*EST	30834-33-4
C ₈ H ₄ F ₆ ⁺ CF ₃ CF ₃	10.57 IP from 82CAB/C	(-61) OW.	(-255)	-305	-1275	*EST	402-31-3

330

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcai/mol		Neutral reference	CAS registry number					
C ₈ H ₄ N ₂ + CN CN	9.9 IP is onset of pho	(316) (1323) toelectron band.	88±0.5	368±2	80SAT/SAK	91-15-6					
CN	10.2 IP is onset of phor	(322) (1347) toelectron band.	87±0.5	363±2	80SAT/SAK	626-17-5					
NC CN	10.10	318 1331	85±0.5	357±2	80SAT/SAK	623-26-7					
C ₈ H ₄ O ₂ +	≤9.23	(≤237) (≤992)	24	101	*EST	6383-11-5					
C ₈ H ₄ O ₃ +	(10.0) IP is onset of pho	(142) (594) toelectron band.	−89±0.5	−371±2	77PED/RYL	85-44-9					
C ₈ H ₅ BrOS ⁺	≤9.10 IP from 82BEN/C	(≤225) (≤941) DUR.	15	63	*EST	57147-27-0					
Ør S‱	≤8.95 IP from 82BEN/D	(≤221) (≤927) DUR.	15	63	*EST	57147-26-9					

Table 1. Positive Ion Table - Continued

ION	Tanination addantial	A 77(7		A 77/NI-		Nautual	CAS
Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₅ BrO ₂ S +							
S=0	≤9.10 IP from 82BEN/I	(≤171) DUR.	(≤715)	-39	-163	*EST	5350-05-0
S=0	≤9.40 IP from 82BEN/I	(≤178) DUR.	(≤744)	39	-163	*EST	16957-97-4
C ₈ H ₅ Cl ⁺							
CICH	(8.6) IP is onset of pho	(264) otoelectron t	(1104) band.	65	274	*EST	873-73-4
C ₈ H ₅ ClOs +			<u></u>	1			
© S CI	≤9.10 IP from 82BEN/I	(≤212) OUR.	(≤888)	2	10	*EST	57147-28-1
OT &	≤8.95 IP from 82BEN/I	(≤209) OUR.	(≤874)	2	10	*EST	63724-95-8
C ₈ H ₅ ClO ₂ S +	, ,				 		
CI S CI	≤9.25 IP from 82BEN/I	(≤162) OUR.	(≤676)	-52	-216	*EST	10133-41-2
CI	≤9.45 IP from 82BEN/I	(≤166) DUR.	(≤696)	-52	-216	*EST	21211-29-0

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(Ion) ol kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry
C ₈ H ₅ F ₃ O +	(9.72) IP from 79MCL/1	(61) FRA.	(256)	-163	-682	*EST	434-45-7
C8H5MnO3 ⁺ OC. Mn CO	(7.6) IP is onset of pho	(61) toelectron	(257) band (81CAL/)	-114±2 HUB). See also	476±8 o: 86LIC/KEL.	77PED/RYL	12079-65-1
C ₈ H ₅ NO +	≤10.10 IP from 85GAL/C	(≤258) GER.	(≤1081)	25	107	*EST	105-07-7
C ₈ H ₅ NO ₂ +	(10.0) IP from 84TOB/I	(193) AJ.	(807)	-38	-158	*EST	619-65-8
C ₈ H ₆ + (E),(E)-HC≡CCH = CHC	EH = CHC≡CH (7.8) IP from 74KOP/S 8.81±0.04 See also: 80BOC/	276	(1161) 1156 COP/SCH, 81EL	98 73±0.5 .B/LIE.	409 306±2	*EST 85DAV/ALL	53477-04-6 536-74-3
	(≤7.5) IP is onset of pho	(≤291) toelectron	(≤1218) band.	118	494	85DEW/MER	4026-23-7
C ₈ H ₆ Br ₂ ⁺	(9.0) IP is onset of pho	(358) toelectron	(1496) band (85HON/	150 HEI).	628	*EST	59346-70-2

Table 1. Positive Ion Table - Continued

			- Ton Table				
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₆ Cl ⁺							
CI C= CH ₂	From proton affin PA = 196.1 kcal/n			766-83-6). (8	35MAR/MOD).		
CI C=CH ₂	From proton affin PA = 199.4 kcal/n			873-73-4). (8	85MAR/MOD).		
C ₈ H ₆ CiN ⁺							
CI CH2-CE N	(9.48±0.05)	(256)	(1071)	37	156	*EST	
CI CH2-CEN	(9.43±0.05)	(255)	(1066)	37	156	*EST	
C ₈ H ₆ Cl ₂ +							· · · · · · · · · · · · · · · · · · ·
CI	(9.15) IP is onset of photo	(337) pelectron ba	(1411) and (85HON/HI	126 3I).	528	*EST	
С ₈ н ₆ F ⁺				····			
F C=CH ₂	From proton affini PA = 195.4 kcal/m	196 ty of 3-FC ₆ ol, 818. kJ/i	819 H ₄ C≖CH (RN 2 nol.	561-17-3). (8	85MAR/MOD).		
F C=CH ₂	From proton affinit PA = 200.8 kcal/m			66-98-3). (85	MAR/MOD).		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number					
С ₈ H ₆ F ₃ О ⁺ снон	From proton affir 799. kJ/mol.	2 10 nity of 4-CF ₃ C ₆ H ₄ CF	IO (RN 455-19-6).	PA = 191.9 k	ccal/mol,						
C ₈ H ₆ I ₂ +	(8.7) IP is onset of pho	(379) (1587) toelectron band (85H	179 ON/HEI).	748	*EST						
C ₈ H ₆ NO ⁺											
(NC CHO) H	+ From proton affir 782. kJ/mol.	204 855 uity of 4-(CN)C ₆ H ₄ C	HO (RN 105-07-7).	PA = 187.0	kcal/mol,						
C ₈ H ₆ N ₂ +	(8.2) IP is onset of pho	(270) (1129) toelectron band.	81±2	338±10	*EST	253-66-7					
	(8.8) IP is onset of pho	(267) (1116) toelectron band.	64	267	*EST	254-79-5					
	(9.0) IP is onset of photon	(271) (1135) toelectron band.	64	267	*EST	253-72-5					
	(8.99) IP is onset of phot	(271) (1134) toelectron band.	64	267	*EST	253-69-0					
	(8.8)	(267) (1116)	64	267	*EST	254-60-4					

Table 1.	Positive	Ion Table	_	Continued
i abie i.	Positive	ion rabie	-	Conuni

ION	Ionization potential	∆ _f H(Io		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₆ N ₂ +	(8.4) IP is onset of pho	(274) toelectron b	(1148) aand.	81	338	*EST	253-52-1
	(≤8.8) IP is onset of pho	(267) toelectron b	(1116) pand.	64	267	*EST	253-50-9
	(8.8) IP is onset of pho	(267) toelectron b	(1116) vand.	64	267	*EST	253-45-2
	9.00±0.02	(269)	(1125)	61	257	*EST	253-82-7
	9.01±0.02	271	1131	63±1	262±4	81STE/BAR	91-19-0
C ₈ H ₆ N ₂ O ₂ +							
0 ₂ N CH ₂ -CEN	(10.11±0.04)	(274)	(1146)	41±1	171±4	*EST	555-21-5
C ₈ H ₆ N ₂ Se ⁺							
C-N HC _{Se} N	(8.1) IP is onset of photo	(295) toelectron b	(1234) and (80BOC/.	108.1±2 AYG).	452.3±8	73ARS/SHA	25660-64-4
C ₈ H ₆ N ₄ +							
	(8.3) IP is onset of photon	(293) toelectron b	(1227) and (82BAR/	102 CAU).	426	*EST	34671-83-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C8H6O2S+	(9.1) IP is onset of pho	(166) toelectron b	(694) and (82BEN/DU	44 (R).	-184	*EST	825-44-5
С ₈ Н ₆ О ₄ +	(9.98±0.2)	(64)	(267)	−166±0.5	-696±2	77PED/RYL	121-91-5
ноос Соон	(9.86±0.2)	(55)	(233)	-172±0.7	-718±3	77PED/RYL	100-21-0
C ₈ H ₆ S +	8.13±0.015	227	950	40±0.2	166±1	79SAB	95-15-8
₩ S	(7.75)	(228)	(954)	49	206	*EST	270-82-6
С ₈ H ₆ S ₂ +	(7.99)	(243)	(1017)	59	246	*EST	3172-56-3
C ₈ H ₇ +							
Č=CH₂	From proton affin PA = 200.2 kcal/n			4-3). (85M <i>A</i>	AR/MOD).		

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry				
C8H6N4+	(9.0) IP is onset of pho	(309) toelectron	(1294) band (82BAR/CA	102 U).	426	*EST	2426-94-0				
$\sim \sim $	(9.0) IP is onset of pho	(306) toelectron l	(1278) band (82BAR/CA	98 U).	410	*EST	28648-89-7				
	(9.0) IP is onset of phot	(306) toelectron t	(1278) band (82BAR/CA	98 U).	410	*EST	56598-46-0				
C8H6O+	(≤8.17)	(≤194)	(≤813)	6	25	80DEM/WUL	3496-32-0				
O-CECH	(8.7)	(266)	(1113)	65	274	*EST	4279-76-9				
	8.37±0.015	199	833	6±2	26±10	77PED/RYL	271-89-6				
С ₈ Н ₆ О ₂ +	(10.13±0.01)	(196)	(820)	−37.6±2	−157±8	*EST	623-27-8				
	(9.64) IP is onset of photo	(222) pelectron b		-1 ().	-3	*EST	77627-49-7				

Table 1. Positive Ion Table - Continued

territor and relative and reserve		1. I OSILI	e ion table ·	Contin	<u></u>	~	
ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₈ H ₇ Br ⁺	(8.76) IP is onset of pho	(351) toelectron b	(1470) pand (85HON/HE	149 EI, 84ABE/I	625 DEL).	*EST	59346-69-9
C8H7ClHg+	8.3 IP is onset of pho	(232) toelectron b	(971) pand (81BAI/CHI	41).	170	*EST	36525-03-8
C8H7CIO+	(9.51±0.1)	(191)	(801)	-28±2	-117±8	*EST	99-02-5
СІСНЗ	(8.9) IP is onset of pho	(177) toelectron b	(742) pand. See also: 85	−28±2 GAL/GER	–117±8 , 82PFI/GER, 77	*EST ROS/DRA.	99-91-2
С8H7FO+	(9.76±0.1)	(158)	(662)	−67±2	280±8	*EST	455-36-7
F C CH3	(9.57±0.2)	(154)	(643)	−67±2	-280±8	*EST	403-42-9
C ₈ H ₇ I ⁺	(8.6) IP is onset of phot	(362) oelectron b	(1515) and (84ABE/DE	164 L).	685	*EST	74725-77-2

Table 1. Positive Ion Table - Continued

							······································
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₇ N ⁺	(9.34)	(260)	(1087)	44.5	186	*EST	140-29-4
СИ	9.38	(259)	(1083)	43	178	*EST	529-19-1
CH3	9.34	(259)	(1084)	44	183	*EST	620-22-4
CH ₃	9.32	(258)	(1081)	44	182	•EST	104-85-8
	7.761±0.001 IP from 85HAG/I	216 VA. See als	906 o: 79COR.	38±1	157±5	77PED/RYL	120-72-9
	7.26	243	1015	75.2	314.6	79COR	274-40-8
CN	(≤9.26) IP from 83HOU/R		(≤1265)	89	372	*EST	39863-20-2
C ₈ H ₇ NO ⁺							
H3CO-CN	(8.6) IP is onset of photo	(213) oelectron ba	(892) and (81MOD/DIS	15 S).	62	*EST	874-90-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcai/mol		kcal/mol		reference	number
C ₈ H ₇ NO ⁺							
()\(\frac{\bar{n}}{\sqrt{n}}\)	(6.95) IP is onset of pho	(182) otoelectron b	(760) and (81GAL/	21 KLA).	89	*EST	63122-43-0
C ₈ H ₇ NO ₃ +						14 HW-	
02N-C-CH3	≤9.98 3 IP from 85GAL/	(≤206) GER.	(≤861)	-24	-102	*EST	100-19-6
C ₈ H ₇ NS ⁺	<u> </u>	-					
	(7.1) IP is onset of pho	(221) otoelectron b	(924) and (81GAL/	57 KLA).	239	*EST	52707-46-7
C ₈ H ₇ N ₂ +							
$\left(\begin{array}{c} OON \\ OON \end{array}\right)$ H	+ From proton affi 934. kJ/mol.	(223) nity of cinno	(934) line (RN 253-6	56-7). PA = 22	23.2 kcal/mol,		
	From proton affi 897. kJ/mol.	(214) nity of quino	(895) xaline (RN 91	-19-0). PA = :	214.4 kcal/mol,		
C ₈ H ₈ +							
	8.01±0.04 See also: 78FU/D	256 DUN.	1070	71.1±0.3	297.6±1.3	77PED/RYL	629-20-9
	(8.5) IP is onset of pho	(287) otoelectron b	(1201) and (85MEI/k	91 (ON).	381	85KOL/MEI	
	(8.2) IP is onset of pho	(281) otoelectron b	(1176) and (85MEI/F	92 (ON).	385	85KOL/MEI	68344-46-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₈ H ₈ + = =	(8.9)	(321)	(1346)	116	487	78LEU/WIR	49852-40-6
H ₂ C — CH ₂	(7.5) IP is onset of pho	(221) toelectron b	(927) pand. See also: 82	48±4 DEW.	203±17	81POL/RAI	502-86-3
CH=CH ₂	8.43±0.06 IP from 78FU/DU	230 JN, 81KIM/	961 KAT.	35.3±0.2	147.7±0.7	77PED/RYL	100-42-5
	(≤8.66±0.03)	(≤248)	(≤1037)	48±1	201±4	81ROT/SCH	694-87-1
	8.23 See also: 82HAS/	263 NEU, 83GL	1100 Æ/BOH.	73	306	76ALL	500-24-3
CH ₂	(8.5) IP is onset of photon	(274) toelectron b	(1145) and. See also: 85N	78 MAR/MAY	325	*EST	37846-63-2
	(8.5) Values for this IP 8.56 eV (83LIF/E.			149±1 8.46 (82LEV	622±4 //LIA) and	77PED/RYL	277-10-1
	(8.18)	(285)	(1189)	96	400	81GOD/SCH	20656-23-9

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol		Veutral) ol kJ/mol	Neutral reference	CAS registry number				
C ₈ H ₈ Br ⁺											
Br CH-CH ₃	From proton affin PA = 197.4 kcal/n			H ₂ (RN 2039-	86-3) (84HAR,	/HOU).					
Вг СН-СН₃	From proton affin PA = 201.3 kcat/r			H ₂ (RN 2039-	82-9) (84HAR,	/HOU).					
C ₈ H ₈ CIN ⁺		·····									
N CI	≤8.3 IP from 82CRI/LI	(≤255) C.	(≤1067)	64	266	*EST	28192-05-4				
C ₈ H ₈ FN ⁺	***************************************			· · · · · · · · · · · · · · · · · · ·		and the second s					
C S I S I N	(≤8.2) IP from 82CRI/LI	(≤213) C.	(≤890)	24	99	*EST	698-53-3				
C ₈ H ₈ N ₂ O ₂ +											
DN NO2	(≤8.9) IP from 82CRI/LI	(≤273) C.	(≤1142)	68	283	*EST	30855-79-9				
C ₈ H ₈ N ₄ +				.	<u> </u>						
N CH3	(≤8.9) IP from 84GLE/SI	(≤275) PA2.	(≤1151)	70	292	*EST	6499-39-4				
C ₈ H ₈ O +											
СН2СНО	(8.80) See also: 81DAL/I	(190) NIB.	(796)	-13	-53	*EST	122-78-1				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₈ O +							-
н ₃ с-Сно	9.33±0.05 See also: 85GAL/	(197) GER.	(825)	-18	-75	*EST	104-87-0
© C-CH3	9.29±0.03 See also: 81DAL/	194 NIB, 79MC	810 L/TRA, 85G		–86.6±1.5 N/FRA, 82PI	77PED/RYL TI/GER.	98-86-2
OH C≈CH₂	Δ _f H(Ion) from ap	(175) pearance po	(731) Otential deter	mination (81D <i>a</i>	AL/NIB).		4383-15-7
сн=снон	(8.71±0.1) IP from 81DAL/N	(194) IB.	(812)	-7	-28	*EST	4365-04-2
	(7.65) IP is onset of photo	(163) pelectron ba	(683) and (81BAK/	−13 ARM). See also	-55 : 82LEV/LIA	*EST 	496-16-2
C8H8O2+		· · · ·			· · · · · · · · · · · · · · · · · · ·		
H0 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(8.67±0.05)	(137)	(573)	−63±2	-264±8	*EST	
H0 CH3	(8.70±0.03)	(138)	(575)	−63±2	-264±8	*EST	
СН ₂ СООН	(8.26) IP is onset of photo		(478) nd (83KLA/I	−76 (OV). See also:	–319 81MEE/WA	*EST H.	103-82-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	on)	$\Delta_{\mathbf{f}}H(\text{Neutral})$		Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
С ₈ H ₈ O ₂ + СН ₃ ССН ₃	(9.1) IP from 81MEE/V	(133) VAH.	(558)	−76.5±0.2	-320±1	76COL/JIM	118-90-1
СНЗ	(9.43±0.2) See also: 81MEE/	(139) WAH.	(581)	-79±0.2	-329±1	76COL/JIM	99-04-7
н ₃ с соон	(9.23±0.2) See also: 81MEE/	(134) WAH.	(558)	-79±0.2	-332±1	76COL/JIM	99-94-5
O c CH3	(8.6±0.05)	(131)	(550)	-66.8±0.3	~279.7±1.1	77PED/RYL	122-79-2
C000CH3	9.32±0.03 IP from 79MCL/I	146 RA. See als	611 60: 81MEE/WAH	−69±2 ., 82CAB/C	−288±7 OW.	77PED/RYL	93-58-3
н ₃ со Сно	(8.43) See also: 85GAL/0	(145) GER.	(610)	-49±1	203±5	77PED/RYL	123-11-5
CH ₃ CH ₃	9.58	(176)	(737)	-45	-187	*EST	137-18-8
	(9.3) IP is onset of phot	(218) oelectron b	(910) and 85GLE/JAH	3	13	*EST	77627-56-6

Table 1. Positive Ion Table - Continued

ION	Tarinaia	A 17/1-		A XXXI	10	N 1	CAS
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₈ O ₂ +	(8.1) IP is onset of pho	(160) toelectron b	(669) and.	-27	-113	*EST	60526-48-9
C ₈ H ₈ O ₂ Si ⁺	(8.2) IP is onset of photon	(178) toelectron b	(743) and (83ZYK/ER	-11 C).	-48	*EST	87027-12-1
С ₈ H ₈ O ₃ + соон осн ₃	(9.06±0.2)	(102)	(428)	-107±0.2	-446±1	78COL/JIM	586-38-9
н ₃ со соон	(9.04±0.2)	(100)	(420)	-108±0.2	-452±1	78COL/JIM	100-09-4
H ₃ C H ₃ C	(8.4) IP is onset of phot	(80) coelectron b	(334) and (81BEC/HO	-114 F).	-476	*EST	81640-32-6
C ₈ H ₈ S ₂ ⁺	(≤7.91) IP from 82BRE/S	(≤219) CH.	(≤916)	37	153	*EST	6247-55-8
C ₈ H ₈ S ₄ ⁺	(7.5) IP is onset of phot	(246) roelectron b	(1032) and (83BOC/RO	74 T).	308	*EST	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С8Н9+	(6.9) Δ _f H(Ion) from pr and from hydride IP is Δ _f H(Ion) - Δ	transfer equ	uilibrium cons	_			2348-51-8
CH ₂ ·	7.07 IP from 86HAY/F Δ _f H(2-CH ₃ C ₆ H ₄	-				86HAY/KRU nstants (85SHA/SHA	2348-48-3 A).
H ₃ C CH ₂	7.12 IP from 86HAY/k Δ _f H(3-CH ₃ C ₆ H ₄	-				86HAY/KRU nstants (85SHA/SHA	2348-47-2 A);
H3C CH2	6.96 IP from 86HAY/F Δ _f H(4-CH ₃ C ₆ H ₄					86HAY/KRU nstants (85SHA/SHA	2348-52-9 A);
CgHgCl+ CH2Cl	(8.82±0.03)	(200)	(835)	-4	-16	*EST	620-19-9
H ₃ C CH ₂	CI (8.79±0.03)	(199)	(832)	-4	-16	*EST	104-82-5
CgHgN ⁺ CgHgN ⁺ Ch3	8.77	(246)	(1031)	44±2	185±10	*EST	622-29-7
	(8.0) IP from 82ROZ/F	(256) IOU2, 82CI	(1070) RI/LIC.	71	298	*EST	696-18-4

Table 1. Positive Ion Table - Continued

	Table 1. Fositive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Id kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C8H9N+	(7.15±0.02)	(212)	(888)	47	198	*EST	496-15-1				
	≤9.15 IP from 79AUE/I of pyridines: 234 I					*EST nities					
	≤9.19 IP from (79AUE/ affinities of pyridi					*EST eV.					
C ₈ H ₉ NO ⁺											
N <ch3< td=""><td>(7.28)</td><td>(212)</td><td>(888)</td><td>44</td><td>186</td><td>*EST</td><td>65194-06-1</td></ch3<>	(7.28)	(212)	(888)	44	186	*EST	65194-06-1				
O CH3	7.89	(207)	(866)	25	105	*EST	3376-23-6				
N-C-CH3	(8.30) Values reported fo	(161) or this ioniza	(672) ation potential rai	−31±0.2 nge from 8.1	−129±1 .8 eV to 8.60 eV.	77PED/RYL	103-84-4				
H ₂ N	(7.8±0.1) See also: 85GAL/	(159) GER.	(666)	-21	-87	•EST	99-92-3				
C ₈ H ₉ NOS ⁺	(8.2) IP is onset of phot	(166) oelectron ba	(695) and (82LOU/VA)		-96	*EST					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₈ H ₉ NO ₂ +	(7.3) IP is onset of phot	(99) coelectron b	(412) and (81MEE/WA	-70 AH).	-292	*EST	10541-83-0
CH ₃ HN OCH ₃ NH ₂	(7.7) IP is onset of phot	(109) coelectron b	(455) and (81MEE/W <i>A</i>	-69 AH).	-288	*EST	619-45-4
нзс Снз	9.17±0.015	(221)	(925)	10	40	*EST	81-20-9
H ₃ C NO ₂	(9.1) IP is onset of phot	(215) coelectron b	(898) and.	5	20	*EST	89-87-2
C2H5 NO ₂	(9.39) IP from 82BAL/C	(219) AR.	(917)	3±2	11±7	77PED/RYL	612-22-6
C2H5 NO2	(9.64) IP from 82BAL/C	(224) AR.	(937)	2	7	*EST	7369-50-8
0 ₂ N	(9.71) IP from 82BAL/C	(225) AR.	(943)	2±2	7±7	77PED/RYL	100-12-9

852

PA = (221) kcal/mol, (925) kJ/mol.

C₈H₉N₂+

204 From proton affinity of 1-methyl-1H-indazole (RN 13436-48-1) (84FLA/MAQ).

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 1. Positive Ion Table - Con	ntinue	ed	ı
-----------------------------------	--------	----	---

ION	Ionization potential	Δ _f <i>H</i> (I	on)	Δ _f H(Ne	eutral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₉ N ₂ +							
N-CH ₃	From proton affi PA = (224) kcal/			oie (RN 4838-0	0-0) (84FL.A	/MAQ).	
C ₈ H ₉ O +							
н ₃ с снон	From proton affii 852. kJ/mol.	144 nity of 4-(CF	603 1 ₃)C ₆ H ₄ CH0	O (RN 104-87-0). PA = 203	.7 kcal/mol,	
CH ³	From proton affir	140 nity of C ₆ H ₅	584 COCH ₃ (RN	98-86-2). PA :	= 205.4 kcai/	mol, 859. kJ/mol.	
C ₈ H ₉ O ₂ +			·····	**************************************		***************************************	
н _з со снон	From proton affin 893. kJ/mol.	104 uity of 4-(CH	434 1 ₃ 0)C ₆ H ₄ CH	IO (RN 123-11-	5). PA = 21	3.5 kcal/mol,	
C OCH3	From proton affin 852. kJ/mol.	94 ity of C ₆ H ₅	395 СООСН _З (R	N 93-58-3). PA	= 203.7 kca	l/mol,	
C ₈ H ₁₀ +							
(E)-CH ₂ = CHCH = CHCF	H = CHCH = CH ₂ 7.79±0.02 IP from 84HOL, 7	(235) 7ROS/DRA	(981) 	55	229	*EST	3725-31-3
$CH_2 = C(CH_3)C = CC(CH_3)$	$= CH_2$ (8.95±0.1)	(324)	(1357)	118	494	77LEB/RYA	3725-05-1
	(7.9)	(226)	(945)	44	183	69BEN/CRU	1871-52-9
	(9.5)	(242)	(4.04M)				
	(8.5)	(243)	(1017)	47	197	*EST	3725-30-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	on)	$\Delta_{ m f} H$ (Ne	utral)	Neutral	CAS registry				
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number				
C ₈ H ₁₀ +				·							
	(8 00)	(276)	(1150)	71	200	201 ET 1 (111D)	(0177.00.4				
	(8.90)	(276)	(1158)	71	299	78LEU/WIR	68177-00-4				
011											
CH3	9.54.0.01	201.7	942.0	42.01	10.0.05	770FD (0.VI	05.47.7				
<u></u>	8.56±0.01 Value derived fro	201.7 om charge tr	843.9 ansfer equilibriu	4.3±0.1 m constant of	18.0±0.5 leterminations	77PED/RYL (78LIA/AUS)	95-47-6				
		Value derived from charge transfer equilibrium constant determinations (78LIA/AUS) is in agreement. See: 84HOW/GON.									
/ СН ₃											
	8.56±0.01	202	843	41.01	172.06	77DED /DVI	100 20 2				
СНЗ	Value derived fro			4.1±0.1 m constant of	17.3±0.6 leterminations	77PED/RYL (78LIA/AUS)	108-38-3				
- 3	is in agreement.	-	-			,					
	0.44.0.01	100	922	40.00	100.00	TTO COLUMN	107 10 0				
н ₃ с———сн ₃	8.44±0.01 IP at 298 K from	199 charge trans	832 fer equilibrium	4.3±0.2 constant dete	18.0±0.9 erminations (7	77PED/RYL 8LIA/AUS)	106-42-3				
	is 8.52 eV. See: 8-					·					
C-H-	8.77±0.01	209	875	7.0±0.1	29.2±0.5	770ED/DVI	100 41 4				
2/5	Value derived fro					77PED/RYL (78LIA/AUS)	100-41-4				
	is in agreement.	See also: 83I	KLA/KOV, 82SI	EL/HEL, 841	IOW/GON.						
∠CH ₃											
C CH-	(-0.00)	(.017)	4.000	00.1.1.0		##DFIF (0.4.4)	2477 04 0				
~ cm3	(≤8.03)	(≤217)	(≤909)	32.1±1.3	134.4±5.4	77PED/RYL	2175-91-9				
√CH3	(0.4)	(220)	(1040)	107	500	*******					
нзс	(8.4) IP is onset of pho	(320) toelectron b	(1340) and (82SPA/KC	127 (R).	530	*EST					
-	•		·	,							
	(7.6)	(224)	(039)	40	205	*ECT	2725 20 0				
	(7.6) IP is onset of pho	(224) toelectron b	(938) and (81GLE/GI	49 JB2).	205	*EST	3725-28-8				
	•		•	-							

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₈ H ₁₀ +							
	(8.5) IP is onset of pho	(230) toelectron b	(964) pand. See also: 82	34 HAS/NEU.	144	76ALL	657-23-8
H ₃ C	(8.0) IP is onset of phot	(273) toelectron b	(1141) and (84GLE/HA	88 J).	369	*EST	63001-13-8
	(8.4) IP is onset of phot	(242) coelectron b	(1012) and.	48.1	201.3	81GOD/SCH	765-72-0
	(≤7.89)	(≤242)	(≤1012)	60	251	*EST	53143-64-9
	(8.20)	(246)	(1029)	57	238	*EST	15439-15-3
C ₈ H ₁₀ Br ⁺		···					
CH3 Br H	From proton affini (832) kJ/mol.	178 ty of 1,3,2-0	743 C ₆ H ₃ (CH ₃) ₂ Br (I	RN 576-22-7). PA = (199) k	cal/mol,	
C ₈ H ₁₀ N+					<u> </u>		
€ T	From proton affinit (945.) kJ/mol.	166 ty of 2,3-cyc	695 lopentenopyridin	e. PA = (2	25.8) kcal/mol,		
HODO	From proton affinit (949.) kJ/mol.	166 by of 3,4-cyc	696 Iopentenopyridin	e. PA = (2	26.8) kcal/mol,		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	∆ _f H(l kcal/mol	ion) l kJ/moi	Δ _f H(Ne kcal/moi		Neutral reference	CAS registry number			
$\left(\begin{array}{c} C_8H_{10}N^+ \\ \end{array}\right)H^+$	From proton affir PA = 226.7 kcal/i			RN 496-15-1) (i	85BOL/HOU).					
C ₈ H ₁₀ NO ₂ + CH ₃ NO ₂	From proton affir PA = 199.8 kcal/i	153 nity of 1,3,4 mol, 836. k.	641 -C ₆ H ₃ (CH ₃) ₂ N J/mol.	10 ₂ (RN 89-87	7-2) (84ROL/HC	DU).				
C ₈ H ₁₀ N ₂ O ₂ +	(7.6±0.1)	(191)	(801)	16.1±0.4	67.3±1.8	84FUR/MUR	100-23-2			
C8H10O+	8.23 IP from 83RUS/F	(146) RE.	(611)	-44	-183	*EST	42104-03-0			
ОН СН ₃ СН ₃	(8.26) IP from 83RUS/F	(153) RE.	(640)	-37.6±0.3	-157.2±1.4	77PED/RYL	526-75-0			
CH ₃	(8.0) IP is onset of phot	(146) coelectron l	(609) pand.	-38.9±0.2	-162.9±0.9	77PED/RYL	105-67-9			
H ₃ C CH ₃	8.05±0.02	147	615	−38.7±0.2	-161.8±1.0	77PED/RYL	576-26-1			
H ₃ C — OH	(8.09) IP from 83RUS/FI	(149) RE.	(624)	−37.4±0.3	-156.6±1.1	77PED/RYL	95-65-8			

Table 1. Positive Ion Table - Continued

							
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₀ O +							
но С2Н5	(7.84) IP from 83RUS/F	(146) RE.	(612)	-34.4±0.2	-144.1±1.0	77PED/RYL	123-07-9
CH ₂ 0CH ₃	8.85±0.03	186	780	-18	-74	73BIL/CHO	538-86-3
0-CH ₃	7.90	(157)	(657)	-25	-105	*EST	578-58-5
CH ₃	(8.0) IP is onset of phot	(160) oelectron b	(668) and.	-25±1	~104±5	77PED/RYL	100-84-5
H3C OCH3	7.9 IP is onset of phot	(158) oelectron b	(662) and.	-24	-100	*EST	104-93-8
OC ₂ H ₅	8.13±0.02	163	683	-24.3±0.1	−101.7±0.5	77PED/RYL	103-73-1
OCH3	(≤8.05) IP from 83HOU/F		(≤865)	21	88	*EST	74437-38-0
C ₈ H ₁₀ OS + OCH ₃ SCH ₃	(≤8.05)	(≤172)	(≤720)	-14	-57	*EST	2388-73-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry number
C ₈ H ₁₀ OS +	≤7.80	(≤168)	(≤703)	-12	-50	*EST	1879-16-9
S-c ₂ H ₅	(≤8.75) IP from 81MOH/	(≤193) JIA.	(≤809)	-8	-35	*EST	4170-80-3
CH3	(≤8.70) IP from 81MOH/	(≤193) JIA.	(≤808)	-7.6	-31.8	*EST	934-72-5
С ₈ H ₁₀ O ₂ + осн ₃ осн ₃	(7.8) IP is onset of pho	(127) toelectron t	(530) pand.	~53±0.7	-223±3	77PED/RYL	91-16-7
осн3	(7.8) IP is onset of pho	(122) toelectron t	(511) pand.	-58	-242	*EST	151-10-0
нзсо оснз	7.53 IP from 85OIK/A	(118) BE, 82LEV	(493) //LIA.	-56	-234	*EST	150-78-7
	(8.8) IP is onset of pho	(173) toelectron t	(724) pand.	-30	-125	*EST	15940-88-2
	(9.1) IP is onset of pho	(154) toelectron b	(645) pand (85GLE/JA	–56 H).	-233	*EST	54338-82-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₈ H ₁₀ O ₂ + 0	(≤9.33) IP is onset of pho	(≤138) toelectron	(≤576) band.	-77	-324	*EST	
	(8.7) IP is onset of pho	(127) toelectron ((532) band.	-73	-307	*EST	74896-14-3
н3с	(9.14) IP is onset of pho	(139) toelectron t	(582) pand (81BEC/H0	-72 OF).	-300	*EST	29978-55-0
C ₈ H ₁₀ O ₂ S +	(9.4) IP from 81MOH/.	(150) JIA.	(628)	-67	-279	*EST	599-70-2
С ₈ H ₁₀ O ₃ S +	(9.5) IP is onset of photon	(160) toelectron b	(668) pand (84AIT/GO	60 PS).	-249	*EST	
C ₈ H ₁₀ S ⁺	7.88±0.02	200	837	18.4±0.6	77.0±2.6	77PED/RYL	622-38-8
CH ₂ SCH ₃	(8.42)	(213)	(892)	19.0±0.7	79.5±2.9	77PED/RYL	766-92-7
H ₃ C SCH ₃	(≤8.00)	(≤200)	(≤838)	16	66	*EST	4886-77-5

Table 1. Positive Ion Table - Continued

		I. Positi	ve Ion Table	- Contint	iea		· · · · · · · · · · · · · · · · · · ·
ION Neutral	Ionization potential eV	∆ _f H(l kcal/mol	lon) kJ/mol	Δ _f H(Net		Neutral reference	CAS registry number
C ₈ H ₁₀ S +					,		
H ₃ C SCH ₃	7.5 IP is onset of photon	(189) toelectron	(790) band.	16	66	*EST	623-13-2
C ₈ H ₁₀ S ₂ +				<u>.</u>	· ·		
SCH ₃	7.7 IP is onset of phot	(206) toelectron	(864) band (81TRA/I	29 RED, 82LEV/L	121 JA).	*EST	2388-68-3
SCH ₃	(≤8.0)	(≤211)	(≤885)	27	113	*EST	2388-69-4
H ₃ CS SCH ₃	(7.3) IP is onset of phot	(195)	(817) band.	27	113	*EST	699-20-7
C ₈ H ₁₀ Se +							
Se ^C 2H5	(7.6) IP is onset of phot	(207) coelectron	(865) band (81BAK/A	31 ARM).	132	*EST	17774-38-8
SeCH ₃	(7.5) IP is onset of phot	(200) oelectron	(837) band (81BAK/2	27 ARM).	113	*EST	1528-88-7
C ₈ H ₁₁ +							
CH3.	From proton affin	177 ity of 1,2-C	739 C ₆ H ₄ (CH ₃) ₂ (F	N 95-47-6). P.A	A = 193.3 kca	al/mol, 809. kJ/mol	
CH ₃ H ₂ CH ₃	From proton affin 820. kJ/mol.	174 ity of 1,3-0	727 C ₆ H ₄ (CH ₃) ₂ (F	N 108-38-3). P	A = 195.9 kg	cal/moi,	

Table 1. Positive Ion Table - Continued

							
ION Neutral	Ionization potential eV	Δ _f H(Ic kcal/mol		∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₈ H ₁₁ +		· · · · · · · · · · · · · · · · · · ·					
нзс-СНз	From proton affin 803. kJ/mol.	178 nity of 1,4-C ₍	745 ₅ H ₄ (CH ₃) ₂ (RN 106-42-3).	PA = 192.0 k	cal/mol,	
H ₂ C ₂ H ₅	From proton affin 802. kJ/mol.	181 hity of C ₆ H ₅	757 C ₂ H ₅ (RN 10	00-41-4). PA =	· 191.6 kcal/m	ol,	
C ₈ H ₁₁ BrO +						······································	······································
H ₃ C Br	(≤9.35) IP from 82PFI/GE	(≤180) 3R.	(≤755)	-35	-147	*EST	13271-49-3
C ₈ H ₁₁ ClO ⁺		·					
H ₃ C A	(9.35) IP from 82PFI/GE	(170) ER.	(713)	-45	-189	*EST	17530-69-7
C ₈ H ₁₁ ClSi ⁺							
CH3	(8.93) IP from 84VES/H.	(156) AR.	(652)	-50	-210	*EST	768-33-2
C ₈ H ₁₁ N ⁺		<u>-</u>					
NH ₂	(8.5) IP is onset of photo	(212) oelectron ba	(885) and.	16	65	*EST	64-04-0
HNC ₂ H ₅	(≤7.67) IP from 82ROZ/H		(≤796)	13±1	56±6	77PED/RYL	103-69-5
(CH3)2	7.12±0.02	188	788	24±0.7	101±3	82FUR/SAK	121-69-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(I		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₁₁ N ⁺ NHCH ₃ CH ₃	(7.27)	(182)	(759)	14	58	*EST	611-21-2
NHCH ₃	(7.26)	(180)	(753)	13	53	*EST	696-44-6
CH ₃	(7.13)	(177)	(741)	13	53	*EST	623-08-5
H ₃ C NH ₂	≤7.77±0.05	(≤186)	(≤777)	6	27	*EST	87-59-2
H ₃ C NH ₂	(≤7.65±0.05)	(≤182)	(≤761)	5	23	*EST	95-68-1
H ₃ C CH ₃	7.2 IP is onset of pho	(172) toelectron b	(718) and.	5	23	*EST	95-78-3
H ₃ C CH ₃	7.33±0.05	(175)	(734)	6±0.2	27±1	*EST	87-62-7
H ₃ C NH ₂	(≤7.68±0.05)	(≤183)	(≤764)	5	23	*EST	95-64-7

Table 1. Positive Ion Table - Cont	Table 1.	Positive	Ion Table	-	Continued
------------------------------------	----------	-----------------	-----------	---	-----------

				Contin			
ION Neutral	Ionization potential	-	ion) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₈ H ₁₁ N ⁺ NH ₂ CH ₃	7.2 IP is onset of pho	(171) otoelectron	(716) band.	5	21	*EST	108-69-0
H ₃ C CH ₃	(≤8.9±0.1)	(≤210)	(≤879)	5	20	*EST	108-75-8
C ₈ H ₁₁ N ₂ O ₂ +				·			
(CH3 NO2) H	From proton affi PA = 214.6 kcal/	167 nity of N,N- 'mol, 898. kJ	699 dimethyl-4-nitroa //mol.	niline (RN	100-23-2) (84RO	L/HOU).	
C ₈ H ₁₁ P+		- · · · · · · · · · ·				······································	
P(CH ₃) ₂	7.58±0.05	(184)	(771)	10	40	*EST	672-66-2
		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	
$C_8H_{12}^+$ (E),(E)-CH ₃ CH = C(CH ₃)C	CH = CHCH = CH ₂ (≤8.01)	(≤208)	(≤872)	24	99	*EST	58434-77-8
CH ₂ = CHCH = CHCH(CH ₂	3)CH = CH ₂ (8.4±0.1) IP from 84GRO/0	(226) GRO.	(945)	32.2	134.7	*EST	925-52-0
$n-C_4H_9C=CCH=CH_2$	(8.83±0.01)	(248)	(1038)	44±2	186±7	78SHA	17679-92-4
(E)- n - $C_4H_9CH = CHC = CH$	(8.87±0.01)	(248)	(1040)	44	184	*EST	42104-42-7
$n-C_3H_7C = CC(CH_3) = CH_2$	(8.62±0.01)	(241)	(1008)	42	176	*EST	17669-40-8
(C ₂ H ₅) ₂ C = CHC≡CH	(8.54±0.01)	(240)	(1004)	43	180	*EST	2750-71-2
	(8.4)	(213)	(891)	19	81	82KOZ/MAS	1700-10-3

360 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₂ ⁺	(8.5)	(221)	(925)	25±2	105±8	*EST	1073-07-0
	(8.9)	(219)	(917)	14.0±0.3	58.6±1.2	77PED/RYL	111-78-4
(E) (Z)	(8.2) IP is onset of pho	(218) toelectron b	(912) pand.	29	121	*EST	5259-71-2
Ō	(8.9)	(248)	(1041)	43±1	182±3	75ALL/MEY	1781-78-8
С■СН	(≤9.92)	(≤257)	(≤1076)	28±1	119±3	75ALL/MEY	931-48-6
CH=CH ₂	(8.93±0.02) See also: 84GRO/	(221) /GRO.	(927)	15.6±0.3	65.1±1.2	77PED/RYL	100-40-3
CCH3	(8.60±0.01)	(219)	(917)	21	87	*EST	37689-19-3
C CH3	(8.89±0.02)	(227)	(950)	22	92	*EST	14564-97-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₈ H ₁₂ + CH ₃ CH ₃	(7.96±0.05)	(192)	(804)	9	36	*EST	3853-27-8
СН3 СН3	(8.0±0.1)	(195)	(818)	11	46	*EST	4249-09-6
CH=CH ₂	(≤9.22) IP from 81BIS/GI	(≤252) LE.	(≤1056)	39.8±0.8	166.5±3.5	77PED/RYL	16177-46-1
CH=CH ₂	(≤9.20) IP from 81BIS/GI	(≤246) JE.	(≤1031)	34.3±0.8	143.5±3.4	77PED/RYL	6553-48-6
	(8.9) IP is onset of phot	(247) coelectron b	(1035) and (81BIS/GLE	42 ().	176	*EST	77614-53-0
	(8.9) IP is onset of phot	(247) oelectron ba	(1035) and (81BIS/GLE	42).	176	*EST	77614-67-6
C C C C C C C C C C C C C C C C C C C	8.08	(237)	(993)	51	213	*EST	822-93-5
	(8.92) See also: 82HAS/N	(211) IEU.	(881)	4.9±0.2	20.5±0.8	77PED/RYL	931-64-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₈ H ₁₂ +	≤9.02	≤220	≤920	12	50	79AUE/BOW	497-35-8
CH2	(≤9.40) See also: 85MAR	(≤231.2) √MAY.	(≤967.2)	14±1	60±3	<i>77</i> KOZ/BYC	31463-35-1
\triangle	(≤8.95)	(≤234)	(±980)	28	116	*EST	50695-42-6
	(≤9.39)	(≤244)	(≤1022)	28	116	*EST	50895-58-4
	(≤9.18)	(≤264)	(≤1102)	52±2	216±8	73ENG/AND2	28636-10-4
	(≤9.23)	(≤259)	(≤1084)	46±2	193±7	73ENG/AND2	13027-75-3
	(9.4) IP is onset of pho	(238) toelectron b	(997) and.	21±3	90±14	81GOD/SCH2	250-21-5
$\bigcirc \triangleleft$	(≤8.44)	(≤228)	(≤954)	33	140	*EST	7647-57-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₈ H ₁₂ +					·		
	(8.65)	(233)	(975)	33	140	*EST	14783-50-7
	(8.4) IP is onset of phot	(266) coelectron b	(1112) and.	72	302	*EST	21426-37-9
	(8.8) IP is onset of phot	(275) coelectron b	(1151) and.	72	302	*EST	25399-32-0
C ₈ H ₁₂ Cr ₂ O ₈ +		<u> </u>		. 1 V. 81 VTV			······································
0 — cr → 0 c-cн ₃	(8.0) IP is onset of phot		(–1212) and.	-474±7	−1984±28	82PIL/SKI	15020-15-2
C8H ₁₂ Mo ₂ O8 + CH ₃ -C() CH ₃ CH	6.54 H3 IP from 84LIC/BI		(-1175)	-432±2	−1806±10	81CAV/CON	14221-06-8
C ₈ H ₁₂ N ⁺							
(H5C2 NH2) HT	From proton affin 895. kJ/mol.	158 ity of 3-C ₂ F	662 I ₅ C ₆ H ₄ NH ₂ ((RN 587-02-0).	PA = 214.0 k	cal/mol,	
(NHC ₂ H ₅) H+	From proton affin 928. kJ/mol.	157 ity of C ₆ H ₅	658 NHC ₂ H ₅ (RI	N 103-69-5). P <i>P</i>	A = 221.8 kcal	/mol,	
(CH312) H+	From proton affin 935. kJ/mol.	166 ity of C ₆ H ₅	696 N(CH ₃) ₂ (R1	N 121-69-7). P <i>e</i>	A = 223.4 kcal	/mol,	

Table 1. Positive Ion Table - Continued

			- Ton Tuble	· Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₈ H ₁₂ N+	From proton affi 951. kJ/mol.	152 nity of 2-isop	635 propylpyridine	(RN 75981-47	/-4). PA = 227	.2 kcal/mol,	
C ₈ H ₁₂ N ₄ + (E)-(NCC(CH ₃) ₂) ₂ N ₂	(9.2) IP is onset of pho	(271) otoelectron b	(1134) pand.	59±0.4	246±1.8	84LEB/GUT	34241-39-9
С ₈ H ₁₂ O +	(≤9.24) IP from 82PFI/G	(≤171) ER.	(≤718)	-42	-174	*EST	4694-17-1
C(CH3)3	(8.38) IP from 83ZYK/I	(157) ERC.	(656)	-37	-153	*EST	7040-43-9
Or°	(8.8) IP is onset of pho	(148) otoelectron b	(619) and (81CAR/0	-55±1 3AN).	-230±5	77PED/RYL	2716-23-6
ОСНЗ	(≤8.15) IP from 83HOU/	(≤173) RON.	(≤724)	-15	-62	*EST	17190-90-8
C ₈ H ₁₂ OP + OH H ₃ C. I	From proton affii PA = 216 kcal/m	82 nity of (CH ₃ ol, 904 kJ/m	341) ₂ (C ₆ H ₅)PO (RN 10311-08-	7) (86TRA/ML	JN).	
C ₈ H ₁₂ OS +	(8.0) IP is onset of pho	(125) otoelectron b	(523) and (81JOR/C	-60 AR).	-249	*EST	76698-82-3

Table 1. Positive Ion Table - Continued

					· · · · · · · · · · · · · · · · · · ·	
Ionization potential eV					Neutral reference	CAS registry number
(7.8) IP is onset of phot	(120) oelectron b	(504) and (81JOR/	-60 CAR).	-249	*EST	
				· · · · ·	· · · · · · · · · · · · · · · · · · ·	
≤8.80 See also: 84OLI/FI	≤129 LE.	≤541	-74±0.5	-308±2	77PED/RYL	933-52-8
		(≤625)	-68±3	-287±13	*EST	3471-13-4
(8.62) IP from 82MOR/M	(120) IER.	(502)	- 79	-330	82MOR/MER	
(9.28±0.05)	(145)	(608)	-68.5±3	-287±12	*EST	126-81-8
		(≤584)	-73	-304	*EST	
•				-304	*EST	
		(288)	-129	-542	*EST	
	Ionization potential eV (7.8) IP is onset of phot ≤8.80 See also: 84OLI/FI (≤9.45) IP from 82PFI/GE (8.62) IP from 82MOR/M (9.28±0.05) (9.28±0.05) IP is onset of photo (8.6)	Ionization potential eV Acal/mol eV kcal/mol	Ionization potential Δ _f H(Ion) eV kcal/mol kJ/mol (7.8) (120) (504) IP is onset of photoelectron band (81JOR/4 ≤8.80 ≤129 ≤541 See also: 84OLI/FLE. (≤9.45) (≤149) (≤625) IP from 82PFI/GER. (8.62) (120) (502) IP from 82MOR/MER. (9.28±0.05) (145) (608) (≤9.2) (≤139) (≤584) IP from 84AIT/GOS.	Ionization potential eV kcal/mol kJ/mol kJ/mol kcal/mol eV kcal/mol kJ/mol kcal/mol kJ/mol kcal/mol	eV kcal/mol kJ/mol kcal/mol kJ/mol (7.8) (120) (504) -60 -249 IP is onset of photoelectron band (81JOR/CAR). \$8.80	Ionization potential

Table 1. Positive Ion Table - Continued

				- Cont			
ION Neutral	Ionization potential eV	$\Delta_{\mathbf{f}}H$ (Iokcal/mol		_	Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₈ H ₁₂ P ⁺						* ************************************	
PH(CH ₃) ₂	From proton affin 961. kJ/mol.	156 ity of C ₆ H ₅	651 P(CH ₃) ₂ (RN	l 672-66-2).	PA = 229.6 kca	l/mol,	
S ₈ H ₁₂ S +				-			
CICH3)3	(8.32) IP is onset of phot	(194) toelectron b	(812) and (83VES/F	2 HAR).	9	*EST	1689-78-7
S	(8.0) IP is onset of phot	(192) toelectron b	(804) and (84AIT/C	8 GOS).	32	*EST	
8H ₁₂ Si ⁺ (CH ₂ = CH) ₄ Si	(9.3) IP is onset of phot	(229) coelectron b	(958) and.	15	61	85GAD/GUB	1112-55-6
SICH3/2H	(8.92±0.15)	(203)	(848)	-3	-13	*EST	766-77-8
8H ₁₂ Sn + Sn(CH = CH ₂) ₄	(8.4) IP is onset of phot	(277) coelectron b	(1162) and (81NOV/	84 CVI).	352	*EST	1112-56-7
СН3	From proton affin (866) kJ/mol, (RN 862 kJ/mol, (RN 6 (76SOL/FIE, 85SI	(497-35-8), 2 (94-92-8) and	2-methylbicycl	lo[2.2.1]hept	-2-ene PA = 20	06 kcal/mol,	3197-78-2
CH3 C	From proton affin 906. kJ/mol.	200 ity of 1,1-dio	837 cyclopropyleth	nylene (RN 8	322-93-5). PA =	· 216.5 kcal/mol,	50555-45-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₃ Br ⁺	(9.4±0.1) IP is onset of pho	(194) toelectron b	(812) and (84DEI	−23 Ľ/ABE).	-95	*EST	7697-09-8
C ₈ H ₁₃ I ⁺	(8.7) IP is onset of pho	(192) toelectron b	(805) and (84DE)	-8 L/ABE).	-34	*EST	931-98-6
C ₈ H ₁₃ NO +	(≤8.55) IP from 82PFI/GI	(≤150) 3R.	(≤628)	-47	-197	*EST	873-95-0
С8H ₁₃ O+ СH ₃ ОН	From proton affir 869. kJ/mol (86TA	-	487 methylcyclo	hex-2-ene-1-one	PA = 207.6	kcal/mol,	
H ₃ C CH ₃	From proton affir PA = 217.6 kcal/i	-		ylfuran (RN 1059	9-58-3) (85F	IOU/ROL).	
C ₈ H ₁₄ + (E)-CH ₃ CH ₂ CH ₂ CH ₂ CH ₂ CH	H = CHCH = CH ₂ (8.45) IP from 81MAS/N	(198) AOU.	(830)	4	15	*EST	39491-65-1
$(E)-CH_2 = CHCH_2CH =$	CH(CH ₂) ₂ CH ₃ (8.96) IP from 84HOL.	(215)	(897)	8	32	*EST	53793-31-0
(E),(E)-CH ₃ CH ₂ CH ₂ CH	I = CHCH = CHCH ₃ (8.13) IP from 81MAS/N	(188) MOU.	(786)	0.5	2	*EST	60919-80-4
(E)-CH ₃ CH ₂ CH ₂ C(CH ₃) = CHCH = CH ₂ (8.02) IP from 81MAS/N	(185) MOU.	(776)	0.5	2	*EST	40095-05-4

Table 1. Positive Ion Table - Continued

N	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\mathrm{f}}H(\mathrm{Ne}%)=0$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
₃ H ₁₄ +							
(Z) - $(CH_3)_3$ CCH = CHC		(100)	(000)		4.77	*170m	50 CO 5 CO C
	(8.46) IP from 81MAS/	(199) MOU.	(833)	4	17	*EST	59697-92-6
(E)-(CH ₃) ₃ CCH = CHC	H=CH ₂						
	(8.43) IP from 81MAS/	(197) MOU	(823)	2	10	*EST	36320-14-6
(OII) G							
(CH3)2C = CHCH = C(C	(7.67)	(171)	(716)	-6	-24	*EST	764-13-6
	IP from 81MAS/		` /				
$(Z),(Z)-(CH_3CH=C(CH_3CH))$							
	(8.1) IP is onset of pho	(182) stoelectron b	(761) and (84HON/	-5 ZHO).	-20	*EST	21293-01-6
(E),(E)-(CH ₃ CH = C(CI	Ha))a						
(=),(=) (3((7.8)	(177)	(740)	-3	-12	*EST	18265-39-9
	IP is onset of pho	toelectron b	and (84HON/	ZHO).			
$(E),(Z)-(CH_3CH=C(CH_3CH))$	(8.0)	(181)	(756)	-4	-16	*EST	2417-88-1
	IP is onset of pho					201	• • • • • • • • • • • • • • • • • • • •
$C_2H_5C(=CH_2)C(=CH_2)$	2)C2H5						
	(8.58) IP from 81MAS/I	(199) MOU.	(834)	1	6	*EST	16356-05-1
1.C.H			(1041)	10.1	01.4		(20.05.0
1-C ₈ H ₁₄	(9.95±0.02)	(248)	(1041)	19±1	81±4	79ROG/DAG	629-05-0
n-C ₅ H ₁₁ C≡CCH ₃	9.31±0.01	230	962	15±0.2	64±2	79ROG/DAG	2809 - 67-8
$C_4H_9C=CC_2H_5$	9.22±0.01	228	953	15±0.5	63±2	79ROG/DAG	15232-76-5
$n\text{-}C_3H_7C\equiv CC_3H_7$	9.20±0.01	226	948	14±0.5	60±2	79ROG/DAG	1942-45-6
\bigcup	8.82	196.9	824.0	-6.5±0.3	-27.0±1.1	77PED/RYL	931-88-4
√ '∪π							
∠ CH ₃	8.44±0.05	174	726	-21	-88	76JEN	1003-64-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₄ ⁺	(8.48±0.01)	(180)	(755)	-15.2±0.2	-63.4±1	77PED/RYL	1453-24-3
CH ₂ CH ₃	(8.83±0.01)	(191)	(799)	-13	-53	*EST	2808-71-1
_c ₂ н ₅	(8.88±0.01)	(192)	(804)	-13	-53	*EST	3742-42-5
С ₃ н ₇	(8.48±0.01)	(186)	(779)	-9	-39	*EST	3074-61-1
C3+7	(8.84±0.02)	(196)	(819)	-8	-34	*EST	34067-75-9
CH(CH ₃) ₂	8.81 IP from 84HOL.	(193)	(807)	-10	-43	*EST	4276-45-3
H ₃ C CH ₃	(8.8) IP is onset of phot	(222) coelectron b	(931) and (82SPA/GLI	20 ∃).	82	*EST	59020-33-6
\bigcirc	(9.6) IP is onset of phot	(220) coelectron b	(921) and.	-1.2	-5	81MAI/SCH	7078-34-4

Table 1. Positive Ion Table - Continued

YON							
ION Neutral	Ionization potential eV	Δ _f H(Iα kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₄ ⁺	9.43±0.02	194	813	−23±1	97±4	81GOD/SCH	280-33-1
	(≤9.46)	(≤221)	(≤925)	3	12	*EST	185-65-9
$\Diamond \Diamond$	(9.45)	(225)	(941)	7	29	*EST	175-56-4
C ₈ H ₁₄ CIN ⁺	(≤8.55) IP from 82NEL/C	(≤190) GAN.	(≤795)	-7	-30	*EST	
C ₈ H ₁₄ CINO +	(9.19±0.03) IP from 79GOL/I	(178) KUL.	(747)	-33	-140	*EST	10499-33-9
C ₈ H ₁₄ N ⁺	From proton affii PA = (231.0) kca			ct-2-ene,3-meti	nyl		
(N) CH2) H+	From proton affin PA = (230.1) kca			ctane, 3-methyl	lene		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Ionization potential $\Delta_{\mathbf{f}}H$ (Ion)			utral)	Neutral CAS regists		
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number	
C ₈ H ₁₄ N ₂ +								
CH3	(-)	()	42.44					
Ŋ	(7.8) IP is onset of pho	(202) stoelectron b	(846) and.	22±1	93±5	80ENG	49570-30-1	
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								
Ċнз								
N N	c7.75	(~100)	(~705)	11	47	*DOT	201 20 0	
H	≤7.75	(≤190)	(≤795)	11	47	*EST	281-29-8	
$C_8H_{14}O^+$ $n-C_3H_7CH = C(CH)$	(3)C(=O)CH3							
	(9.22)	(159)	(666)	-54	-224	*EST	39899-08-6	
	9.08	144	604	-65±1	−272±5	77PED/RYL	502-49-8	
	See also: 86SPA/I	RAD.						
A H								
	(9.0)	(149)	(624)	-58	-244	*EST		
✓ H-O	IP is onset of pho	toelectron b	and (631 OR)	nan).				
∼ F	(9.0)	(148)	(620)	-59	-248	*EST		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	IP is onset of pho				-240	E31		
н								
C ₈ H ₁₄ OSi ⁺							····	
	(8.1)	(129)	(540)	-58	241	*DOT	12071 (7.5	
Si Czh	5 IP is onset of pho				-241	*EST	13271-67-5	
72' 5	•							
C ₈ H ₁₄ O ₂ +		<u></u>						
	(≤8.6)		(≤358)	-113	-471	82MOR/MER		
H3C 10 0C	2 ^H 5 IP from 82MOR/N	MER.						

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued												
ION Neutral	Ionization potential eV	Δ _f H((Ion) ol kJ/mol	•	Neutral) ol kJ/mol	Neutral reference	CAS registry					
C ₈ H ₁₄ O ₂ +	(≤9.2) IP from 84GLE/D	(≤177) OOB.	(≤741)	-35	-147	*EST	69492-24-6					
$C_8H_{15}^+$ (CH ₃) ₂ C = C(CH ₃)C(CH ₃)	From proton affin (881.) kJ/mol.	(152) aity of (CF	(636) H ₃) ₂ C = C(CH ₃)C(CH ₃) = C	EH ₂ PA = (210	.6) kcal/mol,						
C ₈ H ₁₅ N ⁺	≤7.50 IP from 81MUL/I	(≤170) PRE2.	(≤711)	-3	-12	*EST	13815-46-8					
	(6.7) IP is onset of photon	(153) toelectron	(642) a band (81MUL	-1 /PRE2).	-4	*EST	13937-89-8					
	(6.8) IP is onset of photon	(160) toelectron	(671) a band (81MUL	4 /PRE2).	15	*EST	2403-57-8					
	(≤7.48) IP from 81MUL/I	(≤193) PRE2.	(≤809)	21	87	*EST						
C ₈ H ₁₅ NO +	(8.80±0.03) IP from 79GOL/K	(171) KUL.	(717)	-32	-132	*EST	1074-51-7					
C ₈ H ₁₅ N ₃ +	(≤8.08)	(≤212)	(≤889)	26	109	*EST	38705-10-1					

Table 1. Positive Ion Table - Continued

ON	Ionization potenti			e - Contin $\Delta_{f}H(\text{Ne}$		Neutral	CAS registry
Neutral	eV	•	kJ/mol	kcal/mol		reference	number
C ₈ H ₁₅ O +							
OH C-CH	From proton a 847. kJ/mol.	98 ffinity of cyclo	410 hexylethanone	(RN 823-76-7)	. PA = 202.4	kcal/mol,	
8H ₁₅ O ₂ +				V-11-			
OH OCH3	From proton at PA = 203.7 kg			carboxylate (R	N 4630-82-4).		
8 ^H 16 + 1-C ₈ H ₁₆	9.43±0.01	198	829	-19.4±0.2	-81.2±1	77PED/RYL	111-66-0
(Z)-2-C ₈ H ₁₆	8.91±0.01	(184)	(767)	-22	-91	*EST	7642-04-8
(E)-2-C ₈ H ₁₆	8.91±0.01	(183)	(765)	-23	-95	*EST	13389-42-9
(Z)-3-C ₈ H ₁₆	8.85±0.01	(183)	(764)	-21	-90	*EST	14850-22-7
(E)-3-C ₈ H ₁₆	8.85±0.01	(181)	(759)	-23	-95	*EST	14919-01-8
(Z)-4-C ₈ H ₁₆	8.84±0.01	(182)	(763)	-21	-90	*EST	7642-15-1
(E)-4-C ₈ H ₁₆	8.83±0.01	(181)	(758)	-22	-94	*EST	14850-23-8
$(C_2H_5)_2C = CHC_2H_5$	(8.48±0.01)	(171)	(715)	-25	-103	*EST	16789-51-8
$C_2H_5CH_2C(CH_3) = C(CH_3)$	H ₃) ₂ (8.19±0.01)	(162)	(680)	-26	-110	*EST	7145-20-2
(Z)- $(CH3)2CHCH = CHC$	CH(CH ₃) ₂ (8.85±0.01)	(179)	(749)	-25	-105	*EST	10557-44-5
(E)-(CH ₃) ₂ CHCH = CHC	CH(CH ₃) ₂ (8.84±0.01)	(178)	(743)	-26	-110	*EST	692-70-6
$(Z)-C_2H_5C(CH_3) = C(CH_3)$	H ₃)C ₂ H ₅ (8.17±0.01)	(162)	(678)	-26	-110	*EST	19550-87-9
$(E)-C_2H_5C(CH_3) = C(CH_3)$	H ₃)C ₂ H ₅ (8.16±0.01)	(162)	(677)	-26	-110	*EST	19550-88-0
(tert-C ₄ H ₉)CH ₂ C(CH ₃)=	= CH ₂ (8.91±0.01)	(179)	(749)	-26.4±0.2	-110.4±1	77PED/RYL	107-39-1
$(C_2H_5)_2C = C(CH_3)_2$	8.17±0.01	(162)	(678)	-26	-110	*EST	19780-67-7

Table 1. Positive Ion Table - Continued

			C 1011 Table	Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₆ +							
$(CH_3)_2$ CHC $(CH_3) = C(C$							
	(8.17±0.01)	(160)	(670)	-28	-118	*EST	565-77-5
	9.76	195	817		-124.4±0.9	77PED/RYL	292-64-8
	IP from charge tra Reference IP's, flu						
	Reference if s, in	uotooenzen	cs. Filotoetectic	on spectrosco	py 1r = 9.74±0.03	(/9GOL/KOL).	
CH ₃	9.42	174	728	_42 2+0 5	-180,9±1.9	77PED/RYL	590-66-9
CH3	IP from charge tra						390-00-9
	Reference IP's, flu				•	,	
~ .cu							
CH3	9.41	174	728	-43.0±0.4	-179.9±1.8	77PED/RYL	6876-23-9
·-CH3	IP from charge tra						
	Reference IP's, flu	ioropenzen	es. Electron imp	act IP = 9.85	ev (81HEK/SIC	۵).	
CH ₃	(-0.70)	((551)	44.4.0.4	150 0 1 0		
CH ₃	(<9.78) IP from 81HER/S	(<184) IC	(<771)	-41.1±0.4	-172.3±1.8	77PED/RYL	2207-01-4
· ·	11 110111 01112240	10,					
H3CCH3	9.53	178	743	-42.2±0.4	-176.5±1.7	77PED/RYL	2207-03-6
	IP from charge tra	_			•	•	
~	Reference IP's, flu	orobenzene	es. Electron imp	act IP = 9.89	eV (81HER/SIC)	·	
H ₃ C							
	(<9.98) IP from 81HER/S	(<186)	(<778)	-44.1±0.4	-184.6±1.7	77PED/RYL	638-04-0
\checkmark	ii iiolii biiiibiiyo	10.					
н, С	9.56	176	738	-44.1±0.4	-184.5±1.7	77PED/RYL	2207-04-7
3 \	IP from charge tra					82LIA).	
	Reference IP's, flu	orobenenes	s. Threshold pho	otoionization	value of IP = 9.67	eV.	
CH ₃							
H ₃ C	(<9.93) IP from 81HER/S		(<781)	-42.2±0.4	-176.6±1.7	77PED/RYL	624-29-3
-	ii iiom oiiiiiiyo.						

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Nekcal/mol	utral) kJ/mol	Neutral reference	CAS registry				
C ₈ H ₁₆ +											
c ₂ H ₅	9.54 IP from charge tra Reference IP's, flu	_			–172.4±0.6 ns (82SIE/MA	77PED/RYL AU, 82LIA).	1678-91-7				
CH ₂ CH ₂ CH ₃	(10.00±0.04)	(195)	(817)	-35.3±0.2	-147.8±0.6	77PED/RYL	2040-96-2				
C ₈ H ₁₆ N ⁺											
(N) CH3 H+	From proton affin PA = (231.7) kcal			lo[2.2.2]octane	(RN 695-88-5).					
C ₈ H ₁₆ NO +			 -								
OH HT	From proton affin PA = 223.9 kcal/n			2.2.2]octan-2-ol	(RN 17997-6:	5-8).					
(OH) H+	From proton affin PA = 220.6 kcal/n			o[2.2.2]octan-2·	ol (RN 40335	-14-6).					
C ₈ H ₁₆ N ₂ +											
$\binom{N}{N}$	7.0 IP is onset of phot	(174) oelectron ba	(729) and (85HON/	13 YAN).	54	*EST					
C ₈ H ₁₆ N ₂ O ⁺		······································	· · · · · · · · · · · · · · · · · · ·								
H ₃ C CH ₃	(≤9.13±0.03)	(≤204)	(≤854)	-6.33±0.55	-26.48±0.3	83BYS	54143-34-9				
C ₈ H ₁₆ O ⁺ n-C ₆ H ₁₃ COCH ₃	9.40±0.03	140	586	-77	-321	75TRC	111-13-7				
n-C ₄ H ₉ COCH ₂ CH ₂ CH ₃	(9.10±0.05)	(133)	(558)	-76	-320	75TRC	589-63-9				

Table 1. Positive Ion Table - Continued

ION							
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
C ₈ H ₁₆ O ⁺ tert-C ₄ H ₉ CO(iso-C ₃ H ₇)	(8.80±0.01)	(122)	(510)	-80.8±0.3	-338.3±1.2	77PED/RYL	5857-36-3
C ₈ H ₁₆ O ₂ +							
OCH ₃	(8.7) IP is onset of phot	(104) toelectron b	(435) and.	- 97	404	*EST	29887-60-3
OCH ₃	(8.6) IP is onset of phot	(102) coelectron b	(426) and.	-97	-404	*EST	30363-80-5
H ₃ C CH ₃	9.2 IP is onset of phot	(135) toelectron b	(567) and.	-77	-321	*EST	22431-89-6
C ₈ H ₁₆ O ₂ Si +	≤9.44 IP from 81KHV/Z	(≤52) ZYK.	(≤216)	-166	-695	*EST	67059-49-8
C ₈ H ₁₆ O ₄ ⁺	(8.8) IP is onset of phot	(52) coelectron b	(218) and (83BAK/		-631±2 LIA).	82BYS/MAN	294-93-9
C ₈ H ₁₆ Si +	(≤8.89) IP from 81KHV/Z	(≤175) XYK.	(≤734)	-30	-124	*EST	69657-20-1
С ₈ H ₁₇ + (СН ₃) ₂ ССН ₂ СН ₂ СН ₂ СН	I ₂ CH ₃ From appearance	139 potential m	582 easurement (8	34LOS/HOL).			40626-79-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
	ev	kcal/mol	KJ/moi	kcal/mol	kJ/mol	reference	number
C ₈ H ₁₇ N ⁺	(7.5) IP is onset of pho	(148) toelectron b	(618) and.	-25	-106	*EST	98-94-2
H ₃ C N CH ₃	(7.77) IP from 82ROZ/F	(148) HOU.	(620)	-31	-130	*EST	2439-13-6
H ₃ C CH ₃	(7.66) IP from 82ROZ/F	(152) IOU.	(637)	-24	-102	*EST	16544-52-8
H ₃ C CH ₃	(7.63) IP from 82ROZ/F	(149) IOU.	(625)	-27	-111	*EST	14446-76-5
H ₃ C CH ₃	(7.77) IP from 82ROZ/H	(148) IOU.	(621)	-31	-129	*EST	1003-84-5
C8H17O4+	From proton affin PA = 221.6 kcal/n			lododecane (12	-Crown-4) (RI	N 294-93-9).	
C ₈ H ₁₈ ⁺ n-C ₈ H ₁₈	(9.82) IP from charge tra Reference IP's, flu	-		−49.8 <i>−38.6</i> at determinatio	-208.5 -161.4 ns (81MAU/S)	74SCO IE, 82LIA).	111-65-9
(CH ₃) ₂ CH(CH ₂) ₄ CH ₃	9.84 IP from charge tra Reference IP's, flu			-39.6±0.3	−215.1±1.4 <i>−165.9±1.4</i> ns (81MAU/S)	74SCO IE, 82LIA).	592-27-8
(CH ₃) ₃ CC(CH ₃) ₃	9.8 IP is onset of phot	(172) oelectron b	(720) and (81SZE/K		-225.7±1.1 AT).	77PED/RYL	594-82-1

ION	Ionization potential	$\Delta_{\rm f}H({ m Ion})$		$\Delta_f H(\text{Neutral})$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₁₈ +							
(CH ₃) ₂ CHCH ₂ C(CH ₃) ₃							
5.2	9.86	(171)	(714)	-57	-238	*EST	540-84-1
C ₈ H ₁₈ ClP ⁺							
(tert-C ₄ H ₉) ₂ PCl							
	(8.0)	(112)	(469)	-72	-303	*EST	13716-10-4
	IP is onset of pho	toelectron b	and.				
C ₈ H ₁₈ FP +			· · · · · · · · · · · · · · · · · · ·				
(tert-C ₄ H ₉) ₂ PF	(8.2)	(63)	(265)	-126	-526	*EST	29146-24-5
· + //2	IP is onset of pho		, ,				
C ₈ H ₁₈ Hg +				· · · · · · · · · · · · · · · · · · ·			
(n-C ₄ H ₉) ₂ Hg	(≤8.35)	(≤185)	(≤774)	-8±2	-32±8	77PED/RYL	629-35-6
(iso-C ₄ H ₉) ₂ Hg	(≤8.30)	(≤182)	(≤763)	-9±2	-38±8	77PED/RYL	24470-76-6

$C_8H_{18}N^{+}$

108 450

From proton affinity of N,N-dimethylcyclohexanamine (RN 98-94-2) (86TAF/GAL). PA = 232.7 kcal/mol, 974. kJ/mol.

(109) (457)

From proton affinity of N,3,5-trimethylpiperidine PA = (230) kcal/mol, (962) kJ/mol, (RN 14446-76-5) (84HOP/JAH).

C ₈ H ₁₈ NO ⁺ (tert-C ₄ H ₉) ₂ NO	(6.77)	(126)	(527)	-30±3	-126±13	*EST	2406-25-9
C ₈ H ₁₈ NO ₂ P +							
P-NICHICH31212	(≤8.52) IP from 82W	(≤71) ⁄OR/HAR.	(≤295)	-126	-527	*EST	
C ₈ H ₁₈ N ₂ + (E)-(tert-C ₄ H ₉ N) ₂							
	(7.7) IP is onset o	(169) f photoelectror	(707) n band.	-9±0.7	-36±3	80ENG	927-83-3

Table 1. Positive Ion Table - Continued

Table 1. Tostive for Table Committee										
ION Neutral	Ionization potential eV	•	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C8H ₁₈ N ₃ OP + CH ₃ CH ₃ CH ₃	(≤8.14±0.10) IP from 82COW	(≤88) /LAT.	(≤367)	-100	-418	*EST	15199-21-0			
C ₈ H ₁₈ N ₃ P+ S N-CH ₃ N-CH ₃	(≤7.71±0.10) IP from 82COW	(≤177) /LAT.	(≤739)	-1	-5	*EST	14418-26-9			
C8H ₁₈ N ₃ PS + S-P-N-CH ₃ CH ₃ CH ₃	(≤8.14±0.10) IP from 82COW	(≤164) /LAT.	(≤688)	-23	97	*EST	15199-22-1			
C ₈ H ₁₈ O + (n-C ₄ H ₉) ₂ O	≤9.43 IP from 80BAC/	≤138 MOU. Valu	≤577 e derived fron	80 n hydrogen affir	-333 hity considerat	77PED/RYL ions: 9.37 eV.	142-96-1			
(sec-C ₄ H ₉) ₂ O	(9.11) IP from 81HOL/	(122) FIN.	(509)	-88±0.5	-370±2	77PED/RYL	6863-58-7			
(tert-C ₄ H ₉) ₂ O	8.81 See also: 80BAC	117 /MOU.	488	-87±0.2	-362±1	77PED/RYL	6163-66-2			
C ₈ H ₁₈ OS ⁺ [(CH ₃) ₃ C] ₂ SO	8.0 IP is onset of pho	(113) otoelectron b	(471) pand.	-72	-301	*EST	2211-92-9			
C ₈ H ₁₈ O ₂ + (tert-C ₄ H ₉ O) ₂	(8.4) IP is onset of pho	(111) otoelectron b	(461) eand.	-83±0.7	-349±3	77PED/RYL	110-05-4			
C ₈ H ₁₈ O ₂ S ⁺ (iso-C ₄ H ₉) ₂ SO ₂	(9.54±0.05)	(92)	(384)	-128±0.7	-536±3	77PED/RYL	10495-45-1			
C ₈ H ₁₈ O ₄ + (CH ₃ O(CH ₂) ₂ OCH ₂) ₂	(≤9.8) IP from 83BAK/.	(≤69) ARM.	(≤289)	-157	-656	*EST	112-49-2			
C ₈ H ₁₈ S + (n-C ₄ H ₉) ₂ S	(8.2) IP is onset of pho	(149) otoelectron b	(624) eand.	-40.0±0.3	-167.3±1.1	77PED/RYL	544-40-1			
(iso-C ₄ H ₉) ₂ S	8.36±0.05	150	628	-43±0.5	−179±2	77PED/RYL	592-65-4			

380 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	-	$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₁₈ S + (tert-C ₄ H ₉) ₂ S	(8.0)	(139)	(582)	-45.1±0.2	-188.9±0.7	77PED/RYL	107-47-1
	IP is onset of pho	toelectron b	and.				
C ₈ H ₁₈ SSi ⁺							
(Catte)aSi CH3	(7.92±0.03)	(165)	(691)	(-17)	(-73)	81GUS/VOL	
(C ₂ H ₅) ₂ Si CH ₃	IP from 81GUS/\	` '	(091)	(-17)	(-73)	81GU3/VOL	
H ₃ C/							
C.WC. +		·					<u> </u>
$C_8H_{18}S_2^+$ $(n-C_4H_9S)_2$	(≤8.51)	(≤158)	(≤663)	-38±0.7	-158±3	77PED/RYL	629-45-8
. 7 / 2	Dialkyl disulfides	undergo a c	hange in the				
	upon ionization; a the experimentall		-	=	oly well below th	he	
	me experimentan	y observed i	omzauon ons	cı.			
$(\text{tert-C}_4\text{H}_9\text{S})_2$	(7.7)	(130)	(542)	-48±0.7	-200±3	77PED/RYL	110-06-5
	IP is onset of pho CSSC bond angle		•		-		
	are probably well		-		-	potentiais	
C-11 - C: +						· · · · · · · · · · · · · · · · · · ·	
$C_8H_{18}Si_2^+$ $CH_2 = CH[Si(CH_3)_2]_2CH^2$	= CH ₂						
2 (3/212	(≤8.63)	(≤166)	(≤694)	-33	-139	*EST	
	IP from 81KHV/2	ZYK.					
C ₈ H ₁₉ ClNP ⁺							
(CH ₃) ₃ CP(Cl)NHC(CH ₃) ₃	-						
	(≤8.75)	(≤145)	(≤606)	-57	-238	*EST	
	IP from 85ELB/E	.LL.					
C ₈ H ₁₉ N ⁺							
$n-C_8H_{17}NH_2$	(8.5)	(155)	(648)	-41	-172	*EST	111-86-4
	IP from 79AUE/E	sow.					
(n-C ₄ H ₉) ₂ NH	(7.69±0.03)	(140)	(585)	-37.4±0.3	-156.6±1.3	77PED/RYL	111-92-2
	Ion heat of forma	-	-	-	of secondary am	ines:	
		kJ/mol. com	esponding to	IP of 7.8 eV.			
	143 kcal/mol, 598	,,					
(sec-C ₄ H ₉) ₂ NH	143 kcal/mol, 598 (7.63)	(138)	(579)	-38	-157	*EST	626-23-3
(sec-C ₄ H ₉) ₂ NH		(138)	(579)	-38	-157	*EST	626-23-3
(sec-C ₄ H ₉) ₂ NH (i-C ₄ H ₉) ₂ NH	(7.63)	(138)	(579) (574)	−38 −43±2	-157 -179±8	*EST 73PEP/GAF	626-23-3 110-96-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(l kcal/mo	ion) i kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₈ H ₁₉ N ₂ OP +						· · · · · · · · · · · · · · · · · · ·					
P-NICHICH322	(≤7.74) IP from 82WOR/	(≤79) HAR.	(≤330)	-100	-417	*EST					
C ₈ H ₁₉ O ⁺											
(n-C ₄ H ₉) ₂ OH	From proton affin 852. kJ/mol.	82 nity of (n-C	345 4H ₉) ₂ O (RN	142-96-1). PA =	= 203.7 kcal/r	noi,					
(sec-C ₄ H ₉) ₂ OH	From proton affii 874. kJ/mol.	68 nity of (sec-	286 .C ₄ H ₉) ₂ O (RI	N 6863-58-7). P <i>i</i>	A = 209.0 kc	al/mol,					
C ₈ H ₁₉ O ₄ +						,					
CH ₃ (OCH ₂ CH ₂) ₂ O(H)C	CH ₂ CH ₂ OCH ₃										
	.	-15	-64		10 A) T :						
	From proton affir 938. kJ/mol.	nity of CH ₃	(OCH ₂ CH ₂) ₃	3OCH ₃ (RN 112	-49-2). PA =	= 224.1 kcal/mol,					
C ₈ H ₁₉ P +											
(tert-C ₄ H ₉) ₂ PH	(7.9) IP is onset of pho	(132) toelectron l	(551) pand.	-5 0	-211	*EST	819-19-2				
C ₈ H ₁₉ S +											
(n-C ₄ H ₉) ₂ SH	From proton affin 873. kJ/mol.	117 hity of (n-C	490 ₄ H ₉) ₂ S (RN 5	44-40-1). PA =	208.7 kcal/m	ol,					
(t-C ₄ H ₉) ₂ SH	From proton affin 890. kJ/mol.	108 ity of (t-C ₄	451 H ₉) ₂ S (RN 10	07-47-1). PA = 1	212.8 kcal/mo	ol,					
C ₈ H ₂₀ Ge +											
(C ₂ H ₅) ₄ Ge	8.9 IP is onset of phot	(167) coelectron t	(698) pand.	-38±2	−161±8	77PED/RYL	597-63-7				
C ₈ H ₂₀ N +				<u> </u>							
n-C ₈ H ₁₇ NH ₃	From proton affin 922. kJ/mol.	(104) ity of n-C ₈ l	(436) H ₁₇ NH ₂ (RN	111-86-4). PA =	= 220.4 kcal/i	mol,					
(n-C ₄ H ₉) ₂ NH ₂		100	417								
	From proton affin 956. kJ/mol.	ity of (n-C ₄		I 111-92-2). PA	= 228.4 kcal	mol,					
(sec-C ₄ H ₉) ₂ NH ₂		(97)	(407)								
. 1 7/4 4	From proton affin $PA = (230.9)$ kcal	ity of (sec-0	C ₄ H ₉) ₂ NH (R	N 626-23-3), re-	evaluated (84	НОР/ЈАН).					

Table 1. Positive Ion Table - Continued

	Ionization potential	∧. ₩\	$\Delta_{f}H(Ion)$		utral)	Neutral	CAS registry
ION Neutral	eV	-	kJ/mol	∆ _f H(Ne kcal/mol		reference	number
C ₈ H ₂₀ N +	······································	· · · · · · · · · · · · · · · · · · ·					
(iso-C ₄ H ₉) ₂ NH ₂		94	395				
	From proton aff	inity of (iso-0	C ₄ H ₉) ₂ NH (R	N 110-96-3). P	A = 228.6 kca	ıl/mol,	
	956. kJ/mol.						
(tert-C ₄ H ₉) ₂ NH ₂							
, ,		91	382				
	From proton aff	inity of (tert-	C ₄ H ₉) ₂ NH (F	N 21981-37-3)	PA = 233.2	kcal/mol,	
	976. kJ/mol.						
$(i-C_3H_7)_2(C_2H_5)NH$							
		(97)	(406)	/m.\	m\ w		
	From proton aff. 984. kJ/mol.	inity of (i-C ₃	H ₇) ₂ (C ₂ H ₅)N	(KN 7087-68-	b). PA = 235.	3 kcal/mol,	
	704. KJ/IIIOL						
(CH ₃) ₃ C(CH ₂) ₂ NH(CH ₃))2						
	E	(100)	(417)	OU) (DATA	: (72 04 0\ D 4	- 220 A l1/1	
	964. kJ/mol.	inity of (CH ₃	3)3C(CH ₂) ₂ N(CH ₃) ₂ (RN 13	00/3-04-8). PA	= 230.4 kcal/mol,	
C ₈ H ₂₀ N ₂ +							
$(C_2H_5)_2NN(C_2H_5)_2$	(6.50)	(149)	(625)	-0.5	-2	*EST	4267-00-9
	IP from charge to		, ,				4207-00-9
	Reference stand					,	
COLL NAMEOU							
(i-C ₃ H ₇) ₂ NN(CH ₃) ₂	(6.53)	(153)	(639)	2	9	*EST	60678 <i>-7</i> 2-0
(i-C ₃ H ₇) ₂ NN(CH ₃) ₂	(6.53) IP from charge t	(153) ransfer equil	(639) ibrium constar	2 t determination	9 on (86RUM).	*EST	60678-72-0
	IP from charge t		• •			*EST	60678-72-0
(i-C ₃ H ₇) ₂ NN(CH ₃) ₂ (i-C ₃ H ₇)(CH ₃)NN(CH ₃)(IP from charge to	ransfer equil	ibrium constar	t determinatio	on (86RUM).		
	IP from charge to i-C ₃ H ₇) (6.58)	ransfer equil	ibrium constar	t determinatio	on (86RUM).	*EST	60678-72-0 60678-71-9
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(IP from charge to	ransfer equil	ibrium constar	t determinatio	on (86RUM).	*EST	
	IP from charge to i-C ₃ H ₇) (6.58)	ransfer equil	ibrium constar	t determinatio	on (86RUM).	*EST	
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(IP from charge to i-C ₃ H ₇) (6.58) IP from charge to	ransfer equil (154) ransfer equil	ibrium constar (645) ibrium constar	t determination 2 t determination	on (86RUM). 10 on (86RUM). S	*EST See also: 84NEL.	
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(C ₈ H ₂₀ N ₃ P +	IP from charge to i-C ₃ H ₇) (6.58)	ransfer equili (154) ransfer equili (≤136)	ibrium constar	t determinatio	on (86RUM).	*EST	
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40)	ransfer equili (154) ransfer equili (≤136)	ibrium constar (645) ibrium constar	t determination 2 t determination	on (86RUM). 10 on (86RUM). S	*EST See also: 84NEL.	
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(C ₈ H ₂₀ N ₃ P +	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40)	ransfer equili (154) ransfer equili (≤136)	ibrium constar (645) ibrium constar	t determination 2 t determination	on (86RUM). 10 on (86RUM). S	*EST See also: 84NEL.	
(i-C ₃ H ₇)(CH ₃)NN(CH ₃)(C ₈ H ₂₀ N ₃ P +	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40)	ransfer equili (154) ransfer equili (≤136)	ibrium constar (645) ibrium constar	t determination 2 t determination	on (86RUM). 10 on (86RUM). S	*EST See also: 84NEL.	
$(i-C_3H_7)(CH_3)NN(CH_3)(CH_3)(CH_3)(CH_3)NN(CH_3)(CH_3)NN(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)(CH_3)$	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40)	ransfer equili (154) ransfer equili (≤136)	ibrium constar (645) ibrium constar	t determination 2 t determination	on (86RUM). 10 on (86RUM). S	*EST See also: 84NEL.	
(i- C_3H_7)(CH ₃)NN(CH ₃)($C_8H_{20}N_3P^+$ $N_{H}^{P-NICHICH_3}$ $C_8H_{20}N_4^+$ $(N_2(C_2H_5)_2)_2$	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40) IP from 82WOR	(154) ransfer equil (≤136) /HAR.	(645) ibrium constar (≤568)	2 t determination	n (86RUM). 10 on (86RUM). S -146	*EST See also: 84NEL. *EST	60678-71-9
(i- C_3H_7)(CH ₃)NN(CH ₃)($C_8H_{20}N_3P^+$ $C_8H_{20}N_4^+$ $(N_2(C_2H_5)_2)_2$ $C_8H_{20}O_4Si^+$	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40) IP from 82WOR	(154) ransfer equil (≤136) /HAR.	(645) ibrium constan (5568) (≤890)	t determination 2 t determination -35	10 nn (86RUM). S	*EST See also: 84NEL. *EST	13304-29-5
(i- C_3H_7)(CH ₃)NN(CH ₃)($C_8H_{20}N_3P^+$ $N_{P}-N(CH(CH_3)_2)_2$ $C_8H_{20}N_4^+$ $(N_2(C_2H_5)_2)_2$	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40) IP from 82WOR	(154) ransfer equil (≤136) /HAR.	(645) ibrium constar (≤568)	2 t determination	n (86RUM). 10 on (86RUM). S -146	*EST See also: 84NEL. *EST	60678-71-9
(i- C_3H_7)(CH ₃)NN(CH ₃)($C_8H_{20}N_3P^+$ N_1 N_2 $C_8H_{20}N_4^+$ $(N_2(C_2H_5)_2)_2$ $C_8H_{20}O_4Si^+$	IP from charge to i-C ₃ H ₇) (6.58) IP from charge to (≤7.40) IP from 82WOR	(154) ransfer equil (≤136) /HAR.	(645) ibrium constan (5568) (≤890)	t determination 2 t determination -35	10 nn (86RUM). S	*EST See also: 84NEL. *EST	13304-29-5

Table 1	Docitiva	Ion Table	_	Continued
Table L.	POSITIVE	man rable	_	Conuntea

							
ION	Ionization potential	•		$\Delta_{\mathbf{f}}H(\mathbf{N})$		Neutral	CAS registry
Neutral	eV	kcal/moi	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₈ H ₂₀ Si ⁺							
(C ₂ H ₅) ₄ Si	(8.9)	(142)	(594)	−63±4	-265±15	77PED/RYL	631-36-7
C ₈ H ₂₀ Sn ⁺							
$(C_2H_5)_4Sn$	(8.1)	(176)	(737)	-11±0.7	-45±3	77PED/RYL	597-64-8
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	IP is onset of pho	• •					
C ₈ H ₂₁ N ₂ +							
(CH3)2NH(CH2)4N(CH3)2	2	108	450				
	From proton affi			(CHa)a (RN 1	11-51-3\ PA	= 246 kcal/mol	
	1029. kJ/mol.	my or (CI13)21 (C112)41 V	(C113)2 (1411	11-01-0). 174	- 240. Real/11101,	
(O II) NIVELO V							
$(C_2H_5)_2NHN(C_2H_5)_2$		135	564				
	From proton affin)_ (RN 4267.00	_Q\ (RAM A I I/	NRI)	
	PA = 230.4 kcal/			12 (144 7201400	~) (U	٠٠٠٠)،	
				· · · · · · · · · · · · · · · · · · ·		·	
C ₈ H ₂₂ NSi ⁺							
(CH3)3Si(CH2)3NH(CH3)2	2	75	312				
	From proton affir			(CH_)_ (RN 28	247 20.21		
	231.8 kcal/mol, 97	-	301(0112)311	(C113)2 (101 20	241-25-2).		
$(CH_3)_2$ (tert- C_4H_9)SiNH(C	H ₃) ₂						
	-	68	283		_		
	From proton affir			SiN(CH ₃) ₂ (R	N 66365-05-7)	•	
	PA = 229.7 kcal/i	moi, 961. KJ/I	noi.				
C ₈ H ₂₄ N ₄ Mo ⁺							
((CH ₃) ₂ N) ₄ Mo	(≤5.30)	(≤153)	(≤642)	31±2	131±8	81CAV/CON	
C-H O C: +					****	····	····
C ₈ H ₂₄ O ₂ Si ₃ + [(CH ₃) ₃ SiO] ₂ Si(CH ₃) ₂							
[(C113)3310]231(C113)2	(≤10.04)	(≤−99) (≤-412)	220.2	1001 10	anno mari	105 51 -
	IP from 82ERM/k		5-412)	-330±3	-1381±12	77PED/RYL	107-51-7
					· · · · · · · · · · · · · · · · · · · 		·
C ₈ H ₂₄ Si ₃ +							
Si ₃ (CH ₃) ₈	(7.7)	(65)	(273)	-112±4	-470±17	77PED/RYL	3704-44-7
	IP is onset of phot	oelectron ba	nd.				
C9Fe ₂ O ₉ +							
00							
	(7.91±0.01)	(-136)	(-571)	-319±6	-1334±23	77PED/RYL	15321-51-4
OC-FE FECCO			-				
ŏc c							
U							
							

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry			
C9H5CICrO3+ OC C7 CO CI	(7.00±0.1)	(74)	(311)	-87±1	−364±6	77PED/RYL	12082-03-0			
C9H6CrO3 ⁺ OC Cr CCO	7.0 IP is onset of phot	(78) oelectron b	(325) and. See also: 820	-84±2 GUI/PFI.	-350±9	77PED/RYL	12082-08-5			
C ₉ H ₆ F ₃ +										
CF ₃ C= CH ₂	From proton affin PA = 192.9 kcal/n			i 705-28-2) ((85MAR/MOD).					
C ₉ H ₆ OS ⁺							· · · · · · · · · · · · · · · · · · ·			
5 0	(8.5) IP is onset of phot	(222) oelectron b	(930) and (84GLE/BIS	26).	110	*EST	10095-83-7			
C ₉ H ₆ O ₂ +	-									
	(8.65) IP is onset of phot	(190) pelectron b	(795) and (84GLE/BIS	-10).	-40	*EST	18895-06-2			
=0	(8.8) IP is onset of photo	(167) pelectron b	(699) and.	-36	-150	*EST	16214-27-0			
C ₉ H ₆ S ₃ +										
O S	(7.8) IP is onset of photo	(253) pelectron b	(1060) and.	74±2	311±10	72GEI/RAU	3445-76-9			

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₉ H ₇ BrO ₂ + C ₉ H ₇ BrO ₂ + C ₂ C ₁ C ₂ C ₂ C ₁ C ₂ C ₁ C ₂ C ₂ C ₁ C ₂	(8.80) IP from 84SCH.	(152)	(638)	-50	-211	*EST				
C ₉ H ₇ ClO ₂ +	(8.85) IP from 84SCH.	(147)	(615)	-57	-239	*EST	4513-41-1			
C9H7FO2+	(9.00) IP from 84SCH.	(103)	(430)	-105	-438	*EST	451-69-4			
C ₉ H ₇ IO ₂ + COOH	(8.55) IP from 84SCH.	(160)	(668)	(-37)	(-156)	*EST	90276-19-0			
C9H7MnO3 + OC CO Mn CH3	(7.4) IP is onset of phot	(47) coelectron b	(196) and (81CAL/H	-124 :UB, 81CAL/I	-518 LIC).	*EST	12108-13-3			
С ₉ H ₇ N ⁺	8.62±0.01	249	1043	50±0.2	211±1	79VIS	91-22-5			
	8.53±0.03	247	1031	50±0.2	208±1	79VIS/WIL	119-65-3			
	·····									

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₉ H ₇ NO +	8.00±0.02	(215)	(903)	31	131	*EST	1613-37-2
исСН3	(≤9.82) IP from 85GAL/C	(≤237) GER.	(≤991)	11	44	*EST	1443-80-7
(C)(O)NO	(7.9) IP is onset of phot	(213) toelectron b	(890) pand.	31	128	*EST	1532-72-5
C ₉ H ₈ +							
C≡C-CH ₃	8.41 See also: 81ELB/I	(258) LIE.	(1079)	64	268	85DAV/ALL	673-32-5
CH3 C≡CH	(≤8.61±0.02)	(≤264)	(≤1105)	65	274	*EST	766-47-2
H ₃ C C≡CH	(≤8.63±0.02)	(≤264)	(≤1106)	65	273	*EST	766-82-5
H ₃ C C=CH	8.3 IP is onset of phot	(257) oelectron b	(1075) and.	65	274	*EST	766-97-2
	8.14±0.01	227	948	39±0.2	163±1	80KUD/KUD	95-13-6

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	$\Delta_f H$ (Ion) kcal/mol kJ/		∆ _f H(Neu cal/mol		Neutral reference	CAS registry			
C9H8+	(7.99)	(271) (113	34) 87	7	363	*EST	14867-83-5			
C ₉ H ₈ Cl ₂ ⁺	(8.7) IP is onset of pho	(234) (979 toelectron band.	9) 33	3	140	*EST	2415-80-7			
C9H8F3+	From proton affin PA = 194.6 kcal/r			V 402-24-	4) (84HAR/HO)	U).				
C9H8MnO3 + occo	From proton affin PA = (200.6) kcal	(44) (183 ity of η ⁵ -methylo //mol, (839.) kJ/m	yclopentadienyl	-(RN 121	108-13-3).					
C9H8N+	From proton affin 948. kJ/mol.	190 793 ity of quinoline (A = (22)	6.5) kcal/mol,					
	From proton affin 945. kJ/mol.	190 793 ity of isoquinolin). PA =	225.9 kcal/mol,					
C ₉ H ₈ NO +	From proton affin 940. kJ/mol.	172 721 ity of quinoline-1		3-37-2).	PA = 224.6 kcal,	/mol,				

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number		
C9H8N2+	(≤8.5) IP from 82CRI/LI	(≤299) C.	(≤1251)	103	431	*EST	30855-80-2		
C ₉ H ₈ OS +		• • • • • • • • • • • • • • • • • • • •							
CH ₃	(≤8.75) IP from 82BEN/D	(≤203) UR.	(≤848)	1	4	*EST	33945-86-7		
CH3	(8.2) IP is onset of phot	(190) oelectron l	(795) pand (82BEN	1 /DUR).	4	*EST	51500-43-7		
C ₉ H ₈ O ₂ +		······································			7 /uiu				
Соон	(8.90±0.05) IP from 84SCH.	(155)	(649)	-50	-210	*EST	102-94-3		
Соон	(9.00±0.05) IP from 84SCH.	(153)	(641)	-54	-227	77PED/RYL	140-10-3		
	(≤9.38) IP from 85GLE/JA	(≤249) AH.	(≤1043)	33	138	*EST	94499-50-0		
	(≤8.65) IP from 78MAR/S0	(≤193) CH.	(≤809)	-6	-26	*EST			
	(≤8.90) IP from 78MAR/S0	(≤204) CH.	(≤854)	-1	-5	*EST			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H({ m Id}$	\m\\	Δ _f H(Ne		Neutral	CAS registry	
Neutral	eV	kcal/mol		kcal/mol		reference	number	
C9H8O2+	(8.1) IP is onset of pho	(199) toelectron b	(834) and.	12	52	*EST	60526-40-1	
C ₉ H ₈ O ₂ S ⁺		4.		·				
СН3	(≤9.10) IP from 82BEN/D	(≤158) DUR.	(≤662)	-52	-216	*EST	6224-55-1	
CH ₃	(≤9.20) IP from 82BEN/D	(≤160) oUR.	(≤672)	-52	-216	*EST	6406-91-3	
С ₉ H ₈ O ₃ + соон	(8.50±0.05) IP from 84SCH.	(93)	(389)	-103	-431	84SCH	614-60-8	
C9H9+ CH3 CH2	From proton affin PA ≈ 203.8 kcal/n			(RN 766-97-2) ((85MAR/MC	DD).		
	(217) (907) $ \Delta_f H(\text{Ion}) \text{ from appearance potential determination in C}_6 H_5 C(\text{CH}_3) = \text{CH}_2 \text{ (85HON/SEG)}; $ structure may be indanyl or vinyltropylium.							
C ₉ H ₉ BrO ₂ S ⁺								
$C_9H_9BrO_2S^+$ $B_7 \longrightarrow C_{H_3} \longrightarrow C_{H_3}$	O ≤8.92 O IP from 84CAU/F	(≤174) UR.	(≤727)	-32	-134	*EST		

Table 1. Positive Ion Table - Continued

	Table 1. I ostave for Table Continued						
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C9H9C1+	(≤8.64)	(≤228)	(≤953)	28	119	*EST	1798-84-1
C9H9ClO2S+	≤8.94 IP from 84CAU/I	(≤162) FUR.	(≤679)	-44	-184	*EST	
CH ₃ C ₉ H ₉ FO ₂ S + F—C C S O C C C C C C C C C C C C C C C C	(≤9.05) IP from 84CAU/I	(≤145) FUR.	(≤607)	-64	-266	*EST	
C9H9N+	(9.16±0.06)	(248)	(1037)	36.6	153	*EST	
CH ₃	(7.44±0.015)	(203)	(850)	32	132	*EST	95-20-5
CH ₃	(7.54±0.01)	(205)	(859)	32	132	*EST	83-34-1
CH ₃	(7.60±0.015)	(207)	(865)	32	132	*EST	16096-32-5
H ₃ C N H	(7.54±0.015)	(205)	(859)	32	132	*EST	3420-02-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(\text{Ion})$ $\Delta_f H(\text{Neutral})$ Neutral CAS registry								
Neutral	eV	kcal/mol		kcal/mol		reference	number		
C ₉ H ₉ N ⁺	(7.53±0.015)	(205)	(859)	32	132	*EST	933-67-5		
ССН ₃	(≤7.12)	(≤214)	(≤895)	50	208	*EST	33804-84-1		
C9H9NO+ C≅NO H3C CH3	(8.4) IP is onset of pho	(249) toelectron b	(1042) and.	55	232	*EST	19111-74-1		
H3C0 CH2-CN	(8.77±0.05)	(209)	(876)	7.1	30	*EST	104-47-2		
C ₉ H ₉ NO ₄ S + O ₂ N — CH ₃ CH ₃	(≤9.62) IP from 84CAU/F	(≤181) UR.	(≤758)	-41	-170	*EST			
C9H9O+	193 806 From proton affinity of 4-CH ₃ OC ₆ H ₄ C≡CH (RN 768-60-5) (85MAR/MOD). PA = 210.1 kcal/mol, 879. kJ/mol.								
С9H ₁₀ ⁺	8.15 IP from 78FU/DU	217 JN and onse	907 t of photoelectron	29 n band (81K	121 (OB/ARA).	69BEN/CRU	766-90-5		
H C-5C-CH3	(8.08) IP is onset of phot	(214) oelectron ba	(897) and (81KOB/AR	28 A).	117	69BEN/CRU	873-66-5		

392 LIAS ET AL.

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry			
C ₉ H ₁₀ ⁺ C+3 C=CH ₂	8.19±0.02	216	903	27	113	69BEN/CRU	98-83-9			
CH2-CH=CH2	8.60 See also: 78FU/D	(236) UN.	(986)	37±2	156±8	81СНІ/НҮМ	300-57-2			
	8.35 IP from 78FU/DU	229 IN.	957	36±0.2	151±1	82FUC/HAL	873-49-4			
СH=СH ₂	8.20±0.02	217	909	28	118	69BEN/CRU	611-15-4			
CH=CH ₂	8.15±0.02	215	901	27	115	69BEN/CRU	100-80-1			
н ₃ с сн=сн ₂	8.1±0.1 IP is onset of photo	(214) Delectron ba	(896) and.	27	115	69BEN/CRU	622-97-9			
	(8.3) IP is onset of photo	(206) Delectron ba	(862) and.	15±0.2	61±1	80KUD/KUD	496-11-7			
	(8.47)	(293)	(1225)	97±2	408±8	73ENG/AND2	452-61-9			

Table 1.	Positive	Ion Table	_	Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$	$\Delta_{\mathbf{f}}H(1)$	$\Delta_{\mathbf{f}}H(\text{Neutral})$ Neutral			
Neutral	eV	kcal/mol kJ/mol	kcal/me	ol kJ/mol	reference	number	
C ₉ H ₁₀ +							
	(8.2) IP is onset of pho	(246) (1030) toelectron band.	57	239	*EST	766-30-3	
	(8.2) IP is onset of pho	(246) (1030) toelectron band.	57	239	*EST	24430-29-3	
	(8.3) IP is onset of photon	(344) (1441) toelectron band (82SPA	153 /KOR).	640	*EST	55980-70-6	
	(7.9) IP is onset of photon	(271) (1133) toelectron band.	89	371	*EST	7092-57-1	
C9H ₁₀ Br +							
Br - CH ₃ CH ₃ CH ₃	Value from appea	186 777 rance energy determina	tions (86ORL)	/MIS).			
C9H ₁₀ BrNO ⁺			<u></u>				
Br — C—N(CH3)2	(≤9.09) IP from 85GAL/G	(≤192) (≤803) EER.	-18	-74	*EST	18469-37-9	
С ₉ H ₁₀ Cl ⁺							
CI CICH312		180 753 ity of 4-ClC ₆ H ₄ C(CH ₃) from appearance energ					

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number					
C ₉ H ₁₀ ClNO ⁺											
CI-C-N(CH3)2	(≤9.16) IP from 85GAL/	(≤182) (≤760) GER.	-30	-124	*EST	14062-80-7					
C ₉ H ₁₀ F ⁺											
Ć(CH ₃) ₂		138 579 nity of 4-PC ₆ H ₄ C(CH ₂ te from appearance ene									
C ₉ H ₁₀ FNO ⁺	+										
FC-N(CH ₃) ₂	(≤9.13) IP from 85GAL/0	(≤140) (≤587) GER.	-70	-294	*EST	24167-56-4					
C ₉ H ₁₀ I ⁺						···					
I — С.	Value from appea	199 833 arance energy determin	nations (86ORL/M	IIS).							
C ₉ H ₁₀ N ⁺ (HC≡CCH ₂) ₃ NH	From proton affir 921. kJ/mol.	(319) (1336) nity of (HC≡CCH ₂) ₃ N	(RN 6921-29-5).	PA = 220.2 k	cal/mol,						
C ₉ H ₁₀ NO ₂ +											
$0^{2}N - \bigcirc $	Value from appea	189 789 arance energy determin	ations (86ORL/M	IIS).							
C ₉ H ₁₀ N ₂ + CN CN NICH ₃ h ₂	(7.60) IP is onset of pho	(230) (963) toelectron band (81M0	55 DD/DIS).	230	*EST	1197-19-9					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (Ιο	on)	Δ _f H(Ne	utrel)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₉ H ₁₀ N ₂ O ₃ + O ₂ N-C-NICH ₃ I ₂	(≤9.46) IP from 85GAL/G	(≤192) BER.	(≤803)	-26	-110	*EST	7291-01-2
C9H ₁₀ N ₄ ⁺ N N CH ₃ CH ₃	(≤8.7) IP from 84GLE/SI	(≤261) PA2	(≤1090)	60	251	*EST	6479-02-3
С ₉ H ₁₀ O +	(8.7±0.2) IP from 84DEN/A	(182) UD.	(763)	-17	-73	84DEN/AUD	1335-10-0
СНО	(8.5) IP from 83AUD/N	(176) IIL.	(735)	-20	-85	83AUD/MIL	69380-02-5
CH3 0 C-CH3	(8.92) IP is onset of photo	(180) oelectron b	(754) and. See also: 81	-26 RAB/HEL.	-107	*EST	577-16-2
H ₃ C C=0	(8.85) IP is onset of photo	(175) pelectron b	(734) and. See also: 81)	-29 RAB/HEL.	120	*EST	585-74-0
н3С СН3	(8.85) IP is onset of photo	(176) pelectron b	(735) and. See also: 81)	-28 RAB/HEL,	-119 85GAL/GER.	*EST	122-00-9
CH ₂ CH ₃	(9.16) IP from 79MCA/T	(185) RA.	(775)	−26±0.5	109±2	77PED/RYL	93-55-0

Table 1. Positive Ion Table - Continued

			e ion rable	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₉ H ₁₀ O +					·		
CH2 C CH3	(8.7) IP is onset of phot	(177) coelectron b	(741) and (78CEN/FR		−98.6±1.4	77PED/RYL	103-79-7
ОН	(8.4±0.2) IP from 84DEN/A	(186) LUD.	(779)	-7	-29	84DEN/AUD	104-54-1
OH OH	(8.6±0.2) IP from 84DEN/A	(192) LUD.	(802)	-6	-25	84DEN/AUD	
	(7.93)	(161)	(673)	−22±1	-92±5	77SHA/GOL	493-08-3
ОТ ОН	(8.6) IP from 83AUD/N	(167) AIL.	(697)	-32	-133	83AUD/MIL	4254-29-9
C ₉ H ₁₀ O ₂ +					<u></u>		
© — ° — ° — ° — ° — ° — ° — ° — ° — ° —	(8.9) IP is onset of phot	(128) oelectron b	(537) and (81MEE/W	-77 AH).	-322	*EST	93-89-0
H3C CH3	(8.6) IP is onset of phot	(123) oelectron b	(514) and (81MEE/W	-75 AH).	-316	*EST	89-71-4
0 c 0 CH3	(8.5) IP is onset of phot	(119) oelectron b	(499) and (81MEE/W	<i>~77</i> AH).	-321	*EST	99-36-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f <i>H</i> (Io		Δ _f H(Ne		Neutral reference	CAS registry number
C ₉ H ₁₀ O ₂ + C-0-CH ₃	(8.4) IP is onset of photo	(117) oelectron b	(489) and (81MEE/W	-77 AH).	-321	*EST	99-75-2
ооссн ₃	(8.98±0.2)	(132)	(553)	−75±0.5	−313±2	77PED/RYL	122-46-3
н ₃ соС-сн ₃	8.2±0.1 See also: 85GAL/0	(132) GER.	(552)	-57	-239	*EST	100-06-1
OCH ³	(8.53±0.05)	(137)	(573)	−59.8±1	−250±4	*EST	586-37-8
COOH H3C CH3	(8.9) IP from 81MEE/W		(517)	-81.6±0.4	−341.6±1.7	84COL/JIM	632-46-2
СООСНЗ	(≤8.92) IP from 83HOU/R		(≤737)	-30	−124	*EST	3604-36-2
H ₃ C CH ₃	(8.2) IP is onset of photo		(649) nd.	-34	-142	*EST	60526-42-3
	(≤9.3) (IP from 85GLE/JA:		(≤799)	-23	-98	*EST	94499-48-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_{ m f} H$ (Ion)			Neutral)	Neutral	CAS registry
Neutral	eV	kcal/mol kJ/mol	kcal/mo	ol kJ/mol	reference	number
C9H ₁₀ O ₂ +	(9.14) IP is onset of phot	(187) (784) coelectron band (85GLE	-23 :/JAH).	-98	*EST	94595-48-9
	(≤8.85) IP from 78MAR/S	(≤167) (≤699) SCH.	-37	-155	*EST	67843-62-3
	(≤8.85) IP from 78MAR/S	(≤160) (≤668) CCH.	-44	-186	*EST	67843-61-2
°	(8.4) IP is onset of phot	(243) (1017) coelectron band.	49	207	*EST	70705-73-6
C9H ₁₀ O ₂ S+	(8.7) IP from 84CAU/F	(164) (684) UR.	-37	-155	*EST	
C ₉ H ₁₀ O ₂ Si ⁺ CH ₃ Si +	(8.0) IP is onset of phot	(156) (651) oelectron band (83ZYK	-29 V/ERC).	-121	*EST	1911-24-6
CH3 Si Co	(8.1) IP is onset of phot	(157) (661) oelectron band (83ZYK	-29 /ERC).	-121	*EST	73357-16-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry			
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number			
С ₉ н ₁₁ +										
Ć(СН3)2	(6.6)	(186) <i>(196)</i>	(777) (821)	32.4±1.5	135.5±6.3	81ROB/STE	16804-70-9			
	Value at 298 K fro PA = 207.0 kcal/r (83BRA/BAE, 85)	nol, 866. kJ	mol Value at 0 K	from appea	arance potential i					
нзс снснз	From proton affin PA = 206.8 kcal/n			(RN 622-9	7-9) (84HAR/HC	טט).				
C ₉ H ₁₁ Cl+		*************								
CH ₂ CI	(8.63±0.03)	(187)	(784)	-12	-49	*EST	2745-54-2			
н ₃ С Сн ₃										
C ₉ H ₁₁ N ⁺										
\Diamond	(7.1)	(222)	(929)	58	244	*EST	3334-89-2			
Ö	IP is onset of phot									
\bigvee_{N}										
	(≤8.0) IP from 82CRI/LIC		(≤1037)	63	265	*EST	38201-24-0			
CH ₃										
\bigcap^{N}			(≤957)	18	74	*EST	10500-57-9			
~~	IP from 79AUE/B	OW.								
			(≤963)	18	76	*EST	36556-06-6			
~ ~	IP from 79AUE/B	OW.								

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry				
C9H ₁₁ NO+	(≤9.04) IP from 85GAL/0	(≤186) 3ER.	(≤777)	-23	-95	*EST	611-74-5				
H ₃ C CN	(≤9.72) IP from 82PFI/GI	(≤214) ER.	(≤896)	-10	-42	*EST	65115-71-1				
(CH3)2N CHO	7.36±0.02 See also: 85GAL/	(160) GER.	(670)	-10	-40	*EST	100-10-7				
N-OCH3	(≤7.6) IP from 82CRI/LI	(≤210) C.	(≤880)	35	147	*EST	27347-09-7				
C ₉ H ₁₁ NOS +	(8.2) IP is onset of photon	(160) toelectron t	(670) pand (82LOU/VA	29 .N).	-121	*EST					
C ₉ H ₁₁ NO ₂ + NO ₂ CH ₃ CH ₃ O	(8.8) IP is onset of phot	(200) coelectron t	(836) pand.	-3	-13	*EST	603-71-4				
(CH3)2N OH	(7.1) IP is onset of phot	(97) coelectron b	(405) pand (81MEE/W <i>A</i>	-67 AH).	-280	*EST	619-84-1				
CH ₂ CH COOH	8.4 See also: 83CAN/I	119 HAM.	497	-74.8±0.3	-312.9±1.2	77PED/RYL	150-30-1				

Table 1. Positive Ion Table - Continued

Table 1. Positive fon Table - Continued										
ION Neutral	Ionization potential eV		on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₉ H ₁₁ NO ₃ +						1 1 1 1 1 1 1 1 1				
HO—CH2CH COOH	(8.0) IP is onset of pho	(68) otoelectron	(286) band(83CAN/HA	–116 AM).	-486	*EST	556-03-6			
C ₉ H ₁₁ NS ⁺			· · · · · · · · · · · · · · · · · · ·							
S C-NICH312	(≤7.70) IP from 82BER/I	(≤212) HEN.	(≤885)	34	142	*EST	15482-60-7			
C ₉ H ₁₁ NSe ⁺										
5e C-N(CH3)2	(≤7.33) IP from 82BER/F	(≤220) HEN.	(≤919)	51	212	*EST	13120-03-1			
aw of					· • · · · · · · · · · · · · · · · · · ·					
С ₉ H ₁₁ O +										
н ₃ с сн ₃	From proton affin 873. kJ/mol.	128 nity of (4-CI	535 H ₃)C ₆ H ₄ COCH ₂	3 (RN 122-00	9-9). PA = 20	8.7 kcal/mol,				
. CHCH3	From proton affii PA = 214.4 kcal/i			CH ₂ (RN 63	7-69-4) (84H <i>1</i>	AR/HOU).				
C ₉ H ₁₂ +		······································	····							
	8.43±0.02	228	954	34	141	76JEN	696-86-6			
CH2CH2CH3	8.72±0.01 Value from charg (78LIA/AUS) is in				7.9±0.7 ations	77PED/RYL	103-65-1			
CH(CH ₃) ₂	8.73±0.01 Value from charge (78LIA/AUS) is in				4.0±1.0 ations	77PED/RYL	98-82-8			

402 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С9H ₁₂ +	8.42±0.02 From charge tran	192 sfer equilibi	803 rium constant d	−2.3±0.2 leterminations	-9.5±1.1 (78LIA/AUS).	77PED/RYL See: 84HOW/GO	526-73-8 DN.
CH3 CH3	8.27±0.01 IP from 77ROS/D	187 PRA, 84HO	784 W/GON.	−3.3±0.2	-13.8±1.0	77PED/RYL	95-63-6
н ₃ с Сн ₃	8.41±0.01 Value from charg (78LIA/AUS) is i					77PED/RYL	108-67-8
	(8.07) IP from 83BAL/N	(207) IEU.	(868)	21	89	*EST	29304-70-9
H H	8.81±0.03 IP from 85TUR/P	229 'AN.	959	26.1±0.3	109±1	72KOZ/TIM	
₩ H	(8.89) IP from 85TUR/P	(236) AN.	(988)	31	130	*EST	
	(8.3) IP is onset of photon	(231) toelectron b	(965) and.	39	164	*EST	16529-82-1
	(≤8.92±0.03)	(≤252)	(≤1056)	47	195	*EST	16529-83-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry
C9H ₁₂ +						<u>, </u>	
	(8.2) IP is onset of pho	(283) toelectron b	(1185) eand.	94.1	393.7	81GOD/SCH	3105-29-1
	≤8.10 IP is onset of phot	(≤217) toelectron b	(≤910) and.	31	128	*EST	766-29-0
	(≤9.12)	(≤317)	(≤1325)	106	445	*EST	31561-59-8
9H ₁₂ BrO ₂ +	·····		1-11-1				
H ₃ C CH ₃ COOC ₂ H ₅	(7.75) IP is onset of phot	(88) coelectron b	(369) and (81CAU/0	-91 GIA).	-379	*EST	5408-07-1
GH ₁₂ CINO ₂ +				-1		· 	
CI CH3 H3C N COOC2H5	(≤8.03) IP from 81CAU/G	(≤83) ∂IA.	(≤346)	-103	-429	*EST	58921-31-6
CI COOC245	(≤7.94) IP from 81CAU/G	(≤81) ∂IA.	(≤337)	-103	-429	*EST	56453-93-1

C9H12N+

(156) (651)

From proton affinity of 2,3-cyclohexenopyridine (RN 10500-57-9). PA = (227.7) kcal/mol, (953.) kJ/mol.

(156) (653)

From proton affinity of 3,4-cyclohexenopyridine (RN 36566-06-6). PA = (227.7) kcal/mol, (953.) kJ/mol.

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C9H ₁₂ N+ H ₂ N- CH ₃ CH ₃ CH ₃	From appearance	179 750 energy determinatio	on (86ORL/MIS).							
C ₉ H ₁₂ NO + OH C. N(CH ₃) ₂	From proton affin (925) kJ/mol.	(122) (510) hity of C ₆ H ₅ CON(C	H ₃) ₂ (RN 611-74-	5) (86TAF). P.	A = (221) kcal/mol,					
C9H ₁₂ NO ₂ + CH ₃ NO ₂ H CH ₃	From proton affin PA = 198.4 kcal/r	164 687 ity of 2,4,6-(CH ₃) ₃ C nol, 830. kJ/mol.	C ₆ H ₂ NO ₂ (RN 60	3-71-4) (84ROI	L/HOU).					
CH2 CH COOH	H [†] From proton affin PA = 216.5 kcal/r	74 311 hity of L-C ₆ H ₅ CH ₂ C nol, 906. kJ/mol.	:H(NH ₂)СООН ((RN 150-30-1).						
C9H ₁₂ NO ₃ +	H [†] From proton affin	27 114 ity of L-tyrosine. PA	A = 222.3 kcal/mo	ol, 930. kJ/mol.						
C9H ₁₂ N ₂ O ₄ ⁺ H ₃ C COOC ₂ H ₅ O ₂ N CH ₃	(≤8.78) IP from 81CAU/C	(≤103) (≤432) SIA.	-99	-415	*EST					
O ₂ N CH ₃ H ₃ C N CCC ₂ H ₅	(≤8.76) IP from 81CAU/C	(≤103) (≤430) GIA.	-99	-415	*EST					

Table 1. Positive Ion Table - Continued

		·····	TVC 1011 Tab				
ION Neutral	Ionization potential eV	Δ _f H(l	Ion) l kJ/mol	∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С9H ₁₂ N ₂ O ₆ +	(9.0)	(142)	(593)	-66	-275	*EST	58-96-8
C ₉ H ₁₂ O+	(≤8.32)	(≤159)	(≤665)	-33	-138	*EST	2741-16-4
CH ₃ oc ₂ H ₅	(8.0) IP from 81BAK/A	(152) .RM.	(637)	-32	-135	*EST	614-71-1
OCH ₃	8.10±0.02	(161)	(674)	-26	-108	*EST	1004-66-6
C9H ₁₂ OS + 0	(≤8.56) IP from 81MOH/J	(≤180) (IA.	(≤752)	-18	-74	*EST	6378-07-0
С ₉ H ₁₂ O ₂ + осн ₃ осн ₃	(≤7.95)	(≤122)	(≤511)	-61	-256	*EST	494-99-5
CH3 CH3	(9.0) IP is onset of photo	(143) oelectron t	(599) pand (80FRO/	–64 WES).	-269	*EST	38476-46-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry
C ₉ H ₁₂ O ₂ S + 0 (CH ₂) ₂ CH ₃	(9.21±0.03)	(136)	(570)	-76.3±0.5	-319±2	*EST	13596-75-3
	(9.1) IP is onset of pho	(176) toelectron b	(735) pand (84AIT/GO	-34 S).	-143	*EST	
	(9.4) IP is onset of phor	(183) toelectron b	(764) and (84AIT/GO	-34 S).	-143	*EST	
C9H ₁₂ S+	(7.81±0.03)	(194)	(811)	14	57	*EST	874-79-3
SCHICH312	(7.9) IP is onset of phot	(195) coelectron b	(814) and.	12	52	*EST	3019-20-3
H ₃ C SC ₂ H ₅	(≤7.92)	(≤193)	(≤808)	11	44	*EST	34786-24-8
н ₃ с———5С ₂ ін ₅	(8.0) IP is onset of phot	(195) oelectron b	(816) and.	11	44	*EST	622-63-9
C ₉ H ₁₂ Se ⁺ CH ₃ SeC ₂ H ₅	(7.3) IP is onset of phot	(193) oelectron b	(806) and (81BAK/AR	24 RM).	102	*EST	37773-42-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₉ H ₁₂ Se +					···· =		
CH_3 \sim SeC_2H_5	(7.1) IP is onset of photon	(187) toelectron t	(784) pand (81BAK/A	24 RM).	99	*EST	37773-43-6
Sech(CH ₃) ₂	(≤8.3) IP from 81BAK/A	(≤217) \RM.	(≤908)	26	107	•EST	22233-89-2
C ₉ H ₁₃ ⁺		· · · · · · · · · · · · · · · · · · ·					
H3C CH3	From proton affin 840. kJ/mol.	161 ity of 1,3,5-	674 (CH ₃) ₃ C ₆ H ₃ (I	RN 108-67-8).	PA = 200.7	kcal/mol,	
н ₂ СН ₂ СН ₂ СН ₃	From proton affin 805. kJ/mol.	175 ity of n-C ₃ l	733 H ₇ C ₆ H ₅ (RN 10	03-65-1). PA	= 192.4 kcal/	mol,	
H ₂ CH(CH ₃ l ₂	From proton affin 804. kJ/mol.	175 ity of i-C ₃ F	730 I ₇ C ₆ H ₅ (RN 98	-82-8). PA =	192.1 kcal/m	ol,	
C ₉ H ₁₃ N ⁺			· ··· · · · ·		· · · · · · · · · · · · · · · · · · ·		779177
H ₃ C CH ₃	(7.15) See also: 83CET/I	(164) _AP	(686)	-1	-4	*EST	88-05-1
O NH₂	(≤8.89±0.12)	(≤216)	(≤902)	11	44	*EST	2038-57-5
CH3 NH2	(8.5) IP is onset of phot	(203) coelectron b	(849) eand.	7	29	*EST	300-62-9

Table 1. Positive Ion Table - Continued

	Table .	L. FUSILIY	e ion Table	- Contini	uea 		······································
ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₉ H ₁₃ N ⁺				•			
N CH3	(8.4) IP is onset of phot	(205) oelectron b	(857) and.	11	47	*EST	589-08-2
H ₃ C CH ₃	(7.34)	(182)	(763)	13	55	*EST	767-71-5
CH2NCH312	7.69 See also: 81LOG/	(197) ГАК, 79AU	(826) JE/BOW.	20	84	*EST	103-83-3
N(CH ₃) ₂ CH ₃	7.40±0.02	(195)	(813)	24	99	*EST	609-72-3
N(CH ₃) ₂ CH ₃	7.02 IP from charge tra Reference standar				67 ns (85LIA/JAC)	*EST	121-72-2
N(CH ₃) ₂	6.93 IP from charge tra Reference standar				70 ns (85LIA/JAC,	*EST 84MAU/NEL);	99-97-8
C(CH ₃) ₃	(≤9.30±0.05)	(≤222)	(≤929)	8	32	*EST	3978-81-2
C ₉ H ₁₃ NO ⁺							
(CH3)3C NO	(7.8) IP is onset of phot	(169) oelectron ba	(705) and.	-11	-48	*EST	23569-17-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/i		(Neutral) nol kJ/mol	Neutral reference	CAS registry
C9H ₁₃ NO ₂ + H ₃ C N CH ₃ CO	(≤7.91) OC ₂ H5 IP from 81CAU/((≤87) (≤36 GIA.	3) –96	-400	*EST	
H ₃ C COOC	2 ^H 5 (≤7.95) IP from 81CAU/0	(≤88) (≤36 GIA.	7) –96	-400	*EST	
C9H ₁₃ N ₂ O ₆ + 0 H0 - CH ₂ 0 N H 0H 0H	1 Prom proton affir	-66 -275 nity of uridine (RI		208) kcal/mol, (87	0) kJ/mol.	
С ₉ H ₁₃ O ₃ + H ₃ CO	Prom proton affir 923. kJ/mol.	55 228 aity of 1,3,5-C ₆ H ₃	(OCH ₃) ₃ (RN 621-	-23-8) PA = 220.	6 kcal/mol,	
H ₃ C CH	H ₃ 7.8±0.1	(183) (768) 4	15	*EST	4249-10-9
H ₃ C CH ₃	7.84±0.05	(183) (765) 2	9	*EST	4249-11-0
	(8.0) IP is onset of phot	(195) (817 coelectron band.) 11	45	81MAI/SCH	17530-61-9
$\langle \langle \rangle $	(8.7) IP is onset of pho	(200) (835) −1±0.7	∕ -4±3	83JOC/DEK	7124-86-9

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С9H ₁₄ +	(≤8.87)	(≤202)	(≤847)	−2±0.7	-9±3	77PED/RYL	2972-20-5
	(8.3) IP is onset of pho	(210) toelectron b	(879) Pand (82SPA/GLE	19 3).	78	*EST	81969-71-3
	(8.2) IP is onset of pho	(208) toelectron b	(869) vand (82SPA/GLE	19 3).	78	*EST	81969-72-4
	(≤9.65±0.03)	(≤236)	(≤987)	13	56	73ENG/AND	16526-28-6
	(8.8) IP is onset of phor	(211) toelectron b	(884) and.	8	35	73ENG/AND	16526-27-5
	(8.73)	(208)	(872)	7	30	*EST	873-12-1
A	(8.3) IP is onset of photon	(237) coelectron b	(993) and (82SPA/GLE	46 I).	192	*EST	24973-90-8



 $\begin{pmatrix}
\text{CH}_2\text{N/CH}_3\text{I}_2
\end{pmatrix}$ $\text{From proton affinity of } C_6\text{H}_5\text{CH}_2\text{N(CH}_3\text{I}_2\text{)} \text{(RN 103-83-3)}. PA = 228.1 kcal/mol,}$ 954. kJ/mol.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry number
C9H ₁₄ N ⁺	From proton affin 939. kJ/mol.	157 ity of 3-CH	658 ₃ C ₆ H ₄ N(CH ₂	3) ₂ (RN 121-72	:-2). PA = 2	24.5 kcal/mol,	
(H3C)N(CH3)2	H+ From proton affin 944. kJ/mol.	157 ity of 4-CH	656 3C ₆ H ₄ N(CH ₂	3) ₂ (RN 99-97-8	3). PA = 22.	5.6 kcal/mol,	
(C2H5)	4+ From proton affini 950. kJ/mol.	(156) ity of C ₆ H ₅ ;	(651) N(CH ₃)(C ₂ H	I ₅) (RN 613-97	-8). PA = 2:	27.1 kcal/mol,	
H ₅ C ₂ H ₅ C ₂ H ₅	From proton affini 967. kJ/mol.	(139) ity of 2,6-die	(582) ethylpyridine	(RN 935-28-4).	PA = 231.1	kcal/mol,	
C(CH3)3	From proton affini (951.) kJ/mol.	(145) ity of 2-tert-	(607) butylpyridine	(RN 5944-41-2	2). PA = (22	7.4) kcal/mol,	
H_N C(CH3)3	From proton affini 945. kJ/mol.		(616) butylpyridine	(RN 3978-81-2	e). PA = 225	5.9 kcal/mol,	
C9H ₁₄ O+ H ₃ C CH ₃	(≤9.07) IP from 82PFI/GE		(≤6 69)	-49	-206	*EST	78-59-1
СНЗ	(8.6) IP is onset of photo		(603) and (80FRO/\	−54 WES).	-227	*EST	13211-15-9

Table 1. Positive Ion Table - Continued

		1. 1 05111	ve Iuli Table	- Contin	ucu		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
С9H ₁₄ O + H ₃ C Н ₃ C	(8.75) IP is onset of pho	(148) toelectron t	(617) pand (80FRO/W	-54 ES).	-227	*EST	38476-45-8
C ₉ H ₁₄ O ₂ + H ₃ C C ₉ H ₁₄ O ₂ + OCH ₃	(≤9.35) IP from 82PFI/GH	(≤138) ∃R.	(≤576)	-78	-326	*EST	4683-45-8
C9H14SSi+	(8.67±0.05)	(166)	(696)	-34	-141	*EST	4551-15-9
C9H ₁₄ Si +	8.22 IP is onset of phot	(168) toelectron t	(704) pand (82TRA/R)	−21 BD).	-89	*EST	768-32-1
C ₉ H ₁₄ Sn +	8.83±0.05	231	965	27±1	113±5	77PED/RYL	934-56-5
C ₉ H ₁₅ N ⁺ (CH ₂ =CHCH ₂) ₃ N	(7.5) IP is onset of phot	(226)	(948) pand. See also: 79	54 PAUE/BOW.	224	*EST	102-70-5
	(≤7.46) IP from 81MUL/F	(≤197) PRE2.	(≤826)	25	106	*EST	7326-44-5
\sim N	7.1 IP from 79AUE/B	(164) 3OW.	(686)	0.2	1	*EST	7148-07-4

Table 1.	Positive	Ion	Table	_	Continued
----------	----------	-----	-------	---	-----------

ION Neutral	Ionization potential eV		lon) kJ/mol	Δ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₉ H ₁₅ N +							
N	(7.57±0.02)	(165)	(692)	-9	-38	*EST	281-27-6
C ₉ H ₁₅ NO ⁺							
H ₃ C NHCH ₃	(≤8.11) IP from 82PFI/G	(≤144) ER.	(≤602)	-43	~180	*EST	701-58-6
C ₉ H ₁₅ N ₂ O ₆ ⁺							
0 HO-CH ₂ N OH OH	From proton affi (870) kJ/mol.	–76 nity of 5,6-d	−317 ihydrouridine (F	N 56 27- 05-4)). PA = (208) kc	al/mol,	
C ₉ H ₁₆ +							
(E)-n-C ₅ H ₁₁ CH = CHCH =	= CH ₂ (8.44) IP from 81MAS/I	(193) MOU.	(809)	-1	-5	*EST	56700-77-7
1-C ₉ H ₁₆	(9.93±0.02)	(244)	(1020)	15±0.7	62±3	79ROG/DAG	3452-09-3
2-C ₉ H ₁₆	9.30±0.02	225	941	11±1	44±3	79ROG/DAG	19447-29-1
3-C ₉ H ₁₆	9.20±0.01	222	930	10±0.7	42±3	79ROG/DAG	20184-89-8
4-C ₉ H ₁₆	(9.17±0.03)	(221)	(927)	10±0.7	42±3	79ROG/DAG	20184-91-2
(CH ₂) ₇ CH CH	(8.81±0.15)	(190)	(795)	-13	-55	78GRE/LIE	933-21-1
₩ H	≤9.36	≤210	≤878	-6.0±0.3	-25.2±1.4	84WIB/LUP	39124-79-3
H.	(≤9.4)	(≤211)	(≤884)	-5.5±0.2	-23±1	77PED/RYL	286-60-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C9H ₁₆ +	(9.46±0.06) IP from 80MIK/2	(187) ZAI.	(782)	−31±0.5	−131±2	77PED/RYL	3296-50-2				
H,	(9.46±0.06) IP from 80MIK/2	(188) ZAI.	(786)	-30±0.5	-127±2	77PED/RYL	4551-51-3				
4	(9.35)	(185)	(774)	-31±1	−128±3	77PAR/STE	280-65-9				
	(9.0) IP is onset of pho	(183) toelectron b	(765) and.	-25	-103	81MAI/SCH	283-19-2				
C9H ₁₆ CIN ⁺ CH ₃ CH ₃ CH ₃	(≤8.34) IP from 82NEL/C	(≤179) GAN.	(≤748)	-14	-57	*EST	82666-06-6				
C ₉ H ₁₆ N ⁺ (CH ₂ =CHCH ₂) ₃ NH	From proton affir 962. kJ/mol.	(189) nity of (CH ₂	(792) = CHCH ₂) ₃ N	i (RN 102-70-5)). PA = 230.	0 kcai/mol,					
C ₉ H ₁₆ NO ₂ ⁺ O CH ₃ CH ₃ CH ₃ CH ₃	7.40±0.05	120	499	−51±2	−215±7	<i>11</i> PED/RYL	2896-70-0				
C ₉ H ₁₇ N ⁺	(8.23)	(183)	(763)	-7	-31	*EST	6407-36-9				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	A 11/1	\	A 77/21	t01)	No41	CAS an -i-t
Neutral	eV	∆ _f H(Io kcal/mol		Δ _f H(No kcal/mol	kJ/mol	Neutral reference	CAS registry number
C ₉ H ₁₇ N ⁺	(≤7.93±0.03) See also: 81MUL	(≤172) /PRE2.	(≤717)	-11	-48	*EST	673-33-6
	≤7.46 IP from 81MUL/I	(≤160) PRE2.	(≤670)	-12	-50	*EST	7182-10-7
	(≤7.29) IP from 81MUL/I	(≤164) PRE2.	(≤688)	4	-15	*EST	13750-57-7
C9H ₁₇ NO + (CH ₃) ₂	(7.74)	(113)	(474)	-65±1	~273±4	77PED/RYL	826-36-8
C ₉ H ₁₇ NO ₂ + 0 CH ₃ CH ₃ CH ₃	(8.51±0.05)	(125)	(523)	71±1	−298±5	77PED/RYL	3637-11-4
CN OCH3	(≤7.9) IP from 79AUE/E	(≤104) 8OW.	(≤436)	-78	-326	*EST	
C ₉ H ₁₈ + 1-C ₉ H ₁₈	(9.42±0.01)	(192)	(805)	−25±0.2	-104±1	74ROG/KAN	124-11-8
$n-C_4H_9C(CH_3) = C(CH_3)_2$	(8.14±0.01)	(157)	(655)	-31	-131	*EST	3074-64-4
$(E)-C_3H_7C(CH_3)=C(CH_3)$)C ₂ H ₅ (8.08±0.01)	(155)	(649)	-31	-130	*EST	3074-67-7
(Z)-2-C ₉ H ₁₈	(8.90±0.01)	(179)	(748)	-26	-111	*EST	6434-77-1
(E)-2-C ₉ H ₁₈	(8.90±0.01)	(178)	(745)	-27	-114	*EST	6434-78-2

Table 1. Positive Ion Table - Continued

	- Tubic	Table 1. Positive foil Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number						
C ₉ H ₁₈ + (Z)-3-C ₉ H ₁₈	(8.84±0.01)	(178)	(743)	-26	-110	*EST	20237-46-1						
(E)-3-C ₉ H ₁₈	8.84±0.01	(177)	(739)	-27	-114	*EST	20063-92-7						
(Z)-4-C ₉ H ₁₈	(8.80±0.01)	(177)	(739)	-26	-110	*EST	10405-84-2						
(E) -4- C_9H_{18}	(8.81±0.01)	(176)	(736)	-27	-114	*EST	10405-85-3						
CH3	(10.21) IP from 81HER/S	(196) SIC.	(818)	-40	-167	*EST	13151-51-4						
CH ₃	(10.31) IP from 81HER/S	(196) IC.	(820)	-42	-175	*EST	13151-50-3						
CH ₃	(10.41) IP from 81HER/S	(197) IC.	(824)	-43	-180	*EST	13151-53-6						
(CH2)2CH3	(9.46) From charge trans IP's of fluorobenze		(720) ium constants (8		-192.7±0.7 h. Reference stand	77PED/RYL dards,	1678-92-8						
—снісн ³ у ⁵	(9.33) From charge trans IP's of fluorobenze					*EST dards,	696-29-7						
C ₂ H ₅	(9.34) From charge trans IP's of fluorobenze		(706) um constants (8	-47±0.5 2SIE/MAU)	-195±2 . Reference stand	77PED/RYL dards,	4926-90-3						
C ₂ H ₅	(9.32) From charge trans IP's of fluorobenze		(704) um constants (8	-47±0.5 2SIE/MAU)	-195±2 . Reference stand	77PED/RYL dards,	4923-78-8						

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₉ H ₁₈ + H ₃ C CH ₃ CH ₃	9.39 IP from charge tra standards, IP's of			-56.2 (82SIE/MA	-235.1 U). Reference	69STU/WES	3073-66-3
H ₃ C CH ₃	(9.38) IP from 82SIE/M	(166) AU.	(695)	-50	-210	*EST	2234-75-5
(сн ₂) ₃ сн ₃	(9.95±0.03)	(189)	(792)	-40	-168	71ASTM	2040-95-1
C9H18N+ (C) CH=C(CH32) H**	From proton affin PA = (230.7) kcal			tene (RN 67	3-33-6).		
C9H ₁₈ NO+ (CH ₃) ₂ (CH ₃) ₂	(6.73)	(181)	(757)	26±2	108±10	*EST	2564-83-2
C ₉ H ₁₈ NO ₂ + OH OH CH ₃ CH ₃ CH ₃	(7.4±0.1)	(101)	(423)	−70±2	-291±9	77PED/RYL	2226-96-2
OCH ₃ OCH ₃ H	From proton affir PA = (232) kcal/r	(56) nity of 3,3-di nol, (971) k.	(233) methoxy-1-azab J/mol.	icyclo[2.2.2]c	octane.		

418 LIAS ET AL.

Table 1. Positive Ion Table - Continued

	1 able .	I. Positiv	e Ion Table •	- Contin	uea 		
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₉ H ₁₈ N ₂ +					· · · · · · · · · · · · · · · · · · ·		
	7.0 IP is onset of photon	(166) toelectron b	(694) and (85HON/YA	5 AN).	19	*EST	
$\bigcirc_{N}^{N}\bigcirc$	7.0 IP is onset of photon	(157) toelectron b	(656) eand (85HON/Y <i>A</i>	-5 AN).	-19	*EST	
н ₃ с-и и-сн ₃	(6.8) IP is onset of phot	(164) toelectron b	(685) and (81LIV/ROI	7 3).	29	*EST	14789-33-4
C ₉ H ₁₈ O ⁺		· · · · · · · · · · · · · · · · · · ·					
n-C ₇ H ₁₅ COCH ₃	(9.16) IP from 81HOL/F	(130) IN.	(542)	-81±0.5	-340±2	78SEL/STR2	821-55-6
(n-C ₄ H ₉) ₂ CO	(9.07) IP from 81HOL/F	(127) IN.	(530)	-82.4±0.3	-344.9±1.2	77PED/RYL	502-56-7
(iso-C ₄ H ₉) ₂ CO	9.04±0.03	123	515	-85.5±0.3	-357.6±1.1	77PED/RYL	108-83-8
(t-C ₄ H ₉) ₂ CO	8.67±0.02	117	491	-82.6±0.3	-345.8±1.1	77PED/RYL	815-24-7
C ₉ H ₁₉ ⁺ (n-C ₄ H ₉)(n-C ₃ H ₇)(CH ₃)(From appearance	133 potential m	556 easurement (84L	.OS/HOL).		84LOS/HOL	92056-65-0
C ₉ H ₁₉ N + H ₃ C H ₃ C CH ₃ CH ₃	7.59 IP from 82ROZ/H	137 IOU, 79AU	572 E/BOW.	−38±0.7	-160±3	81SUR/HAC	768-66-1
C9H ₁₉ N ₂ +	From proton affin 972. kJ/mol.	166 ity of 1,5-di	696 azabicyclo[3.3.3]v	indecane. P	A = 232.4 kcal/	mol,	

Table 1.	Positive	Ion Table	_	Continued
Tame 1.	1 0314146	IUM LADIC	_	Communea

ION	You igntion notantial	۸ ۱۱/۲۵		A LI(Na	utral)	Neutral	CAS registry
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	number
C9H ₁₉ O + (tert-C ₄ H ₉) ₂ COH		• ***					
· • • • • • • • • • • • • • • • • • • •		77	320				
	From proton affi 864. kJ/mol.	nity of (tert-	C ₄ H ₉) ₂ CO (F	KN 815-24-7). F	A = 206.5 kca	ıl/mol,	
C9H20+							
n-C ₉ H ₂₀	(9.72)	(170)	(709)		-228.4±0.6	74SCO	111-84-2
	YD former also one As	(182)	<i>(761)</i>		-177.1±0.6	£	
	IP from charge to standards, fluoro	=	orium constai	nts (81MAU/SI	E, 82LIA). Re	rerence	
C9H ₂₀ N ⁺							
(H3C H CH3)		(96)	(401)				
(H3C CH3) H7	-	-		oiperidine (RN	768-66-1).		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	PA = (231.7) kc	ıl/mol, (969.)	kJ/mol.				
C ₉ H ₂₁ BO ₃ +						<u> </u>	
(n-C ₃ H ₇ O) ₃ B	(10.02)	(-26)	(-109)	−257±1	-1076±5	77PED/RYL	688-71-1
C ₉ H ₂₁ N ⁺							
(n-C ₃ H ₇) ₃ N	(7.4)	(132)	(552)	-38±0.2	-161±1	*EST	102-69-2
	IP is onset of pho	toelectron b	and.				
tert-C ₅ H ₁₁ (tert-C ₄ H ₉)NH							
1011 O511 [[(1011 O4119). 111	(7.81±0.1)	(134)	(563)	-46±1	-191±4	*EST	58471-09-3
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ predict	ed from hyd	rogen affinitie	s of secondary	amines: 131 kc	al/mol,	
	548 kJ/mol. Corre	esponding IP	r = 7.7 eV.				
C ₉ H ₂₂ N ⁺							
(n-C ₃ H ₇) ₃ NH		(93)	(390)				
	From proton affi		H ₇) ₃ N (RN 1	02-69-2). PA =	= 234.0 kcal/mo	ol,	
	979. kJ/mol.						
(tert-C ₄ H ₉)C(CH ₃) ₂ NH(C	CH ₃) ₂						
e er e wew		(97)	(404)				
	From proton affir) ₂ N(CH ₃) ₂ (RI	N 3733-36-6).		
	PA = 235.1 kcal/	mol, 984. kJ/	mol.				
(tert-C ₅ H ₁₁)(tert-C ₄ H ₉)N	н ₂						
	-	(88)	(366)				
	From proton affin			C ₄ H ₉)NH (RN	58471-09-3).		
	PA = 232.5 kcal/	mol, 973. kJ/	mol.				
С ₉ Н ₂₂ ОР ⁺							
(i-C ₃ H ₇) ₃ POH		17	73				
	From proton affin	_		17513-58-5) (85	BOL/HOU).		
	PA = 227.5 kcal/	mol, 952. kJ/	mol.				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	_	(Ion) ol kJ/mol		leutral)	Neutral reference	CAS registry						
C ₉ H ₂₅ N ₃ OP ⁺ HOP(CH ₂ N(CH ₃) ₂) ₃	$HOP(CH_2N(CH_3)_2)_3$ 51 214 From proton affinity of $OP(CH_2N(CH_3)_2)_3$ (RN 2327-88-0) (85BOL/HOU). PA = 235. kcal/mol, 983. kJ/mol.												
C9H27NSi3 ⁺ ((CH ₃) ₃ Si) ₃ N	(≤8.60)	(≤38)	(≤160)	-160±3	-670±12	77PED/RYL	1586-73-8						
C_{10} Br C_{03} O $_{9}$ + C_{10} Br C_{03} O $_{9}$ + C_{10} Co $_{00}$ C	7.8 IP is onset of photon	-81 oelectror	-337 1 band (81CHE/	−261±2 HAL, 82COS	-1090±9 /LLO). See also	82PIL/SKI o: 82GRA/TON.	19439-14-6						
C ₁₀ ClCo ₃ O ₉ + c ₁ c ₁ c ₂ c ₃ c ₄ c ₅ c ₆ c ₇ c ₇	7.8 IP is onset of phot	-76 oelectror	-316 n band (81CHE/)	–255±2 HAL, 82GRA	−1069±10 √TON, 82COS/I	82PIL/SKI LLO).	13682-02-5						
C ₁₀ F ₈ + F F F F F F	8.85 IP from 84HOH/I	(-88) DIS, 82LE	(-368) 3V/LIA.	-292	-1222	*EST	313-72-4						
C ₁₀ H ₄ Cl ₂ O ₂ +	(9.5) IP is onset of phot	(180) oelectron		−39±2 FRE).	-162±10	*EST	117-80-6						
C ₁₀ H ₅ ClO ₂ +	(9.6) IP is onset of phot	(189) oelectron	(789) a band (80RED/1	-33 FRE).	-137	*EST	1010-60-2						
C ₁₀ H ₅ NO ₅ W ⁺	7.53±0.05	29	121	-145	-606	84ALT/CON2	14586-49-3						

Table 1. Positive Ion Table - Continued

TON	•			A ***	. 1	NI	CAS c'
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₆ + C=CH C=CH	(8.69±0.02)	(329)	(1378)	129	540	*EST	21792-52-9
C==CH C==CH	(8.82±0.02)	(332)	(1390)	129	539	*EST	1785-61-1
HC≡CC=CH	(8.58±±0.02)	(327)	(1368)	129	540	*EST	935-14-8
C ₁₀ H ₆ Cl ₂ N ₂ +					- <u></u>	· <u>···································</u>	·
	(8.8) IP is onset of phot	(257) oelectron ba	(1074) and (83DOB/HI)	54 L).	225	*EST	1762-41-0
C ₁₀ H ₆ N ₂ +						***************************************	
	7.7 IP is onset of phot	(309) oelectron ba	(1294) and (85YAM/HI	132 G).	551	*EST	
	8.3 IP is onset of photo		(1352) and (85YAM/HI	132 G).	551	*EST	
C ₁₀ H ₆ O ₂ +	······						
	9.56±0.01 See also: 80RED/F	194 RE.	811	−27±1	-111±4	77PED/RYL	130-15-4
		····					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry
C ₁₀ H ₆ S ⁺	(8.0) IP is onset of pho	(262) toelectron b	(1096) and (81BOC/BF	77 RA).	324	•EST	3968-63-6
C ₁₀ H ₆ SSe ⁺ Se-S	(≤7.14) IP from 81BOC/B	(≤236) BRA.	(≤986)	71	297	*EST	64869-35-8
C ₁₀ H ₆ S ₂ +	7.14 IP from 81BOC/B	(222) BRA, 82LEV	(931) //LIA.	58	242	*EST	209-22-3
Se—Se	(7.06) IP from 81BOC/B	(247) PRA.	(1033)	84	352	*EST	36579-71-2
C ₁₀ H ₇ Br ⁺	(8.09) IP from 83KLA/K	(228) OV.	(954)	42	174	*EST	90-11-9
C ₁₀ H ₇ Cl ⁺	(8.13) IP from 83KLA/K	(216) OV.	(904)	29±2	120±10	77PED/RYL	90-13-1
OO CI	(8.11) IP from 83KLA/K	(220) OV.	(920)	33±2	137±10	77PED/RYL	91-58-7

Table 1. Positive Ion Table - Continued

			====				
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₀ H ₇ F ⁺	(8.15) IP from 83KLA/k	(200) COV.	(835)	12	49	*EST	321-38-0
	(8.23) IP from 83KLA/K	(201) KOV.	(843)	12	49	*EST	323-09-1
C ₁₀ H ₇ I+	(8.03) IP from 83KLA/K	(241) COV.	(1009)	56±2	234±9	77PED/RYL	76279-71-5
C ₁₀ H ₇ NO ₂ + NO ₂	8.60±0.01 See also: 83KLA/I	234 KOV.	980	36±1	150±5	77PED/RYL	86-57-7
OO NO2	8.65±0.02 IP from 83KLA/K	(232) OV, 82LEV	(9 7 0) //LIA.	32	135	*EST	581-89-5
C ₁₀ H ₇ NO ₂ S +							
HOOC N	(8.6) IP from 84DEM/S		(705)	~30	-125	*EST	7113-10-2
HOOC S	(8.7) IP from 84DEM/Si		(714)	~30	-125	*EST	10058-38-5

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) bl kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
С ₁₀ Н ₈ +											
	(8.0) IP is onset of pho	(238) toelectron	(997) band (81GLE/0	54 GUB).	225	*EST	34305-47-0				
	7.41±0.02	240	1004	69±0.7	289±3	77PED/RYL	275-51-4				
	8.14±0.01	223.6	935.8	35.9±0.3	150.4±1	82COL/JIM	91-20-3				
C ₁₀ H ₈ CrO ₃ +											
co co	6.9±0.2	(108)	(452)	-51±2	−214±9	77PED/RYL	12125-72-3				
OCCO 	(6.6±0.2)	(61)	(257)	-91±1	-380±5	84ALT/CON	12083-24-8				
C ₁₀ H ₈ CrO ₄ +						····					
ос _{ст} со — оснз	(6.75±0.1)	(39)	(162)	-117	-489	84ALT/CON	12116-44-8				
C ₁₀ H ₈ M ₀ O ₃ +				···							
oc. Co	(7.0) IP is onset of phot	(111) coelectron	(466) band.	-50±1	−209±7	82PIL/SKI	12125-77-8				

Table 1. Positive Ion Table - Continued

Table 1. Tositive foil Table - Continued							
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₈ N ₂ +	8.35±0.02 See also: 83DOB/	(262) HIL.	(1095)	69.1±1.2	289.0±5.2	85FAO/AKA	366-18-7
	(9.10±0.02)	(283)	(1182)	73	304	*EST	553-26-4
	(8.65) IP is onset of photon	(270) toelectron b	(1131) and (84BAR/CA	71 U).	296	*EST	3438-48-0
С ₁₀ H ₈ O ⁺	7.76±0.03	172	719	−7.1±0.2	-29.9±1	77PED/RYL	90-15-3
ООООН	7.85±0.05 IP from 85OIK/A	174 BE, 82LEV,	727 /LIA.	-7.2±0.3	-30.3±1.2	77PED/RYL	135-19-3
	(7.9) IP is onset of photon	(230) toelectron b	(962) and (84AND/CE	48±2 R).	200±10	77PED/RYL	4759-11-9
C ₁₀ H ₈ O ₂ +	(9.3) IP is onset of phot	(241) toelectron b	(1009) and (85GLE/JAF	27 H).	112	*EST	87258-06-8
C ₁₀ H ₈ S ⁺	(8.06)	(235)	(981)	49	203	*EST	825-55-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued							
ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mol		Neutral) ol kJ/mol	Neutral reference	CAS registry	
C ₁₀ H ₉ +	From proton affin	215 898 uity of azulene (RN 275-	51-4). PA = 2	220. kcal/mol, 92	7. kJ/mol.		
H ₂	From proton affin	207 865 aity of naphthalene (RN	91-20-3). PA	= 194.7 kcal/m	ol, 815. kJ/mol.		
C ₁₀ H ₉ BrO ⁺	(8.7±0.05) IP from 79SCH/G	(202) (843) BRU, 80GRU/SCH, 81S	1 CH/GRO.	4	79SCH/GRU	J	
Br CH ₃	(8.9) IP from 81SCH/G	(206) (862) PRO.	1	4	*EST	65300-30-3	
Br—CH3	(8.9) 3 IP from 81SCH/G	(206) (863) PRO.	1	4	*EST	3815-31-4	
C ₁₀ H ₉ CIO ⁺	(8.8) IP from 80GRU/S	(190) (795) SCH, 81SCH/GRO.	-13	-54	*EST		
CI CH3	(8.9) IP from 81SCH/G	(192) (805) RO.	-13	-54	*EST	30626-02-9	
СІ	(8.7) IP from 81SCH/G	(188) (785) PRO.	-13	-54	*EST	30626-03-0	

Table 1. Positive Ion Table - Continued

Table 1. Positive fon Table - Continued							
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₉ FO +							
OFO CH3	(8.9) IP from 79SCH/G	(154) RU, 80GR)	(646) U/SCH.	-51	-213	79SCH/GRU	2143-80-8
C ₁₀ H ₉ IO ⁺	····			· · · · · · · · · · · · · · · · · · ·			
CH3	(8.6±0.05) IP from 81SCH/G	(214) RO. See als	(895) so: 80GRU/SCH.	16	65	*EST	
I CH3	(8.7±0.05) IP from 81SCH/G	(214) RO.	(893)	13	54	*EST	
TCH3	(8.4±0.05) IP from 81SCH/G	(207) RO.	(864)	13	54	*EST	
C ₁₀ H ₉ N ⁺	· · · · · · · · · · · · · · · · · · ·						
NH ₂	(7.1) IP is onset of phot	(201) coelectron b	(843) and (83KLA/KO	38±2 V).	158±7	77PED/RYL	134-32-7
OO NH2	7.10±0.02 See also: 83KLA/I	196 KOV.	821	32±3	136±12	77PED/RYL	91-59-8
	7.75 IP from 84AND/0	(266) CER.	(1115)	88±2	367±7	<i>11</i> PED/RYL	4753-55-3
C ₁₀ H ₉ NO ⁺						,, <u>, , , , , , , , , , , , , , , , , ,</u>	
OT _N O CH ₃	(8.0) IP is onset of photon	(174) coelectron b	(727) and (81PFI/GUI)	-11).	-45	*EST	606-43-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	Δ _f <i>H</i> (Ne	utral)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
C ₁₀ H ₉ NO ₂ S +							
NC CH3	(9.0) O IP is onset of pho	(203) otoelectron b	(849) pand (84CAU/FU	-4 IR).	-19	*EST	69957-44-4
C ₁₀ H ₉ NO ₃ +				····			
CH ₃	(9.0) IP from 80GRU/	(198) SCH.	(827)	-10	~41	79SCH/GRU	20766-40-9
C ₁₀ H ₉ O +							
CCH ₃	$\Delta_{ extstyle f} H(extstyle Ion)$ from a	(147) ppearance p	(617) otential determin	ations (79S	CH/GRU).		45883-76-9
C ₁₀ H ₁₀ +							
C CH CH ₂	8.15±0.04 IP from 75DER/J	(237) IOC, 83DAS	(990) S/GRO.	49	204	*EST	2288-18-8
CH2	8.06±0.07 IP from 74KOP/S	(235) SCH, 83DAS	(982) 5/GRO.	49	204	*EST	16939-57-4
CH = CH ₂	(8.39)	(243)	(1017)	50	208	*EST	31915-94-3
CEC-C ₂ H ₅	8.35±0.02 IP from 82LEV/L	(259) .IA, 81ELB/	(1082) 'LIE. See also: 74	66 KOP/SCH.	276	*EST	622-76-4
CH2-CEC-CH3	(8.6) IP from 74KOP/S	(260) SCH.	(1089)	62	259	*EST	33598-22-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Nek		Neutral reference	CAS registry
C ₁₀ H ₁₀ +	(8.5) IP from 74KOP/S	(263) CH.	(1099)	67	279	*EST	16520-62-0
	8.20±0.02 IP from 75DER/J	(249) OC, 82LEV	(1041) /LIA. See al	60 so: 83DAS/GRC	250).	*EST	3365-26-2
	(8.42) IP from 83DAS/G	(258) FRO.	(1078)	64	266	*EST	20211-64-7
CH ₃	(8.3) IP from 84BAI/De	(277) OM.	(1160)	86	359	*EST	65051-83-4
	8.07±0.04 IP from 83DAS/G	(214) RO, 74KOI	(897) P/SCH.	28	119	77PED/RYL	447-53-0
CH ₃	(8.27) IP from 83DAS/G	(226) RO.	(945)	35	147	*EST	767-59-9
CH ₃	8.05 IP from 83DAS/G	(219) RO, 74KOI	(916) P/SCH.	33	139	*EST	767-60-2
CH ₂	(8.00±0.02) See also: 83DAS/0	(220) GRO.	(921)	36	149	*EST	1194-56-5

430 LIAS ET AL.

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	Δ _f <i>H</i> (Io		Δ _f H(Neu kcal/mol		Neutral reference	CAS registry number				
C ₁₀ H ₁₀ +											
CH ₂	(8.34) See also: 83DAS/0	(230) GRO.	(964)	38	159	*EST	68846-65-1				
	(8.26) IP from 83DAS/G	(254) BRO.	(1065)	64	268	*EST					
	(8.6) IP is onset of phot	(252) coelectron b	(1054) and.	53.5±1	224±4	86LIE/PAQ	6053-74-3				
	(8.17)	(265)	(1107)	76	319	*EST	1610-51-1				
	(8.18)	(266)	(1114)	78	325	*EST	58436-35-4				
	8.09±0.05	266	1115	80±0.7	334±3	81MAN/SUN	1005-51-2				
	(8.3) IP is onset of phot	(310) oelectron b	(1298) and (82HON/	119±5 EAT).	497±20	73ENG/AND	4572-17-2				
C ₁₀ H ₁₀ Br ₂ Ti +	≤8.8 IP from 82BOH. 3	(≤158) See also: 82	(≤663) LEV/LIA.	-44	-186	*EST	1293-73-8				

Table 1. Positive Ion Table - Continued

XON .									
ION Neutral	Ionization potential eV	Δ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₁₀ H ₁₀ Cl ₂ Hf ⁺									
CI HI CI	(8.5) IP is onset of pho	(93) toelectron b	(391) and.	-103±0.7	-429±3	82PIL/SKI	12116-66-4		
C II CI III +									
C ₁₀ H ₁₀ Cl ₂ Ti +	(8.2) IP is onset of pho	(126) toelectron b	(525) and. See also	-64±2 : 82BOH.	-266±9	82PIL/SKI	1271-19-8		
C ₁₀ H ₁₀ C ₀ +									
	(5.2)	(193)	(809)	73±1	307±5	77PED/RYL	1277-43-6		
C ₁₀ H ₁₀ Cr ⁺					·				
	5.50	184	772	58±1	241±5	77PED/RYL	1271-24-5		
C ₁₀ H ₁₀ F ₃ +									
F ₃ C C(CH ₃) ₂	From proton affin 835. kJ/mol.	35 uity of 4-CF ₃	146 C ₆ H ₄ C(CH ₃) = CH ₂ (RN 55	186-75-9). I	PA = 199.6 kcal/mol,			
C ₁₀ H ₁₀ F ₃ NO +									
F3C-C-N(CH3)2	(≤9.38) IP from 85GAL/C		(≤128)	-186	<i>–777</i>	*EST	25771-21-5		
C H F- +		·*···							
C ₁₀ H ₁₀ Fe ⁺	6.747 IP from 82BAR/H	213 (EI. See also	893 : 86VON.	58±0.7	242±3	77PED/RYL	102-54-5		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(Io	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₀ Mg +	(8.11)	(218)	(913)	31±2	131±8	77PED/RYL	1284-72-6				
C ₁₀ H ₁₀ Mn +	6.55	217	909	66	277	82PIL/SKI	1271-27-8				
C ₁₀ H ₁₀ N + NC - CH ₃ C. CH ₃ CH ₃	From appearance	219 energy dete	915 erminations (860	DRL/MIS).							
NH2 H+	From proton affin 907.5 kJ/mol.	187 ity of 1-nap	781 hthalenamine (I	RN 134-32-7)). PA = 216.9 k	ccal/mol,					
C ₁₀ H ₁₀ N ₂ + NH ₂	(6.74±0.02)	(194)	(815)	39	165	*EST	2243-62-1				
H ₂ N NH ₂	(6.65±0.02)	(199)	(835)	46	193	*EST	479-27-6				
C ₁₀ H ₁₀ Ni ⁺ O Ni	6.2	228	955	85±1	357±5	77PED/RYL	1271-28-9				

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number					
C ₁₀ H ₁₀ O +	(8.8±0.05) IP from 79SCH/G	(197) (824) RU, 81SCH/GRO, 80	-6 GRU/SCH.	-25	79SCH/GRU	122-57-6					
C ₁₀ H ₁₀ OS + CH ₃ CH ₃	(≤8.40) IP from 82BEN/D	(≤134) (≤561) UR.	-60	-249	*EST	70445-88-4					
С ₁₀ H ₁₀ O ₂ + СООН	(8.65±0.05) IP from 84SCH.	(134) (563)	-65	-272	84SCH	939-57-1					
н ₃ с—с—сн ₃	(≤9.61) IP from 85GAL/G	(≤160) (≤670) ER.	-61	-257	*EST	1009-61-6					
CH ₃ CH ₃	(8.0) IP is onset of photo	(173) (726) pelectron band.	-11	-46	*EST	60526-38-7					
	(≤9.25) IP from 85GLE/JA	(≤240) (≤1002) \.H.	26	110	*EST	94499-49-7					
	(≤9.02) IP from 85ALB/HI	(≤157) (≤656) BL.	-51	-214	*EST	72590-52-4					
C ₁₀ H ₁₀ O ₃ +	(8.50±0.05) IP from 84SCH.	(102) (427)	94	-393	84SCH	1011-54-7					

Table 1. Positive Ion Table - Continued

	Table			e - Contini	 	· · · · · · · · · · · · · · · · · · ·	
ION Neutral	Ionization potential	Δ _f H(kcal/mo	Ion) l kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₁₀ H ₁₀ O ₄ + соосн ₃	(9.64±0.07)	(66)	(276)	−156.2±4	-654±17	*EST	131-11-3
C ₁₀ H ₁₀ Pb+	(≤7.55) IP from 82BAX/C	(≤308) COW, 82L	(≤1288) EV/LIA.	134	559	85DEW/HOL	1294-74-2
C ₁₀ H ₁₀ Ru +	(7.1) IP is onset of pho	(102) toelectron	(425) band.	62	-260	*EST	1287-13-4
C ₁₀ H ₁₀ V ⁺	(6.4) IP is onset of pho	(196) toelectron	(822) band.	49±2	204±10	77PED/RYL	1277-47-0
C ₁₀ H ₁₁ Cl +	(≤8.67)	(≤221)	(≤925)	21±1	88±4	*EST	63340-05-6
С ₁₀ H ₁₁ Fe +	From proton affin PA = (210) kcal/i			ntadienyl) (RN	102-54-5).		
C ₁₀ H ₁₁ NO + C=NO CH ₃	≤8.37 IP is onset of phot	(≤238) coelectron	(≤998) band.	45	190	*EST	2904-57-6

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	lon) l kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₁ NO ₅ W ⁺ C ₁₀ H ₁₁ NO ₅ W C ₁₀ C ₀ C ₁₀ C ₀	(7.0) IP is onset of pho	(~33) toelectron	(-140) band.	-195	-815	84ALT/CON2	31082-68-5				
C ₁₀ H ₁₁ N ₂ +	From proton affir 936. kJ/mol.	188 ity of 1,8-c	787 Iiaminonaphth	alene (RN 479	9-27-6). PA = 3	223.8 kcal/mol,					
$C_{10}H_{11}Ni^+$ O O	From proton affin PA = 223. kcal/m			pentadinyl) (RN 1271-28-9).						
C ₁₀ H ₁₁ Ru +	From proton affin PA = (218) kcal/i			cyclopentadie	enyl) (RN 1287-	13-4).					
C ₁₀ H ₁₂ +	(8.15) IP from onset of p	(213) hotoelectr	(892) on band (81KC	25 DB/ARA).	106	*EST	1560-09-4				
© C2H5	(8.0) IP from onset of p	(208) hotoelectr	(873) on band (81KC	24 0B/ARA).	101	*EST	1005-64-7				
C'C'C'CH2	(8.6) IP from 78FU/DU	(225) N.	(943)	27	113	*EST	768-56-9				
CCH3	(8.48) IP from 78FU/DU	(220) N.	(918)	24	100	*EST	935-00-2				

436 LIAS ET AL.

Table 1. Positive Ion Table - Continued

	Table 1. Positive for Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Nei		Neutral reference	CAS registry number				
C ₁₀ H ₁₂ +	(7.78±0.04) See also: 78FU/DI	(199) UN.	(832)	19	81	85DAS/GRO	1587-04-8				
CH ₃ CH=CH ₂	(8.10±0.02)	(212)	(886)	25	104	*EST	2039-90-9				
CH ₂ CH ₃	(7.4) IP from onset of p	(205) hotoelectro	(856) on band. See also:	34 82DEW.	142	*EST	63238-49-3				
	(8.4) IP from onset of p	(226) hotoelectro	(946) on band.	33	136	*EST	4392-30-7				
	(8.4) IP from onset of p	(223) hotoelectro	(930) n band.	29±1	120±4	*EST	2214-14-4				
	8.47 See also: 80MAU.	201	841	6±0.5	24±2	77PED/RYL	119-64-2				
CH ₃	(8.47)	(205)	(856)	9	39	85DAS/GRO	767-58-8				
CH ₂	≤8.98	≤268	≤1123	61	257	80MAR/HEL	72569-84-7				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₀ H ₁₂ +	(7.97)	(249)	(1042)	65	273	*EST	36456-22-1
	≤9.00	(≤238)	(≤996)	30.5±1	128±4	86LIE/PAQ	31678-74-7
	(8.79±0.05)	(248)	(1038)	45±2	190±9	80ROT/KLA	77-73-6
	≤8.83±0.03	≤275	≤1152	72	300	80ROT/KLA	6574-77-2
	7.33±0.05	(260)	(1087)	91	380	*EST	36262-33-6
	(8.3) IP is onset of photo	(298) pelectron ba	(1246) and (82SPA/KO)	106 ₹).	445	*EST	54440-40-3
	(≤7.74)	(≤269) ((≤1125)	90	378	*EST	30353-70-9
10H ₁₂ Mo +	(≤6.4±0.1) ((≤220) (í≤920)	72±1	303±6	86SIM/BEA	1291-40-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry				
C ₁₀ H ₁₂ N ₂ + CH ₂ CH ₂ NH ₂	(7.7) IP is onset of phot	(211) (882) toelectron band.	33	139	*EST	61-54-1				
C ₁₀ H ₁₂ N ₄ +					<u> </u>					
H ₃ C N N CH ₃	(≤8.6) IP from 84GLE/S	(≤249) (≤1040) PA2.	50	210	*EST	6479-03-4				
C ₁₀ H ₁₂ O +	9.06±0.02 IP is average of va	178 746 alues from 79MCL/TRA a		-128.2±2.4 3.	77PED/RYL	495-40-9				
OH COH	(8.31) IP from 81DAL/N	(186) (780) NIB.	- 5	-22	81DAL/NIB	1007-03-0				
H ₂ C	(8.35) IP from 81DAL/N	(189) (790) NIB.	-4	-16	81DAL/NIB	31729-66-5				
C ₁₀ H ₁₂ O ₂ + OCH ₃ H ₃ C CH ₃	(9.1) IP from 80BOC/K	(150) (626) KAI, 82LEV/LIA.	-60	-252	*EST	527-17-3				
	(≤9.0) IP is onset of phot	(≤180) (≤752) toelectron band (85GLE/.	-28 JAH).	-116	*EST	87305-43-9				
	(8.8) IP from 85GLE/Ja	(175) (733) AH.	-28	-116	*EST	87305-42-8				

Table 1. Positive Ion Table - Continued

	Table 1. Tositive for Table - Continued										
ION Neutral	Ionization potential eV	∆ _f <i>H</i> (I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₁₀ H ₁₂ O ₂ +											
	(≤9.06) IP from 85ALB/F	(≤130) HEL.	(≤542)	-79	-332	*EST					
	(9.0±0.02) IP from 84OLI/F	(216) LE.	(904)	9	36	*EST	4893-00-9				
C ₁₀ H ₁₂ O ₂ S ⁺											
H ₃ C	(8.3) IP is onset of pho	(146) toelectron t	(613) pand (84CAU/F0	–45 JR).	-188	*EST	77355-29-4				
CHO-Si+											
$C_{10}H_{12}O_{2}Si^{+}$	(≤8.60) IP from 83ZYK/F	(≤151) ERC.	(≤633)	~47	-197	*EST	1578-44-5				
C ₁₀ H ₁₂ O ₃ S +											
H ₃ CO————————————————————————————————————	(≤8.52) IP from 84CAU/I	(≤123) FUR.	(≤516)	-73	-306	*EST	70784-98-4				
CtoHtoSe+											
C ₁₀ H ₁₂ Se ⁺	(7.3) IP is onset of pho	(144) toelectron t	(603) pand (81BAK/AI	−24 RM).	-101	*EST	60096-27-7				
C10H12W ⁺				V.I		······································					
C ₁₀ H ₁₂ W ⁺	(6.35±0.2)	(221)	(924)	74±1	311±5	82PIL/SKI	1271-33-6				

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol	utral) kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₃ +											
H ₃ C C(CH ₃)	From proton affin 883. kJ/mol and fr					= 211.0 kcal/mol,					
((()) H+	From proton affin PA = 194.7 kcal/r		_	ithalene (RN	V 119-64-2).						
C ₁₀ H ₁₃ Br ⁺				# * .							
Br C(CH ₃) ₃	8.50±0.02 IP from 86ORL/N	(198) IIS, 85BAI/Ì	(828) MIS.	2	8	86ORL/MIS	3972-65-4				
C ₁₀ H ₁₃ Cl ⁺							· · · · · · · · · · · · · · · · · · ·				
(CH3)3C	(8.56±0.02) IP from 86ORL/M	(184) IIS. See also	(772) : 85BAI/MIS.	-13	-54	86ORL/MIS	3972-56-3				
C ₁₀ H ₁₃ F +	<u> </u>		*** <u>***</u>								
F—————————————————————————————————————	(8.59) IP from 85ORL/M	(146) IIS.	(609)	-52	-219	86ORL/MIS	701-30-4				
C ₁₀ H ₁₃ I +	······································										
I—————————————————————————————————————	(8.35±0.02) IP from 86ORL/M	(206) IIS. See also	(862) : 85BAI/MIS.	14	57	86ORL/MIS	35779-04-5				
C ₁₀ H ₁₃ N ⁺		<u> </u>	-								
	(6.8) IP is onset of phot		(773) and (82ROZ/HC	28 OU2).	117	*EST	4096-21-3				

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Neu		Neutral reference	CAS registry number				
C ₁₀ H ₁₃ N ⁺				·/			····				
	(7.1) IP is onset of pho	(222) toelectron t	(927) pand (82ROZ/HC	58 OU2).	242	*EST	19198-94-8				
	(≤7.80) IP from 82ROZ/F	(≤243) HOU2.	(≤1017)	63	265	*EST	78376-89-3				
	(7.6) IP is onset of pho	(232) toelectron b	(969) pand (82ROZ/HC	56 DU2). See al	236 iso: 82CRI/LIC.	*EST	78376-90-6				
C ₁₀ H ₁₃ NO +											
H ₃ C N C CH ₃	≤7.55	(≤157)	(≤655)	-17	-73	*EST	2124-31-4				
0 	(≤8.90) IP from 85GAL/C	(≤175) GER.	(≤731)	-31	-128	*EST	14062-78-3				
C. H. NO. †											
$C_{10}H_{13}NO_2^+$ O_2N $C(CH_3)_3$	(9.2) IP is onset of photon	(203) toelectron b	(850) pand (85BAI/MIS	-9 2). See also	-38 : 86ORL/MIS.	85ORL/MIS	3282-56-2				
H3CO	≤8.40 IP from 85GAL/C	(≤135) GER.	(≤564)	-59	-246	*EST	7291-00-1				
CH ₃	(≤8.01±0.06)	(≤136)	(≤570)	-49	-203	*EST	51497-09-7				

Table 1. Positive Ion Table - Continued

	Table	1. Posi	tive Ion Tabl	e - Contir	nued		·····
ION Neutral	Ionization potential eV	-	(Ion) ol kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₀ H ₁₃ O+ c(CH ₃)	From proton affir PA = 217.4 kcal/(86ORL/MIS) =	mol, 910.	kJ/mol. Value f	rom appearanc			
C ₁₀ H ₁₄ +							
(CH ₂) ₃ CH ₃	8.69±0.01 IP at 298 K from 6 is 8.71±0.01 eV.	198 charge tra	827 Insfer equilibriu	−3.1±0.1 m constant det	-13.2±0.6 terminations (7	77PED/RYL (8LIA/AUS)	104-51-8
CH<2H5 CH3	8.68±0.01	196	820	~4.1±0.2	~17.3±1	77PED/RYL	135-98-8
СН ₂ -СН(СН ₃)2	8.68±0.01	195	816	−5.1±0.3	−21.5±1	77PED/RYL	538-93-2
C(CH ₃) ₃	8.64±0.02 IP is average of va IP at 298 K from 6 (78LIA/AUS) is 8	charge tra	nsfer equilibriu	in 83BRA/BA m constant det	erminations	77PED/RYL HOW/GON.	98-06-6
H3C-CHICH312	(8.29) IP from 84HOW/	(184) GON.	(772)	-7	28	*EST	99-87-6
СН ₂ СН ₃	≤8.51	≤192	≤804	-4±0.2	~17±1	77PED/RYL	135-01-3
C ₂ H ₅	(8.49±0.01) IP is 298 K value f	(191) From char	(798) ge transfer equi	~5 librium constar	−21 nt determinatio	77PED/RYL ons (78LIA/AUS).	141-93-5

Table 1. Positive Ion Table - Continued

				Continued			
ION Neutral	Ionization potential	Δ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₄ +					-		
H ₅ C ₂ C ₂ H ₅	8.40 See also: 80GLE/	189 HOP.	790	-5±0.5	-20±2	77PED/RYL	105-05-5
CH ₃ CH ₃ CH ₃	8.16±0.02 IP from 82LEV/L	180 .IA, 84HOW	754 ⁷ /GON.	8	-33	75GOO	488-23-3
CH ₃ CH ₃ CH ₃	(8.07) IP from 84HOW/	(176) GON.	(738)	-10	-41	75GOO	527-53-7
H ₃ C CH ₃	8.04±0.01 See also: 82CAB/	174 COW, 84HC	731 DW/GON.	-11	-45	75GOO	95-93-2
	(8.7) IP from 81BIS/GI	(248) LE.	(1036)	47	197	*EST	77614-69-8
	(≤8.48)	(≤259)	(≤1085)	64	267	*EST	53143-76-3
C ₁₀ H ₁₄ BeO ₄ + H ₃ C O Be O CH ₃	(8.1) IP is onset of photon		(-376) and.	-277±1	−1158±4	80TEL/RAB	10210-64-7
$\begin{array}{c c} C_{10}H_{14}C_{0}O_{4}^{+} \\ & \xrightarrow{H_{3}C} \begin{array}{c} O \\ O \end{array} \begin{array}{c} C_{0} \\ O \end{array} \begin{array}{c} C_{H_{3}} \\ C_{H_{3}} \end{array}$	7.6 IP is onset of phot		(–70) and (82LEV/LIA	~192±0.5 A, 83KIT/MO		83KAK/GIE	14024-48-7

Table 1. Positive Ion Table - Continued

		1. Positive ioi	n Table - Contii	nuea		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/ı	Δ _f H(N mol kcai/mol	eutral) kJ/mol	Neutral reference	CAS registry
$\begin{array}{c c} C_{10}H_{14}CuO_4^+ \\ & \xrightarrow{H_3C} \begin{array}{c} O \\ & CH_3 \end{array} \\ & \xrightarrow{CH_3} \end{array}$	(7.2) IP is onset of pho	(5) (20) toelectron band (-675±2	83KAK/GIE	13395-16-9
C ₁₀ H ₁₄ Fe +	(6.6) IP is onset of pho	(192) (803 toelectron band (1		166	*EST	74910-62-6
C ₁₀ H ₁₄ FeO ₄ + H ₃ C O Fe CH ₃ CH ₃	(7.50±0.04)	(-25) (-10)	5) -198±0.5	-829±2	83KAK/GIE	14024-17-0
C ₁₀ H ₁₄ MnO ₄ +	(8.34±0.05)	(-37) (-154	4) −229±1	−959±4	83KAK/GIE	14024-58-9
C ₁₀ H ₁₄ N ⁺	^P rom proton affin 940. kJ/mol.	(171) (716 ity of N-phenylpy) rrolidine (RN 4096-21	-3). PA = 224.7 l	ccal/mol,	
C ₁₀ H ₁₄ N ₂ +	(≤7.1) IP from 82CRI/LI	(≤230) (≤965 C.	5) 67	280	*EST	82027-08-5
C ₁₀ H ₁₄ NiO ₄ + H ₃ C O O CH ₃ CH ₃	(7.1) IP is onset of phot	(-31) (-130 oelectron band. S	0) –195±0.5 See also: 83KIT/MOR.		83KAK/GIE	3264-82-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f <i>H</i> (Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₀ H ₁₄ O +	(7.9) IP is onset of pho	(138) toelectron b	(576) and (85BAI/MIS	-44 2). See also	-186 o: 83CET/LAP.	*EST	88-18-6
HOC(CH ₃) ₃	(≤8.40) IP from 83CET/L		(≤608)	-48	-202	*EST	585-34-2
HO CICH3)3	(7.8) IP is onset of phot	(132) toelectron ba	(551) and (85BAI/MIS)	–48). See also:	-202 83CET/LAP.	*EST	98-54-4
	8.62 IP is onset of phot	(144) coelectron ba	(601) and.	-55±1	−231±5	78ARO/STE	700-58-3
C ₁₀ H ₁₄ OS +	(≤8.50) IP from 81MOH/J		(≤717)	-25	-103	*EST	4170-71-2
C ₁₀ H ₁₄ O ₂ + CH ₃ C	(9.11) IP is onset of phot	(119) oelectron ba	(497) and (80FRO/WE	–91 S).	-382	*EST	31211-08-2
C ₁₀ H ₁₄ O ₂ S ⁺	(9.15) IP is onset of phot		(690) and (84AIT/GOS	-46).	-192	*EST	
S—C(CH ₃) ₃	(≤9.7) IP from 81MOH/J		(607)	-78	-328	*EST	4170-72-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₁₀ H ₁₄ O ₂ S ⁺											
SOZ	(9.2) IP is onset of photon	(166) toelectron b	(696) and (84AIT/GO	-46 S).	-192	*EST					
C ₁₀ H ₁₄ O ₄ Zn +											
H ₃ C O CH ₃	7.8 IP is onset of phot	(-26) toelectron b	(–107) and (83KIT/MC	–206±2 R, 82LEV/L	−860±10 IA).	83KAK/GIE	14024-63-6				
C ₁₀ H ₁₄ S +											
S-CICH3)3	8.39±0.05	(197)	(825)	4	15	*EST	3019-19-0				
н ₃ с — эснісн ₃ 2	(≤8.38)	(≤198)	(≤828)	5	19	*EST	14905-80-7				
H3C	(8.5) IP is onset of phot	(201) oelectron ba	(839) and.	5	19	*EST	14905-81-8				
C10H14Se+			· · · · · · · · · · · · · · · · · · ·		 						
C ₁₀ H ₁₄ Se ⁺	(7.2) IP is onset of phot	(184) oelectron ba	(772) and (81BAK/AR	18 M).	77	*EST	78805-16-0				
C ₁₀ H ₁₅ ⁺				<u></u>	<u>.</u>	8 · · · - · · · · · · · · · · · · · · ·					
(CH2)3CH3)H+	From proton affin 804. kJ/mol.	170 ity of n-C ₄ H	713 I ₉ C ₆ H ₅ (RN 104	-51-8). PA	= 192.1 kcal/n	nol,					
(C(CH ₃) ₃) _H +	From proton affin	167 ity of tert-C	700 ₄ H ₉ C ₆ H ₅ (RN 9	98-06-6). PA	= 193.0 kcal/	mol,					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₅ +	· · · · · · · · · · · · · · · · · · ·					- A	
Ď	(6.21) Δ _f H(Ion) from ch (85SHA/SHA, 86) -180 kJ/mol.						19740-18-2
	(6.73) IP from 86KRU/E	(168) BEA.	(704)	13	54	86KRU/BEA	
C ₁₀ H ₁₅ Br +			***				
Br	9.30±0.06 IP from 84ABE/D	(183) DEL, 82LEV	(766) //LIA.	-31	131	*EST	768-90-1
Br	(9.31±0.05)	(185)	(772)	-30	-126	*EST	7314-85-4
C ₁₀ H ₁₅ Br ₃ Ti +		· · · · · · · · · · · · · · · · · · ·	····				
Br CH ₃ CH ₃ CH ₃	(8.0) IP is onset of phot	(30) coelectron ba	(126) and (84TER/I	-154 .OU).	-646	*EST	33151-84-7
C ₁₀ H ₁₅ Cl ⁺	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·		
CH ₂ CH ₃	(≤9.11) IP from 81NES/BA		(≤809)	-17	-70	*EST	4017-64-5
	(9.30)	(171)	(717)	-43	-180	*EST	935-56-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) l kJ/mol		Veutral) ol kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₅ ClN +		· · · · · · · · · · · · · · · · · · ·					···				
(CI N(C2H5)2) H	From proton affin 944. kJ/mol.	142 hity of 4-Cl	594 C ₆ H ₄ N(C ₂ H ₅)) ₂ (RN 2873-8	89-4). PA = 22:	5.6 kcal/mol,					
C ₁₀ H ₁₅ Cl ₃ Ti + Cl ₂ Cl ₃ Cl CH ₃ CH ₃ CH ₃	(8.1) IP is onset of phot	(7) coelectron	(30) band (84TER/	–179 LOU).	-751	*EST	12129-06-5				
C ₁₀ H ₁₅ F +	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										
F	(9.46)	(141)	(592)	-77	-321	*EST	16668-83-0				
C ₁₀ H ₁₅ I +		·			 	, , , , , , , , , , , , , , , , , , ,					
	(8.6) IP is onset of phot	(182) oelectron	(760) band (84ABE/	–17 DEL).	-70	EST	768-93-4				
C ₁₀ H ₁₅ N ⁺											
H ₂ N — C(CH ₃) ₃	(7.35±0.02) IP from 85ORL/M	(165) IIS. See al	(691) so: 85BAI/MIS	-4.5 2.	-19	85ORL/MIS	769-92-6				
ŅH ₂											
C ₂ H ₅	(≤7.77) IP from 82ROZ/H	(≤176) OU2.	(≤736)	-3	-14	*EST	579-66-8				
NHCH ₃	(≤8.60±0.20)	(≤199)	(≤832)	0.5	2	*EST	7632-10-2				
H ₃ C CH ₃	(7.22)	(171)	(717)	5	20	*EST	13021-14-2				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₅ N ⁺				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
NICH3½	(7.70±0.05) See also: 81LOG/	(193) TAK.	(807)	15	64	*EST	1126-71-2
NC ₂ H ₅) ₂	6.98±0.02 IP from charge tre IP (C ₆ H ₅ N(CH ₃)					69BEN/CRU standard:	91-66-7
H ₃ C CH ₂ NICH ₃ h ₂	(7.61) See also: 81LOG/	(187) TAK.	(784)	12	49	*EST	4052-88-4
H ₃ CNCH ₃ CH ₃	(≤7.79) IP from 82ROZ/H		(≤820)	16	68	*EST	769-53-9
H ₃ C CH ₃	(7.30±0.02) See also: 82ROZ/I	(190) HOU2.	(797)	22	93	*EST	769-06-2
N(CH ₃) ₂	(6.95) IP from charge tra IP (C ₆ H ₅ N(CH ₃) ₂				35 ns; reference s	*EST standard:	4913-13-7
C ₁₀ H ₁₅ NO +	(≤8.16±0.06)	(≤184) ((≤768)	-5	-19	*EST	23239-32-9
C ₁₀ H ₁₅ NO ₂ +							
H ₃ CONH ₂	7.4 IP is onset of photo		(473) nd (81DOM/I		-241 IA).	*EST	120-20-7

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential	Δ _f H(Ion) kcai/moi kJ/m	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₅ NO ₂ +										
CH ₃ CH ₃ H ₃ C COOC ₂ H	(≤7.71) IP from 81CAU/6	(≤74) (≤311 <u>)</u> GIA.) –103	-433	*EST	2199-46-4				
H ₃ C COOC ₂ H ₅	(7.5) IP is onset of pho	(69) (290) stoelectron band (83		-433	*EST	55770-78-0				
H ₅ C ₂ O C N	(8.0) IP is onset of pho	(114) (479) toelectron band (8		-293	*EST	3693-69-4				
C ₁₀ H ₁₅ NO ₃ +	· · · · · · · · · · · · · · · · · · ·									
H ₅ C ₂ O C N	(8.5) IP is onset of pho	(53) (220) stoelectron band (83		-600	*EST	37778-51-1				
C ₁₀ H ₁₅ N ₂ O ₅ +	From proton affin	(-72) (-301) nity of thymidine (F) RN 50-89-5). PA =	(208) kcal/mol,	(870) kJ/mol.					
C ₁₀ H ₁₅ O ₂ P ⁺		-#	·							
PIOC2H5)2	(8.2) IP is onset of pho	(87) (362) toelectron band (81	–103 IARS/ZVE, 81ZVE	-429 E/VIL2).	*EST	1638-86-4				
C ₁₀ H ₁₆ +										
(H ₂ C) ₃ (CH ₂) ₃ C=C H H (Z)	(≤8.68)	(≤194) (≤813)	-6	-24	76JEN	1124-79-4				
(H ₂ C) ₃ H (E) C=C H (CH ₂) ₃	(≤8.05)	(≤184) (≤769)	-2	-8	76JEN	15840-81-0				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Neu kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₆ ⁺ CH ₃ CH ₃ CH ₃	(8.07)	(193)	(807)	7±0.5	28±2	77PED/RYL	80-56-8
СH ₃ СH ₂	(≤8.86) IP from 81NES/B	(≤198) AI.	(≤827)	-7	-28	77KOZ/BYC	79-92-5
	(8.5) IP is onset of pho	(219) toelectron t	(915) oand (82SPA/0	23 GLE).	95	*EST	81969-73-5
	9.35±0.05	201.2	841.9	-14.4±1	-60.2±3	71BOY/SAN	6004-38-2
	9.24±0.06	181	759	-31.8±0.3	-132.7±1.3	75CLA/KNO	281-23-2
	(8.7) IP is onset of pho	(209) stoelectron l	(875) pand.	9	36	*EST	53764-10-6
\bowtie	(≤9.17)	(≤211)	(≤882)	-0.7	-3	*EST	24518-94-3
\Rightarrow	(8.5) IP is onset of pho	(231) otoelectron	(967) band (82SPA/	35 GLE, 82LEV/L	147 .IA).	*EST	24029-74-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
$C_{10}H_{16}N^{+}$	From proton affi 952. kJ/mol.	148 nity of C ₆ H ₅	617 ;N(C ₂ H ₅) ₂ (R	N 91-66-7). P.	A = 227.6 kca	ıl/mol,	
(NICH ₃) ₂ H ⁺	From proton affi 950. kJ/mol.	147 nity of 3,5-(C	615 CH ₃) ₂ C ₆ H ₃ N((CH ₃) ₂ (RN 4!	913-13-7). PA	. = 227.0 kcal/mol,	
C ₁₀ H ₁₆ N ₂ +	(7.1) IP is onset of pho	(200) otoelectron b	(836) and (81NEL/0	36 GRE).	151	*EST	704-01-8
(CH ₃) ₂ N N(CH ₃) ₂	6.20±0.05	164	686	21	88	83MET/ARA	100-22-1
C ₁₀ H ₁₆ N ₆ S + N CH ₃ NCN CH ₂ SCH ₂ CH ₂ NHC NHCH	(7.7) IP is onset of pho	(249) otoelectron ba	(1042) and (80KLA/I	72 BUT).	300	*EST	51481-61-9
C ₁₀ H ₁₆ O ⁺	(8.5) IP is onset of pho	(125) toelectron ba	(523) and (80FRO/\	~71 WES).	-297	*EST	1195-79-5
H ₃ C CH ₃	(8.76±0.03)	(138)	(578)	−64±0.7	−267±3	77STE	76-22-2
ОН	(9.09±0.05)	(136)	(566)	−74±0.7	-311±3	78ARO/STE	768-95-6

Table 1. Positive Ion Table - Continued

	Table	I. FUSILI	ve ton tab	ie - Contin	ucu		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
С ₁₀ H ₁₆ O +	(9.09±0.07)	(139)	(578)	-71±1	−299±5	78ARO/STE	700-57-2
C ₁₀ H ₁₆ OS +	(8.2) IP is onset of phot	(147)	(613) band (82PFI/0	-43 GER).	-178	*EST	52735-49-6
C ₁₀ H ₁₆ OSi+	(≤8.06) IP from 83HOU/F	(≤136) RON.	(≤571)	-49	-207	*EST	68364-22-7
C ₁₀ H ₁₆ O ₂ +	(≤8.87) IP from 82PFI/GE	(≤117) CR.	(≤489)	-88	-367	*EST	6267-39-6
C ₁₀ H ₁₆ O ₂ S +	≤9.75 IP from 83JIA/MC	(≤185))H.	(≤773)	-40	-168	*EST	
C ₁₀ H ₁₆ O ₂ S ₃ +	≤8.55 IP from 83JIA/MC	(≤152) ìH.	(≤637)	-45	-188	*EST	
C ₁₀ H ₁₆ S +	≤8.40 IP from 83JIA/MO	(≤237) iH.	(≤992)	43	182	*EST	

Table 1. Positive Ion Table - Continued

					····		
ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₆ S+	(8.22) IP from 80SAR/W	(187) /OR.	(782)	-3	-11	*EST	77471-74-0
H ₂ C S	(8.26) IP from 80SAR/W	(185) 'OR.	(773)	-6	-24	*EST	77471-73-9
CH3 CH3 5	(8.13) IP from 80FRO/W	(167) /ES. See als	(697) o: 82LEV/LIA.	-21	-87	*EST	875-06-9
SH	(8.6) IP is onset of phot	(158) oelectron ba	(663) and.	-40	-167	*EST	34301-54-7
C ₁₀ H ₁₆ SSi +	(≤7.81±0.05)	(≤121)	(≤506)	-59	-248	*EST	17873-08-4
C ₁₀ H ₁₆ S ₃ + S C CH ₃ S H ₃ C CH ₃ S CH ₃	7.8 IP is onset of photo	(219) oelectron ba	(915) and (83JIA/MOI	39 1).	162	*EST	
C ₁₀ H ₁₆ Si + —CH ₂ Si(CH ₃) ₃	8.35	(164)	(685)	-29	-121	*EST	770-09-2

Table 1. Positive Ion Table - Continued

			e iuli iaul	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₆ Sn +							
CH2-Sn(CH3)3	8.08±0.05	206	863	20±1	83±6	77PED/RYL	4314-94-7
C ₁₀ H ₁₇ +							
н ₃ С Сн ₃	From proton affini PA = (216.1) kcal			nethylenecycloho	exene (RN 16	6609-28-2).	
C ₁₀ H ₁₇ N ⁺	\$2.00 p. 100 p.						· · · · · · · · · · · · · · · · · · ·
	7.10 See also: 81MUL/I	(165) PRE2.	(689)	1	4	*EST	1125-99-1
\bigcirc	(7.0) IP is onset of photo	(138) pelectron ba	(580) and.	-23±1	−95±4	*EST	1614-92-2
CH3 CH3 NH2 CH2	(≤8.67) IP from 81NES/BA		(≤828)	-2	-9	*EST	13487-72-4
C ₁₀ H ₁₇ NO +							1, 7,01,01,01,01
H ₃ C N(CH ₃) ₂	(≤7.88) IP from 82PFI/GE		(≤596)	-39	-164	*EST	31039-88-0
C ₁₀ H ₁₇ NO ₂ +							
H ₅ C ₂ O C N	(7.9) IP is onset of photo		(265) nd (81CAR/	–119 'GAN).	-497	*EST	39926-11-9

456 LIAS ET AL.

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ion) ol kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₁₇ N ₂ +							
(CH3)2 H+	From proton affir 984. kJ/mol.	167 nity of 1,2-	697 (N(CH ₃) ₂) ₂ C ₆	H ₄ (RN 704-01	-8). PA = 23.	5.2 kcal/mol,	
C ₁₀ H ₁₈ ⁺ 1-C ₁₀ H ₁₈	(9.91±0.02)	(239)	(998)	10±.7	42±3	79ROG/DAG	764-93-2
2-C ₁₀ H ₁₈	(9.30±0.02)	(220)	(921)	6±0.7	24±3	79ROG/DAG	2384-70-5
3-C ₁₀ H ₁₈	9.19±0.01	217	909	5±0.7	22±3	79ROG/DAG	2384-85-2
4-C ₁₀ H ₁₈	(9.17±0.02)	(216)	(905)	5±0.7	20±3	79ROG/DAG	2384-86-3
5-C ₁₀ H ₁₈	9.13±0.03	(216)	(905)	6	24	*EST	1942-46-7
(tert-C ₄ H ₉)C≡C(tert-C ₄ H ₉	(9.05±0.01) See also: 85ORL/	(206) BOG.	(861)	3	-13	*EST	17530-24-4
(CH ₂) ₈ (E)	(8.80)	(199)	(832)	-4	-17	78GRE/LIE	2198-20-1
(CH ₂) ₈ (Z)	(8.80)	(196)	(820)	-7	-29	78GRE/LIE	935-31-9
H.	9.24 From charge trans Photoionization o 9.26 eV (77BIE/B	nset, 9.32		determinations			493-02-7
\bigcirc	9.26 From charge trans onset, 9.32 eV (80)			determination		77PED/RYL . Photoionization	493-01-6

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued												
ION Neutral	Ionization potential eV	∆ _f H(Ic			H(Net /mol	ıtral) kJ/mol	Neutral reference	CAS registry number				
C ₁₀ H ₁₈ NO +												
OH NH ₂	From proton affir 937. kJ/mol.	(95) hity of cis-3-	(396) amino-2-twis	stanol. PA	= 224	ł.0 kcal/mol,						
(NH ₂	_H + From proton affir 927. kJ/mol.	(95) hity of trans-	(398) 3-amino-2-ti	wistanol (is	somer	1). PA = 2	21.5 kcal/mol,					
HO NH ₂	From proton affir 920. kJ/mol.	(97) lity of trans-	(405) 3-amino-2-tv	wistanol (is	omer 2	2). PA = 22	20.0 kcal/mol,					
C ₁₀ H ₁₈ OSi +	· · · · · · · · · · · · · · · · · · ·			···				***************************************				
OS;(CH3)3	(≤8.09) IP from 83HOU/I		(≤424)	-85		-357	*EST	57722-40-4				
C ₁₀ H ₁₈ O ₂ S ₃ +				···								
H ₃ C CH ₃ O S I S H ₃ C CH ₃	(≤9.55) IP from 83JIA/M0		(≤552)	-88		-369	*EST					
C ₁₀ H ₁₈ O ₄ Si ⁺												
0 C ₂ H ₅ Si - 0 C ₂ H ₅ 0 C ₂ H ₅	(8.0) IP is onset of phot		(-110) and (83ZYK	-211 (/ERC).		-882	*EST	55811-52-4				
C ₁₀ H ₁₈ S +								The state of the s				
S CH ₃	≤8.35 IP from 83JIA/M((≤787)	- 5		-19	*EST					
H ₃ C CH ₃	· · · · · · · · · · · · · · · · · · ·											

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION I	onization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₁₀ H ₁₈ S ₂ + (H ₃ C) ₃ C	7.65 IP is onset of pho	(204) toelectron t	(853) pand (83JIA/MOI	27 H).	115	*EST	
C ₁₀ H ₁₈ S ₃ +						··· · · · · · · · · · · · · · · · · ·	- · · · · · · · · · · · · · · · · · · ·
S S	7.8 IP is onset of pho	172 toelectron t	719 pand (83JIA/MOI	-8 H).	-34	*EST	
C ₁₀ H ₁₉ N ⁺		· <u>-</u>			····		· · · · · · · · · · · · · · · · · · ·
	(≤7.61) IP from 81MUL/F	(≤161) PRE2.	(≤673)	-14	-61	*EST	21086-43-1
$\langle \rangle$	(6.94±0.09) IP is onset of photon	(166) toelectron b	(695) pand.	6	25	*EST	31023-92-4
C ₁₀ H ₂₀ + 1-C ₁₀ H ₂₀	9.42±0.01 See also: 81HOL/	188 FIN.	786	-29.5±0.5	-123.3±2	77PED/RYL	872-05-9
(Z)-C ₁₀ H ₂₀	8.90±0.01	(174)	(727)	-32	-132	*EST	20348-51-0
(E)-2-C ₁₀ H ₂₀	8.90±0.01	(173)	(724)	-32	-135	*EST	20063-97-2
(Z)-3-C ₁₀ H ₂₀	8.83±0.01	(172)	(721)	-31	-131	*EST	19398-86-8
(E)-3-C ₁₀ H ₂₀	8.83±0.01	(171)	(717)	-32	-135	*EST	19150-21-1
(Z)-4-C ₁₀ H ₂₀	8.78±0.01	(171)	(716)	-31	-131	*EST	19398-88-0
(E)-4-C ₁₀ H ₂₀	8.78±0.01	(170)	(712)	-32	-135	*EST	19398-89-1
(Z)-5-C ₁₀ H ₂₀	8.77±0.01	(171)	(715)	-31	-131	*EST	7433-78-5
(E)-5-C ₁₀ H ₂₀	8.76±0.01	(170)	(710)	-32	-135	*EST	7433-56-9
$(\text{tert-C}_4\text{H}_9)_2\text{C} = \text{CH}_2$	(8.79±0.01)	(164)	(688)	-38	-161	*EST	5857-68-1
$n-C_5H_{11}C(CH_3) = C(CH_3)_2$	(8.13±0.01)	(151)	(633)	-36	-152	*EST	19781-18-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₂₀ +							
$C_4H_9C(C_2H_5) = C(CH_3)$)2 (8.10±0.01)	(151)	(630)	-36	-151	*EST	19780-61-1
(tert-C ₄ H ₉)CH ₂ C(CH ₃)	= C(CH ₃) ₂ (8.10±0.01)	(146)	(610)	-41	-172	*EST	33175-59-6
$(Z)-(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_4H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH(t-C_5H_9)CH=CH$	-C ₄ H ₉) 8.69±0.01	(171)	(717)	-29±0.7	-121±3	*EST	692-47-7
(E)- $(t-C_4H_9)$ CH = CH $(t-C_4H_9)$ CH	·C ₄ H ₉) 8.74±0.01	162	677	-40±0.7	-166±3	79FUC/PEA	692-48-8
\bigcirc	(9.5) IP is onset of pho	(182) toelectron b	(762) and (77BIE/E		-154.3±1.5	77PED/RYL	293-96-9
(CH ₂) ₃ CH ₃	9.41 From charge trans standard, fluorob	_			(82SIE/MAU);		1678-93-9
CH CH3	9.23 From charge transstandard, fluorobo	-					7058-01-7
CH2CH(CH3)2	(9.54±0.03)	(171)	(716)	49	-204	*EST	1678-98-4
CH(CH ₃) ₂	9.32 From charge transreference standar	=		55±0.7 determinations	-231±3 (82SIE/MAU);	77PED/RYL	99-82-1
(CH ₂) ₄ CH ₃	(9.91±0.05)	(184)	(767)	-45	-189	71ASTM	3741-00-2

ION Neutral	Ionization potential eV	Δ _f H(Id kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₀ H ₂₀ N ⁺	, , , , , , , , , , , , , , , , , , , ,						
(H+	From proton affin PA = 230.1 kcal/r			ndecane (RN 3	31023-92-4).		
C ₁₀ H ₂₀ NO +			,,, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>				
(OH NH2	H ⁺ From proton affin 929. kJ/mol.	67 ity of 4-am	280 inodecahydro-	3-naphthalenol	. PA = 222.1	kcal/mol,	
C ₁₀ H ₂₀ N ₂ +		• • • • • • • • • • • • • • • • • • • •				••••	
NN	(7.60) Reported values o usually significantle change associated	y higher th	an the adiabat	ic value becaus			60678-75-3
NN	(7.89) See also: 84NEL.	(189)	(791)	7	30	*EST	6130-94-5
C ₁₀ H ₂₀ O ₅ +					·		
	(8.9) IP is onset of phot	(14) oelectron t	(60) pand. See also:	-191±0.5 83BAK/ARM.		82BYS/MAN	33100-27-5
C ₁₀ H ₂₀ SSi ₂ +							
H ₃) ₃ Si Si(CH ₃) ₃	(7.8) IP is onset of phot	(126) oelectron b	(526) pand (83VES/F	-54 HAR).	-227	*EST	17906-71-7
C ₁₀ H ₂₁ N ⁺							
H ₃ C N C ₃ H	(7.23) IP from 82ROZ/H	(127) IOU.	(530)	-40	-167	*EST	79-55-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₀ H ₂₁ O ₅ +							
(S) H+	From proton affir (RN 33100-27-5).	-49 hity of 1,4,7, PA = 223	–205 ,10,13-pentaox .6 kcal/mol, 93	acyclopentadec 6. kJ/mol.	ane (15-Crowi	1-5)	
C ₁₀ H ₂₂ + n-C ₁₀ H ₂₂	9.65	163	682	_50.6+0.2	-249.5±0.9	77PED/RYL	124-18-5
11-0101122	9.03	103 176	738		-249.3±0.9 -192.7±0.9	//FED/RIL	124-10-5
	From charge trans Reference standar	=					
C ₁₀ H ₂₂ N ₂ O ₃ +							
NH O HN	(≤8.4) IP from 83BAK/A	(≤88) .RM.	(≤369)	-105	-441	*EST	31249-95-3
C ₁₀ H ₂₃ N ⁺							
n-C ₁₀ H ₂₁ NH ₂	(8.63±0.05) See also: 79AUE/	(148) BOW.	(619)	-51	-214	*EST	2016-57-1
C ₁₀ H ₂₃ O + (n-C ₅ H ₁₁) ₂ OH	From proton affin PA = 203.5 kcal/n			693-65-2) (86S <i>a</i>	AN/BAL, 85H	OU/ROL).	
C ₁₀ H ₂₄ N + n-C ₁₀ H ₂₁ NH ₃		(94)	(393)				
10213	From proton affin			= (220.7) kca	l/mol, (923.) k	J/mol.	
C ₁₀ H ₂₄ N ₂ + (n-C ₃ H ₇) ₂ NN(C ₂ H ₅) ₂							
. 3 72 . 2 3.2	(≤7.87) Reported values o usually significantl geometry change a	y higher th	an the adiabat	ic value because	e of the large	*EST nents are	52598-09-1
(n-C ₄ H ₉) ₂ NN(CH ₃) ₂							
	(≤7.96) Reported values o usually significantl geometry change a	y higher th	an the adiabat	ic value because	of the large	*EST nents are	60678-67-3

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Tab	le - Contin	ued		
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₀ H ₂₄ N ₄ +	(7.7) IP is onset of pho	(182) toelectron	(761) band (83BAK	4.3±0.8 (/ARM).	18.0±3.3	83CLA/COR	295-37-4
C ₁₀ H ₂₄ O ₂ Si ₃ +	(≤9.36) IP from 81KHV/2	(≤-70) ZYK.	(≤-293)	-286	-1196	*EST	76795-95-4
C ₁₀ H ₂₅ N ₂ + (CH ₃) ₂ NH(CH ₂) ₆ N(CH ₃)	Prom proton affir 1023. kJ/mol.	106 hity of (CH	444 ₃₎₂ N(CH ₂) ₆ N	V(CH ₃) ₂ (RN 11	.1-18-2). PA =	· 245. kcal/mol,	
C ₁₀ H ₃₀ N ₅ Ta + Ta(N(CH ₃) ₂) ₅	(6.5) IP is onset of pho	(93) toelectron l	(390) Dand.	−57±4	−237±15	82TN270	
C ₁₀ H ₃₀ O ₃ Si ₄ + [(CH ₃) ₃ SiOSi(CH ₃) ₂] ₂ O	(≤10.24) IP from 82ERM/F	(≤−226) XIR.	(≤-947)	-462±5	−1935±23	77PED/RYL	141-62-8
C ₁₀ H ₃₀ Si ₄ + n-Si ₄ (CH ₃) ₁₀	7.29±0.01	32	135	-136±6	-568±24	77PED/RYL	865-76-9
C ₁₀ MnO ₁₀ Re + MnRe(CO) ₁₀	8.22±0.01	(-184)	(-769)	-373	-1562	*EST	14693-30-2
C ₁₀ Mn ₂ O ₁₀ + Mn ₂ (CO) ₁₀	(7.7) IP is onset of phot	(-201) oelectron t	(-842) pand. See also	-379±1 : 81MIC/SVE.	-1585±5	82CON/ZAF	10170-69-1
C ₁₀ O ₁₀ Re ₂ + Re ₂ (CO) ₁₀	(7.8) IP is onset of phot	(-193) oelectron t	(-806) pand. See also	-373±3 : 81MIC/SVE.	-1559±11	83ALT/CON	14285-68-8
C ₁₁ H ₅ MnO ₅ +	(8.22±0.05)	(49)	(203)	-141±0.2	−590±1	82CON/ZAF	13985-77-8

Table 1. Positive Ion Table - Continued

			e ion table -	Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₁ H ₇ BrO ₂ ⁺	(9.25) IP is onset of phot	(182) coelectron b	(760) and (80RED/FRI	−31 E).	-132	*EST	3129-39-3
C ₁₁ H ₇ CIF ₂ O ₂ S +	(≤8.90) IP from 84AND/C	(≤35) CER.	(≤146)	-170	-713	*EST	
C ₁₁ H ₇ ClO ₂ +	(9.4) IP is onset of phot	(180) oelectron ba	(754) and (80RED/FRE	−37 ∃).	-153	*EST	17015-99-5
C ₁₁ H ₇ N ⁺	(8.59) IP from 83KLA/K	(244) OV.	(1021)	46	192	*EST	86-53-3
OO CN	(8.56) IP is onset of photo	(243) oelectron ba	(1016) and (83KLA/KOV	45 V).	190	*EST	613-46-7
C ₁₁ H ₈ ⁺	(8.03) IP from 80SCH/SC	(289) CH.	(1210)	104	435	73BIL/CHO	286-85-1
C ₁₁ H ₈ Br ₂ +	(7.85) IP is onset of photo		(1053) and (84AND/CEI	71 R).	296	*EST	15825-93-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_{f}H(Ion)$			Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/moi	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₁₁ H ₈ CrO ₅ + OC	(7.02±0.1)	(4)	(18)	-157	-659	84ALT/CON	12125-87-0
C ₁₁ H ₈ F ₂ +	(8.19±0.03) IP from 84AND/C	(149) EER.	(625)	-39	-165	*EST	61997-36-2
C ₁₁ H ₈ FeO ₃ + OC CO	(7.3) IP is onset of phot	(132) oelectron ba	(554) and (82LEV/	−36±3 LIA, 80BOH/G	-150±13 LE).	82PIL/SKI	12093-05-9
C ₁₁ H ₈ MoO ₄ +	(7.0) IP is onset of photo		(339) and.	-80±3	−336±11	82PIL/SKI	12146-37-1
C ₁₁ H ₈ O ⁺	(8.3) IP is onset of photo		(879) nd.	19	78	*EST	4443-91-8
СНО	(8.33) IP from 83KLA/KO		(834)	7	30	*EST	66-77-3
	(8.0) IP is onset of photo		(914) nd (84AND/0		142	*EST	36628-80-5

Table 1. Positive Ion Table - Continued

-			e ion Table -	Contin			
ION Neutral	Ionization potential	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₁ H ₈ O ₂ +	(9.3) IP is onset of phot	(184) toelectron b	(770) pand (80RED/FR	−30 E).	-127	*EST	58-27-5
Соон	(8.29) IP from 83KLA/K	(138) COV.	(577)	−53.3±0.2	-223.1±0.9	77PED/RYL	86-55-5
СООН	(8.26) IP from 83KLA/K	(135) COV.	(564)	−55.6±0.4	-232.5±1.6	77PED/RYL	93-09-4
C ₁₁ H ₈ S ₂ +	(7.3) IP is onset of phot	(237) toelectron b	(991) eand (81BOC/BR	69 A).	287	*EST	204-14-8
C ₁₁ H ₉ ⁺	(7.35±0.1) Appearance poter lead to value for ∆					82MCM/GOL n)	7419-60-5
C ₁₁ H ₉ F ⁺	(8.10±0.03) IP is onset of phot	(203) coelectron b	(848) and (84AND/CE	16 R).	66	*EST	72791-63-0
С ₁₁ H ₉ F ₃ O +	(9.0±0.05) IP from 79SCH/G	(39) RU, 80GR)	(164) U/SCH, 81SCH/C	-168 iRO.	-704	79SCH/GRU	76293-37-3
F ₃ C O CH ₃	(9.1±0.05) IP from 81SCH/G	(42) RO.	(175)	-168	-703	*EST	

Table 1. Positive Ion Table - Continued

	Table 1. Positive ion Table - Continued												
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Nekcal/mol		Neutral reference	CAS registry number						
C ₁₁ H ₉ F ₃ O +													
F3C 0 CH3	(9.1±0.05) IP from 81SCH/0	(42) GRO.	(175)	168	-703	*EST							
C ₁₁ H ₁₀ +	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			· · · · · · · · · · · · · · · · · · ·									
CH ₃	7.85 IP from 82LEV/I	208 JA, 83KLA	870 ./KOV.	27±0.5	113±2	74SAB/CHA	90-12-0						
СH ₃	(≤7.26±0.03)	(≤227)	(≤953)	60	253	*EST	769-31-3						
СH3	(≤7.33±0.03)	(≤229)	(≤960)	60	253	*EST	17647-77-7						
СНЗ	(≤7.30±0.03)	(≤227)	(≤950)	59	246	*EST	1654-55-3						
ОО —сн ₃	(≤7.34±0.03)	(≤228)	(≤954)	59	246	*EST	1654-52-0						
<u>О</u> О сн ₃	(7.8) IP is onset of phot	(206) toelectron b	(864) and (82LEV/I	27±0.5 .IA, 83KLA/KO	111±2 OV).	74SAB/CHA	91-57-6						
	(8.1) IP is onset of photo	(253) toelectron b	(1057) and.	66	276	*EST	4453-90-1						

Table 1. Positive Ion Table - Continued

	Table	I. FUSILIY	e ion lable	- Contin	ueu —————		
ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₁ H ₁₀ +							
CH ₂	(7.7) IP is onset of photon	(253) toelectron b	(1058) and (84AND/CI	75±1 ER).	315±6	77PED/RYL	2443-46-1
C ₁₁ H ₁₀ CrO ₃ +							
CH ₃ Cr(CO)	(6.70±0.1) See also: 82GUI/F	(54) PFI.	(224)	-101	-422	*EST	12129-29-2
C ₁₁ H ₁₀ O +		 					
OCH3	7.70 IP from 83KLA/K	(177) OV.	(742)	-0.2	-1	*EST	2216-69-5
OCH3	(7.44) IP is onset of phot	(171) oelectron b	(717) and (83KLA/KC	-0.2 DV).	- 1	*EST	93-04-9
C ₁₁ H ₁₀ OS ⁺							
CH ₃ CH ₃	(≤8.40) IP from 84GLE/B		(≤840)	7	30	*EST	
C ₁₁ H ₁₀ O ₂ +							
CH3	(8.5) IP is onset of photo	(145) oelectron ba	(607) and.	-51	-213	*EST	20651-88-1
	≤9.1 IP from 84MAR/K	≤195 (AY.	≤814	-15	-64	64COO/CRU	
0					·	oroso, ence	

468

Table 1. Positive Ion Table - Continued

Table 1. Positive for Table - Continued											
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number				
C ₁₁ H ₁₁ ⁺	From proton affin 840. kJ/mol.	192 lity of 1-met	803 hylnaphthalene (RN 90-12-0)). PA = 200.7 kg	cal/mo!,					
H2 CH3	From proton affin 837. kJ/mol.	192 uity of 2-met	804 hylnaphthalene (RN 91-57-6). PA = 200.0 kg	cal/mol,					
C ₁₁ H ₁₁ CrNO ₃ ⁺ OC Cr CO CO NCCH ₃ I ₂	(6.9)	(63)	(262)	-96±3	-404±13	84ALT/CON	12109-10-3				
C ₁₁ H ₁₁ NO +	(7.55) IP from 84GLE/B	(182) IS.	(763)	8	35	*EST					
OO OC2H5	(8.0) IP is onset of phot	(181) coelectron b	(756) and (81PFI/GUI	-4).	-16	*EST	46185-83-5				
ОС ₂ Н ₅	(8.1) IP is onset of phot	(192) coelectron b	(804) and (81PFI/GUI)	5).	23	*EST	13720-91-7				
$C_{11}H_{12}^{+}$ $C \equiv C - (CH_2)_2CH_3$	(≤8.29±0.02)	(≤252)	(≤1055)	61	255	*EST	4250-81-1				
C=C-CH(CH3/2	(8.35±0.08) IP is onset of phot	(252) coelectron b	(1053) and (81ELB/LIE	59).	247	*EST	1612-03-9				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry
С ₁₁ H ₁₂ + С=СH	(8.16±0.08) IP from 81ELB/I	(263) .IE.	(1102)	75	315	*EST	769-26-6
H ₃ C H	(≤8.17) IP from 84BAI/D	(≤253) OOM.	(≤1058)	65	270	*EST	23063-31-2
	(≤8.42±0.05) IP from 82HAS/N	(≤224) NEU, 82LEV	(≤938) √/LIA.	30	126	*EST	4486-29-7
	(8.05)	(228)	(956)	43	179	*EST	60582-10-7
	(8.19)	(232)	(969)	43	179	*EST	60582-11-8
C ₁₁ H ₁₂ N ₂ O ₂ + COOH	(≤7.5) See also: 83CAN/	(≤115) HAM.	(≤481)	-58	-243	*EST	54-12-6
C ₁₁ H ₁₂ O ⁺	(8.6±0.05) IP from 81SCH/G	(182) RO.	(762)	-16	-68	81SCH/GRO	15753-84-1
H ₃ C COCH ₃	(8.5±0.05) IP is onset of phot	(180) soelectron b	(752) and (81SCH/	–16 GRO).	-68	*EST	4023-84-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry number
C ₁₁ H ₁₂ O +	THING AREA.						
CH ₃	8.5±0.05 IP from 79SCH/C	183 GRU, 80GRI	766 U/SCH, 81SCH/0	–13 GRO.	-54	79SCH/GRU	16927-82-5
CH3 CH3	(7.8±0.05) IP from 79SCH/G	(170) GRU.	(711)	-10	-41	79SCH/GRU	2513-25-9
	≤8.8 IP from 84MAR/I	(≤208) KAY.	(≤871)	5	22	*EST	
C ₁₁ H ₁₂ O ₂ +			********************************	w			
OCH ₃	(8.2) IP from 79SCH/G	(146) GRU, 80GRU	(612) U/SCH.	-43	-179	79SCH/GRU	10542-87-7
0	(8.1) IP is onset of photon	(205) toelectron b	(860) and.	19	78	*EST	60526-44-5
C ₁₁ H ₁₃ N ⁺							
CN CH ₂) ₃ CH ₃	(9.77±0.1)	(254)	(1064)	29±0.2	121±1	*EST	20651-74-5
NC (CH ₂) ₃ CH ₃	(10.08±0.1)	(261)	(1094)	29±0.2	121±1	*EST	20651-73-4
(CH3)3C	(8.8) IP is onset of photon	(229) toelectron b	(959) and (85BAI/MIS	26 2). See also	110 o: 86ORL/MIS.	85ORL/MIS	4210-32-6

Table 1.	Positive	Ion Table	_	Continued

	Table	1. Positi	ve Ion Table	e - Contir	iued		
ION Neutral	Ionization potential eV	Δ _f H(l kcal/mol	ion) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₁ H ₁₃ N ⁺				· · · · · · · · · · · · · · · · · · ·			
	(7.85±0.02)	(222)	(930)	41	173	*EST	4363-25-1
C ₁₁ H ₁₃ N ₂ O ₂ +			 				
COOH / CH ₂ -CH / NH ₂)H	From proton affi	82 nity of L-try	344 /ptophan (RN :	54-12-6). PA :	= 225.4 kcal/m	ol, 943. kJ/mol.	
11H ₁₄ +					, ,		
	≤8.40±0.02	(≤198)	(≤827)	4±0.7	17±3	*EST	1075-16-7
CH ₃	(8.47)	(195)	(815)	~0.5±0.2	-2±1	78OSB/SCO	4912-92-9
	Carry	(270)	(0.10)	0.5.20.2	221	,0002,000	1018/02/0
Снз	(8.47)	(195)	(815)	0.5±0.2	-2±1	*EST	20836-11-7
Ţ							
C ₂ H ₅	(7.87)	(260)	(1089)	79	330	*EST	49542-94-1
C ₂ H ₅			, ,				
	(8.25)	(286)	(1196)	96	400	*EST	58738-49-1
→	IP is onset of phot	oelectron b	oand (82SPA/K	.OR),			
11H ₁₄ N ⁺	· · · · · · · · · · · · · · · · · · ·	<u> </u>					
(N)		175	732				
(QI)) H ⁺	From proton affin PA = 232.0 kcal/n			noquinoline (l	RN 4363-25-1).		

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry				
C ₁₁ H ₁₄ N ₂ +	(≤7.69±0.16)	(≤215)	(≤900)	38	158	*EST	87-52-5				
(CH ₂) ₂ NHCH ₃	(7.7) IP is onset of pho	(206) toelectron b	(864) and.	29	121	*EST	61-49-4				
H ₃ C (CH ₂) ₂ NH ₂	(7.6) IP is onset of photon	(201) coelectron ba	(839) and.	25	106	*EST	1821-47-2				
C ₁₁ H ₁₄ N ₂ O + CH ₂ CH ₂ NH ₂	(≤7.68±0.12)	(≤174)	(≤729)	-3	-12	*EST	608-07-1				
C ₁₁ H ₁₄ O + CH ₃ CH ₃ CH ₃	(8.2) IP is onset of phot	(140) oelectron ba	(586) and (78CEN/FRA		-204.9±3.6	77PED/RYL	1667-01-2				
С11H14O2 +	(8.6) IP is onset of phot	(103) oelectron ba	(431) and (85BAI/MIS	-95 2). See also:	-399 86ORL/MIS.	85ORL/MIS	98-73-7				
C ₁₁ H ₁₄ O ₂ Si +	(8.1) IP is onset of phot		(577) and (83ZYK/ERC	–49 C).	-205	*EST					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₁ H ₁₅ N ⁺	(7.1) IP is onset of pho	(172) otoelectron b	(718) and (82ROZ	8 /HOU2).	33	*EST	4096-20-2
CH ₃	(6.8) IP is onset of pho	(184) stoelectron b	(771) and (82ROZ	27 /HOU2).	115	*EST	41378-30-7
H ₃ C CH ₃	(7.0) IP is onset of pho	(230) toelectron b	(961) and (82ROZ	68 /HOU2).	286	*EST	19199-06-5
CH ₃	(≤7.48) IP from 82ROZ/I	(≤223) HOU2.	(≤933)	50	211	*EST	81506-10-7
C ₁₁ H ₁₅ NO ₂ S +	O (7.0) IP is onset of pho	(129) toelectron b	(538) and (84CAU	-33 /FUR).	-137	*EST	
C ₁₁ H ₁₅ NO ₃ + H ₃ CCO CH ₃ CCOC ₂ H ₅	≤8.26 IP from 81CAU/0	(≤54) GIA.	(≤227)	-136	-570	*EST	
H ₃ C COOC ₂ H ₅ H ₃ CCO N CH ₃	(≤8.23) IP from 81CAU/0	(≤54) GIA.	(≤224)	-136	-570	*EST	6314-22-3
C ₁₁ H ₁₆ ⁺	(8.42±0.1)	(184)	(768)	-11	-44	*EST	1595-04-6

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	ion) kJ/moi		Neutral) ol kJ/mol	Neutral reference	CAS registry				
C ₁₁ H ₁₆ +	(8.35±0.1)	(182)	(761)	-11	-45	*EST	1595-05-7				
H3C	8.28 IP from 86ORL/N	(178) MIS. See al:	(744) so: 85BAI/MIS.	-13	-55	85ORL/MIS	98-51-1				
CH2-C(CH3)3	≤8.7	(≤187)	(≤784)	-13	-55	*EST	1007-26-7				
н ₃ с Сн ₃ Сн ₃	7.92±0.02 See: 84HOW/GO	(165) N.	(690)	-18	-74	*EST	700-12-9				
C ₁₁ H ₁₆ BrNO ₂ + OCH ₃ CH ₃ O - NH CH ₃ O - NH	(7.4) IP is onset of pho	(97) toelectron	(406) band (81DOM/	-74 EAT).	-308	*EST	60917-67-1				
Br OCH ₃	(7.3) IP is onset of pho	(97) toelectron	(404) band (81DOM/)	-72 EAT, 82LE	300 V/LIA).	*EST	64638-07-9				
H ₃ CO	(7.4) IP is onset of pho	(102) toelectron	(425) band (81DOM/	-69 EAT).	-289	*EST	32156-25-5				
C ₁₁ H ₁₆ N ⁺	From proton affii 945. kJ/mol.	154 nity of 1-ph	642 enylpiperidine (RN 4096-20	0-2). PA = 225.8	kcal/mol,					

Table 1. Positive Ion Table - Continued

			e ion rabie	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₁ H ₁₆ O +							
H3CO-CICH3)3	(7.77) IP from 86ORL/N	(138) 11S.	(576)	-41.5	-173.8	86ORL/MIS	5396-38-3
СН ₃ ОСН(СН ₃) ₂ СН ₃	8.49	(162)	(676)	-34	-143	*EST	54350-31-1
3C ₂ H ₅ CH ₃	(≤8.28)	(≤165)	(≤692)	-26	107	*EST	61248-63-3
C ₁₁ H ₁₆ OS +							
н ₃ с	(≤8.50) IP from 81MOH/J	(≤163) ∏A.	(≤681)	-33	-139	*EST	77919-66-5
н ₃ с	(≤8.33) IP from 81MOH/J	(≤162) IA.	(≤678)	-30	-126	*EST	49833-45-6
CH ₃ H ₃ C CH ₃ H ₃ C S	(8.25) IP is onset of phot	(144) oelectron b	(601) and (80FRO/WE	-47 (S).	-195	*EST	75503-13-8
C ₁₁ H ₁₆ O ₂ +	· · · · · · · · · · · · · · · · · · ·						
CH3 CH3 CH2 OH	(≤9.05) IP from 81NES/BA		(≤468)	-97	-405	*EST	10309-20-3
O H ₃ C H ₃ C H ₃ C	(8.86) IP is onset of photo	(108) oelectron ba	(450) and (80FRO/WE	−97 S).	-405	*EST	57239-03-9

Table 1. Positive Ion Table - Continued

			e ion lable	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₁ H ₁₆ S ⁺			-				
н ₃ cs——сісн _{3);}	(≤7.83±0.05)	(≤179)	(≤747)	-2	-8	*EST	7252-86-0
SCICH ₃) ₃	(≤8.35)	(≤188)	(≤788)	-4	-18	*EST	34786-26-0
H3C	(≤8.31)	(≤187)	(≤784)	-4	-18	*EST	7439-10-3
C ₁₁ H ₁₆ S ₂ +					· · · · · · · · · · · · · · · · · · ·		
SH3C CH3 H3C CH3	(8.2) IP is onset of pho	(193) stoelectron b	(806) oand (80FRO/V	4 WES).	15	*EST	75503-14-9
C ₁₁ H ₁₇ N +					······································		
H ₃ C CH ₃	(7.24)	(174)	(729)	7	30	*EST	13021-15-3
H3C N(C2H5)2	(6.90) IP from charge tr IP (C ₆ H ₅ N(CH ₃)				4 ns; reference	*EST standard:	91-67-8
H3C N(C2H512	(6.83) IP from charge tr IP (C ₆ H ₅ N(CH ₃)					*EST standard:	613-48-9
C ₁₁ H ₁₇ NO ₂ +				****			
H ₃ CO OCH ₃ NH ₂ CH ₃	(≤8.30) IP from 81DOM/	(≤130) EAT.	(≤544)	-61	-257	*EST	15402-81-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₁ H ₁₇ NO ₂ + OCH ₃ H ₃ CO — NH ₂ CH ₃	(7.4) IP is onset of phot	(99) coelectron b	(416) and (81DOM/E	-71 AT, 82LEV	298 /LIA).	*EST	23690-13-3
OCH ₃ NH ₂ OCH ₃ CH ₃	(7.1) IP is onset of phot	(94) oelectron b	(395) and (81DOM/E.	-69 AT, 82LEV,	–290 /LIA).	*EST	13641-74-2
OCH ₃ NH ₂ CH ₃ OCH ₃	(8.18) IP from 81DOM/E	(117) BAT.	(491)	-71	-298	*EST	23690-14-4
H ₃ CO	(≤8.03±0.06) See also: 81DOM/		(≤492)	-68	-283	*EST	120-26-3
C ₁₁ H ₁₈ +						<u> </u>	
H ₃ C CH ₃	(8.4) IP is onset of photo		(940) and.	31	130	*EST	33470-40-5
СНЗ	(9.17±0.02)	(170.9)	(715.0)	-40.6±0.3	-169.8±1.4	79CLA/KNO	768-91-2
CH3	9.24	176	737	-36.9	-154	79CLA/KNO	
\Rightarrow	(8.5) IP is onset of photo		(972) nd (82SPA/GLE	36).	152	*EST	52879-54-6

Table 1. Positive Ion Table - Continued

	Table 1	1. Positive	Ion Tabl	e - Contir	ued		
ION Neutral	Ionization potential eV	Δ _f H(Ion		Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₁ H ₁₈ N ⁺							
H ₃ C CH CH	From proton affin PA = 232.9 kcal/r			dine (RN 6832	-21-9).		
(CH ₂) ₅ CH ₃	From proton affin 958. kJ/mol.		572 ylpyridine (RN 1129-69-7)	. PA = 228.9	kcal/mol,	
(H ₃ C (C ₂ H ₅) ₂)H	From proton affin 956. kJ/mol.		578 C ₆ H ₄ N(C ₂ I	H ₅) ₂ (RN 91-67	7-8). PA = 22	8.9 kcal/mol,	
(H3C NIC2H5)2)H+	From proton affin 956. kJ/mol.		587 C ₆ H ₄ N(C ₂ I	^H 5)2 (RN 613-∕	18-9). PA = 2	28.6 kcal/mol,	
C ₁₁ H ₁₈ O ₄ +						."	
C10C2H513	(8.7) IP is onset of phot		(190) nd (83ZYK)	–155 ERC).	-649	*EST	75905-10-1
C ₁₁ H ₁₈ S ₂ +							
H ₃ C CH ₃ S S S S S S S S S S S S S S S S S S S	7.65 IP is onset of phot			26 10H).	110	*EST	
C ₁₁ H ₁₉ N +							
	(≤7.44±0.03)	(≤162) (≤676)	-10	-42	*EST	2981-10-4

Table 1. Positive Ion Table - Continued

	Table	I. Positiv	ve Ion Table -	Contin	ueu 		
ION Neutral	Ionization potential eV	Δ _f H(Id kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₁ H ₁₉ NO +							
H ₃ C NH(n-C ₃ H ₇)	(≤8.03) IP from 82PFI/GE	(≤131) ER.	(≤548)	-54	-227	*EST	56570-54-8
CH ₃ NH (i-C ₃ H ₇	(≤7.94)) IP from 82PFI/GE	(≤125) ER.	(≤525)	-58	-241	*EST	80555-73-3
C ₁₁ H ₂₀ +							
$(\text{tert-C}_4\text{H}_9)_2\text{C} = \text{C} = \text{CH}_2$	(≤8.55)	(≤206)	(≤860)	8	35	*EST	22585-31-5
$(CH_3)_3CCH = C = CHC(CI)$	H ₃) ₃ (8.6) IP is onset of phot	(193) coelectron t	(807) pand (85ELS/VEI	−5 ₹).	-23	*EST	42066-39-7
1-C ₁₁ H ₂₀	(9.90±0.02)	(233)	(976)	5	21	*EST	2243-98-3
2-C ₁₁ H ₂₀	(9.28±0.02)	(214)	(897)	0.5	2	*EST	60212-29-5
3-C ₁₁ H ₂₀	(9.17±0.02)	(212)	(888)	0.8	3	*EST	60212-30-8
4-C ₁₁ H ₂₀	(9.13±0.02)	(211)	(884)	0.8	3	*EST	60212-31-9
5-C ₁₁ H ₂₀	(9.11±0.02)	(211)	(882)	0.8	3	*EST	2294-72-6
C ₁₁ H ₂₀ O +							
(CH ₃) ₃ C·	(≤8.45)	(≤147)	(≤613)	-48	-202	*EST	14743-58-9
C ₁₁ H ₂₀ O ₂ +			· · · · · · · · · · · · · · · · · · ·				
(CH ₃) ₃ C C(CH ₃) ₃	(7.9) Heat of formation IP is onset of phot			-126±1 enol form.	528±4	81FER/RIB	1118-71-4
C ₁₁ H ₂₁ N ⁺							
	(≤7.93±0.03)	(≤146)	(≤609)	-37	-156	*EST	3319-01-5

Table 1. Positive Ion Table - Continued

	Table .	1. 1 05111	ve Ion Tabl	e - Contini			
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
$C_{11}H_{22}^{+}$ $C_2H_5CH_2C(C_2H_5) = C(C_2H_5)$	₂ H ₅) ₂ (8.04±0.02)'	(145)	(606)	-41	-170	*EST	50787-14-9
C ₁₁ H ₂₄ + n-C ₁₁ H ₂₄	(9.56) IP from charge tra	(156) ansfer equi	(651) librium consta	-65±0.6 nt determinatio	-271±3 ns (81MAU/S)	77PED/RYL IE, 82LIA).	1120-21-4
n-C ₈ H ₁₇ CH(CH ₃) ₂	(9.68) IP from charge tra	(157) insfer equi	(656) librium consta	-66 nt determinatio	–278 ns (81MAU/S)	*EST TE, 82LIA).	6975-98-0
C ₁₂ Co ₄ O ₁₂ +	7.45 IP is onset of phot	(-246.2)	(–1030.1) band. See also		−1748.9±13	82PIL/SKI	17786-31-1
C12F8 ⁺ F F F F	(≤9.1±0.1)	(≤-56)	(≤−234)	-266	~1112	*EST	1554-93-4
F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-	(9.40±0.02)	(-115)	(-480)	−332±3	-1387±12	79PRI/SAP2	434-90-2
C12F12 +	11.14 IP is onset of phot	(-211) oelectron l	(-884) pand (84HEI/\	~468 VIR).	-1959	*EST	32937-02-3
C ₁₂ F ₂₇ N + (n-C ₄ F ₉) ₃ N	(11.3) IP is onset of phot	(-1067) oelectron t	(-4466) pand (82ELB/I		−5556±10 K3).	79ERA/KOL	311-89-7
C ₁₂ Fe ₃ O ₁₂ + C ₁₂ Fe ₃ O	(7.44) IP is onset of phot	(-247) oelectron t	(-1035) pand (82DEK/		−1753±27	82PIL/SKI	17685-52-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ _f H(Ic		Δ _f H(Ne		Neutral reference	CAS registry
C ₁₂ H ₆ O ₂ +	(8.6) IP is onset of pho	(305) toelectron b	(1275) and.	106	445	*EST	82-86-0
C ₁₂ H ₈ ⁺	(8.03) IP is onset of pho	(279) toelectron b	(1166) and (81GLE/SC	93 H).	391	*EST	15727-65-8
CECH	(8.11) IP is onset of pho	(280) toelectron b	(1173) and (81GLE/SC	93 H).	391	*EST	2949-26-0
	(8.22±0.04)	(252)	(1053)	62±0.2	260±1	81KUD/KUD	208-96-8
	7.56±0.02 IP derived from clin agreement (80N				437±13 rminations is	77PED/RYL	259-79-0
C ₁₂ H ₈ Br ₂ N ₂ ⁺	(9.24) IP from 77NUY/N	(324) 1ES.	(1355)	110.8	463.6	*EST	1601-98-5
C ₁₂ H ₈ FNO ⁺	9.11 IP from 80GRU/S	(222) CH. See alse	(927) o: 82LEV/LIA.	11	48	*EST	6238-65-9

Table 1. Positive Ion Table - Continued

			e ion table	- Contin			
ION Neutral	lonization potential eV	Δ _f H(Io		Δ _f H(Nekcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₈ F ₂ +	(8.35±0.02)	(147)	(616)	~45±1	−190±5	64SMI/GOV	388-82-9
F F	(8.35±0.02)	(146)	(611)	-47	-195	*EST	396-64-5
F	(8.00±0.02)	(138)	(577)	-47±1	-195±S	64SMI/GOV	398-23-2
C ₁₂ H ₈ F ₂ S ₂ +		···					
F—————————————————————————————————————	(≤8.4) IP from 82GIO/B6	(≤109) OC.	(≤456)	-85	-354	*EST	405-31-2
C ₁₂ H ₈ N ₂ +							· · · · · · · · · · · · · · · · · · ·
	(8.3) IP is onset of phot	(270) oelectron b	(1130) and.	79	329	*EST	66-71-7
	8.35±0.02	(269)	(1127)	77	321	*EST	230-07-9
	(7.9) IP is onset of photo	(277) pelectron b	(1159) and.	95	397	77SCH/PET	230-17-1
	8.33±0.02	274	1148	82±0.7	344±3	80ARS	92-82-0

Table 1. Positive Ion Table - Continued

ION	Yaninatian antanati	A 77/7		A 77/21	1)	Neutral	CAS ===!==
Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		reference	CAS registry number
C ₁₂ H ₈ N ₂ O +							
	8.00±0.02	(247)	(1036)	63	264	*EST	304-81-4
C ₁₂ H ₈ N ₂ O ₄ S ₂ +							
0 ₂ N	O ₂ (≤8.98) IP from 82GIO/B	(≤258) OC.	(≤1080)	51	214	*EST	100-32-3
C ₁₂ H ₈ N ₄ O ₄ ⁺	O ₂						
02N	~2 (9.97) IP from 77NUY/N	(314) MES.	(1312)	83.6	349.8	*EST	
C ₁₂ H ₈ O +							
QL.)Q	7.9±0.05	202	845	20±1	83±5	77PED/RYL	132-64-9
C ₁₂ H ₈ OS +			·				·
	(8.1) IP is onset of phot	(206) coelectron b	(863) and.	19	81	*EST	1013-23-6
C ₁₂ H ₈ O ₂ +							
	(7.5) IP is onset of phot	(158) coelectron b	(661) and.	-15	-63	82SHA	262-12-4
C ₁₂ H ₈ O ₂ S ⁺		· · · · · · · · · · · · · · · · · · ·					
	(8.9) IP is onset of phot	(171) oelectron ba	(714) and.	-35	-145	*EST	1016-05-3

Table 1. Positive Ion Table - Continued

	Table .	I. FUSIU	ve ion Table	- Contin	iueu 		
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) I kJ/mol	Δ _f H(N kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₂ H ₈ S +							
O'S O	7.90±0.03	231	967	49±0.7	205±1	79SAB	132-65-0
C ₁₂ H ₈ S ₂ +					,,,,,,,,		
©(s)	(7.7) IP is onset of photon	(201) coelectron	(840) band (81TRA/F	23±1 RED).	97±6	77PED/RYL	92-85-3
C ₁₂ H ₈ Se +							
€ Se	(≤7.86) IP from 82TRA/R	(≤243) .OD.	(≤1018)	62	260	*EST	244-95-1
C ₁₂ H ₈ Se ₂ +					 		
© Se © Se ©	(≤7.89) IP from 82TRA/R	(≤231) OD.	(≤968)	49	207	*EST	
C ₁₂ H ₉ +			·				
(ODO) H+	From proton affin 851. kJ/mol.	267 ity of biph	1116 enylene. (RN 25	59-79-0). PA	= 203.4 kcal/mo	ol,	
C ₁₂ H ₉ ClO ₂ +							
CH ₂ CI	(9.25) IP is onset of phot	(242) oelectron	(1010) band (80RED/F	28 TRE).	118	*EST	31599-79-8
C ₁₂ H ₉ F ⁺							
F	(8.20±0.02)	(185)	(774)	-4	-17	*EST	321-60-8

Table 1. Positive Ion Table - Continued

			e ton table	- Contin			
ION Neutral	Ionization potential eV		on) kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₂ H ₉ F +							
─ F	(8.00±0.02)	(180)	(755)	4	-17	*EST	324-74-3
I							
C ₁₂ H ₉ N ⁺							
CN	(8.5) IP is onset of pho	(294) stoelectron b	(1228) pand.	98	408	*EST	71906-57-5
CN							
ÇN CN	(8.7) IP is onset of pho	(301) toelectron b	(1259) and.	100	420	*EST	61346-79-0
NC OO	(8.7) IP is onset of photon	(300) toelectron b	(1255) and.	99	416	*EST	16513-60-3
O'N'O	7.57±0.03	229	959	55±0.2	229±1	81KUD/KUD2	86-74-8
							
C ₁₂ H ₉ NO ⁺	9.06 IP from 82LEV/L	(247) IA, 80GRU/	(1032) SCH.	38	158	*EST	91-02-1
	(9.6±0.1)	(261)	(1090)	39	164	*EST	5424-19-1
O ON	(9.6±0.1)	(261)	(1090)	39	164	*EST	14548-46-0

Table 1. Positive Ion Table - Continued

			ve ion table				
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₉ NO ₃ + H ₃ CO	(≤8.16±0.06)	(≤90)	(≤376)	98	-411	*EST	22199-17-3
C ₁₂ H ₉ N ₂ +	From proton affir	224 nity of phen	938 azine (RN 92-82	-0). PA = 22	3.7 kcal/mol, 93	6. kJ/mol.	
C ₁₂ H ₁₀ +							
CH=CHCH=CHCECH	(7.9) IP from 74KOP/S	(244) CH.	(1019)	61.5	257.3	62MOM/BRA	940-50-1
	7.95±0.02 See also: 74KOP/5	226.9 SCH.	949.4	43.6±0.3	182.3±1.4	77PED/RYL	92-52-4
	(7.68) IP from charge tra	(214) ansfer equil	(896) ibrium constant	37±0.2 determination	155±1 ns (80MAU, re-	81KUD/KUD evaluated).	83-32-9
CH-CH ₂	(7.7) IP is onset of photon	(229) coelectron b	(958) pand (81GLE/S0	51 CH).	215	*EST	826-74-4
	(≤8.1)	(≤286)	(≤1197)	99	415	*EST	19539-78-7
	(7.5) IP is onset of phot	(269) oelectron b	(1127) and (84AND/C	96 ER).	403	*EST	10474-24-5

Table 1. Positive Ion Table - Continued

				<u> </u>	_====		
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₁₀ +							
	(8.0) IP is onset of pho	(259) toelectron b	(1083) and (82HAS/I	74 NEU).	311	*EST	7322-47-6
C ₁₂ H ₁₀ Be +		·					
Be—	(9.20±0.10)	(285)	(1193)	73±5	305±21	80TEL/RAB	22300-89-6
C ₁₂ H ₁₀ Hg +		·					
— н _д —	8.30±0.03 See also: 81FUR/I	285 PIA.	1192	93.5±0.8	391.4±3.2	77PED/RYL	587-85-9
C ₁₂ H ₁₀ N ₂ +			·	·			
N≈N	(8.2) IP is onset of phot	(286) coelectron ba	(1195) and. See also:	97±0.7 81NAT/FRA.	404±3	77SCH/PET	17082-12-1
C ₁₂ H ₁₀ N ₂ O +						· · · · · · · · · · · · · · · · · · ·	
\bigcirc - $N \sim N$ - \bigcirc - \bigcirc	7.6 H IP is onset of phot	(229) oelectron ba	(958) and (81MIL/N	54 11L, 82LEV/LI	225 A).	*EST	20714-70-9
	(8.1) IP is onset of photo	(269) oelectron ba	(1124) and (81MIL/C	81.7±0.6 IL).	342±2.4	86KIR/ACR	495-48-7
C ₁₂ H ₁₀ O ⁺	(8.23)	(185)	(773)	−5±2	-21±8	*EST	941-98-0

Table 1. Positive Ion Table - Continued

			e foir fable	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol	eutrai) kJ/moi	Neutral reference	CAS registry number
$C_{12}H_{10}O^{+}$							
○	(7.80±0.02)	(181)	(756)	0.7	3	*EST	90-43-7
<u></u> О—ОН	(7.78±0.03)	(180)	(754)	0.7	3	*EST	92-69-3
	8.09±0.03	183	766	-3.6±0.4	−14.9±1.8	77PED/RYL	101-84-8
C ₁₂ H ₁₀ OS +							
	(8.3) IP is onset of photon	(217) toelectron b	(908) and.	26±0.7	107±3	77PED/RYL	945-51-7
C ₁₂ H ₁₀ O ₂ +							
CH ₂ COOH	(7.71) IP is onset of photon	(111) toelectron b	(464) and (83KLA/KC	-67 OV).	-280	*EST	86-87-3
CH ₂ COOH	(8.05) IP from 83KLA/K	(118) OV.	(495)	-67	-282	*EST	581-96-4
	(8.5) IP is onset of phot	(227) oelectron b	(948) and (85ALB/HE	31 EL).	128	*EST	
C ₁₂ H ₁₀ O ₂ S ⁺						· · · · · · · · · · · · · · · · · · ·	
	9.16±0.03 See: 81TRA/RED	183	765	-28±0.7	-119±3	77PED/RYL	127-63-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H$ (Io	un)	Δ _f <i>H</i> (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₁₂ H ₁₀ S +							
	7.86±0.04 See also: 81TRA/	236 RED.	989	55±0.7	231±3	77PED/RYL	139-66-2
S	(7.91) IP is onset of phot	(232) toelectron b	(972) and (81GUT/BE	50 SS).	209	*EST	
$C_{12}H_{10}S_2^+$		······					
S-S O	≤8.3 IP from 82GIO/B	≤250 OC.	≤1045	58±1	244±4	77PED/RYL	882-33-7
5-5	(7.4) IP is onset of phot	(223) oelectron b	(931) and (81GUT/BE	52 S).	217	*EST	75574-98-0
C ₁₂ H ₁₀ S ₃ +	· · · · · · · · · · · · · · · · · · ·	·			<u> </u>		
S-S-S	(7.2) IP is onset of phot	(221) oelectron ba	(925) and (81GUT/BE	55 S).	230	*EST	75574-99-1
C ₁₂ H ₁₀ Se +		 					
	(≤7.79) IP from 82TRA/R		(≤1038)	68.4±1.2	286.4±5.2	77PED/RYL	1132-39-4
C ₁₂ H ₁₁ +							
(()—()) H ⁺	From proton affini	213 ity of bipher	892 syl (RN 92-52-4).	PA = 196.	1 kcal/mol, 820. k	J/mol.	
(S) H+	From proton affini PA = 203.5 kcal/m			32-9).			

Table 1. Positive Ion Table - Continued

1able 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	•	(Ion) bl kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₁₂ H ₁₁ ClO+	9.0 IP from 84MAR	(204) /KAY.	(853)	-4	-15	*EST				
C ₁₂ H ₁₁ N ⁺	7.16±0.04	217	910	52±0.7	219±3	78STE	122-39-4			
C ₁₂ H ₁₁ P ⁺	(7.80±0.01)	(234)	(979)	54	226	*EST	829-85-6			
C ₁₂ H ₁₂ +	7.78±0.03	199	834	20	83	69STU/WES	571-58-4			
с́н ₃	(9.0) IP is onset of ph	(344) otoelectron	(1441) band.	137	573	80BAR/STR	60323-50-4			
CH3 CH3	(≤7.18±0.03)	(≤219)	(≤915)	53	222	*EST	56594-77-5			
СH ₃ —СH ₃	(≤7.29±0.03)	(≤221)	(≤924)	53	221	*EST	56594-78-6			
CH ₃	(≤7.20±0.03)	(≤219)	(≤916)	53	221	*EST	46030-99-3			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₁₂ H ₁₂ ⁺	(≤7.27±0.03)	(≤221)	(≤923)	53	222	*EST	7206-52-2
н ₃ ¢	(≤7.17±0.03)	(≤218)	(≤915)	53	223	*EST	10556-12-4
Сн ³	(≤7.08±0.03)	(≤216)	(≤906)	53	223	*EST	56594-76-4
(C2H6	7.95 IP from 83KLA/k	(203) (OV.	(853)	20	86	*EST	939-27-5
CH ₃	(≤7.86±0.03)	(≤201)	(≤840)	20	82	69STU/WES	575-41-7
CH ₃	(≤7.85±0.03)	(≤201)	(≤839)	20	82	69STU/WES	571-61-9
CH3 CH3	(7.5) IP is onset of phot	(199) oelectron b	(832) and (81GUT/BES	26.0±0.2 S).	108.7±1	77PED/RYL	569-41-5
©© CH3	(≤7.89±0.03)	(≤202)	(≤845)	20	84	69STU/WES	581-40-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Net		Neutral reference	CAS registry number
C ₁₂ H ₁₂ +	(≤7.89±0.03)	(≤202)	(≤844)	20	83	69STU/WES	582-16-1
	(7.7) IP is onset of pho	(269) toelectron t	(1125) vand (81GLE/	91 GUB).	382	*EST	21657-71-6
	(8.2) IP is onset of pho	(235) toelectron t	(984) pand (82HAS/	46 NEU).	193	*EST	
	(≤8.0)	(≤257)	(≤1076)	73	304	*EST	38310-32-6
H ₃ C	(≤8.12±0.05)	(≤247)	(≤1033)	60	250	*EST	4897-73-8
	(8.15±0.05) IP from 81HEI/K	(312) OV.	(1306)	124	520	*EST	60323-52-6
CH3	(7.5) IP from 84AND/0	(239) CER.	(1002)	66	278	*EST	58790-01-5
12H ₁₂ Cr ⁺	5.40 IP from 82CAB/C	177 COW.	741	53±2	220±8	77PED/RYL	1271-54-1

Table 1. Positive Ion Table - Continued

YON							
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol k	J/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₁₂ Cr ⁺							
○ cr ○	(5.4) IP is onset of pho		.087) 1 (85DAV/GAF	135 R).	566	*EST	12093-81-1
C ₁₂ H ₁₂ CrO ₃ + H ₃ C Cr(CO) ₃ CH ₃ H ₃ C	(6.8) IP is onset of pho		•	-111±2	-466±10	77PED/RYL	12129-67-8
C ₁₂ H ₁₂ Mo +					·		
Mo-	(≤5.52±0.05)	(≤223) (≤ ⁹	935)	96±5	402±20	77PED/RYL	12129-68-9
C ₁₂ H ₁₂ M ₀ O ₃ +							
OC CO CH ₃	(7.0) IP is onset of pho		,	-101±3	-424±13	82PIL/SKI	12089-15-5
C ₁₂ H ₁₂ N ₂ +							
H N N N N N N N N N N N N N N N N N N N	A value of 7.78 eV values of IP's of h significantly higher associated with ic	ydrazines deter er than the adial	rted for the adi	old measu	irements are usu	ally	122-66-7
CH ₃ CH ₃	(8.2) IP is onset of pho		•	52	217	*EST	1134-35-6
C ₁₂ H ₁₂ O +							
OCH3	(7.0) IP is onset of pho		•	25).	103	*EST	

Table 1. Positive Ion Table - Continued

	Table 1. Fositive ion Table - Continued									
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₁₂ H ₁₂ O +	≤8.95 IP from 84MAR/	(≤206) KAY.	(≤864)	0	0	*EST				
C ₁₂ H ₁₂ O ₂ +										
	(8.3) IP is onset of pho	(185) stoelectron l	(775) pand.	-6	-26	*EST	21377-44-6			
	(7.60) IP is onset of pho	(148) stoelectron ((620) oand.	-27	-113	*EST	73650-68-7			
${c_{12}H_{12}O_3W^+}$										
OC CO CH ₃	(7.0) IP is onset of pho	(74) toelectron l	(309) pand.	−87±4	−366±15	84ALT/CON2	12129-69-0			
C ₁₂ H ₁₂ S ₂ +	(7.7) IP is onset of pho	(225) toelectron l	(940) pand (81GUT/	47 BES).	197	*EST	60948-99-4			
SCH ₃	7.4 IP is onset of pho	(214) toelectron t	(895) pand.	43	181	*EST	10075-73-7			
SCH ₃	(7.3) IP is onset of pho	(212) toelectron t	(885) pand.	43	181	*EST	10075-74-8			
H ₃ CS SCH ₃	(7.2) IP is onset of pho	(215) toelectron t	(901) pand	49	206	*EST	7343-31-9			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
С ₁₂ H ₁₂ S ₂ +							
3CS OO SCH3	7.1 IP is onset of pho	(207) stoelectron b	(866) pand.	43	181	*EST	10075-77-1
s s	(7.95)	(258)	(1079)	75	312	*EST	73650-69-8
C ₁₂ H ₁₂ Si ⁺				<u> </u>			
	(8.8) IP is onset of pho	(248) toelectron b	(1037) and.	45	188	*EST	775-12-2
C ₁₂ H ₁₃ NO +					· · · · · · · · · · · · · · · · · · ·		
H ₃ C-N-0	(7.3) IP is onset of photon	(176) toelectron b	(734) and (84GLE/BI	7 S).	30	*EST	
C ₁₂ H ₁₄ +							
C=C-C(CH ₃) ₃	(8.32±0.08) IP from 81ELB/L	(244) IE. See also	(1020) : 85ORL/BOG.	52	217	*EST	4250-82-2
	(≤8.7)	(≤247)	(≤1032)	46	193	*EST	20295-17-4
	(≤8.0)	(≤229)	(≤958)	44	186	*EST	24139-33-1
	(7.94)	(193)	(809)	10	43	*EST	495-52-3

Table 1. Positive Ion Table - Continued

	Labic	1. 1 05111	e ion labi	e - Contin			
ION Neutral	Ionization potential eV	Δ _f <i>H</i> (I kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₁₄ ⁺	(8.09)	(200)	(836)	13	55	*EST	1076-17-1
	(8.2) IP from 81PAD/F	(255) PAT.	(1068)	66	277	*EST	
C ₁₂ H ₁₄ O ₂ +							
	(8.1) IP is onset of pho	(152) toelectron l	(638) pand.	-34	-144	*EST	21377-45-7
C ₁₂ H ₁₅ N ₂ + H ₃ CNH NHCH ₃	From proton affir PA = 230.0 kcal/r			naphthalenediai	mine (RN 207	34-56-9).	
C ₁₂ H ₁₆ ⁺ ctcH ₃) ₃	8.29±0.04 See also: 81KOB/.	(207) ARA.	(866)	16±1	66±4	77PED/RYL	3740-05-4
H C>C>C(CH3)3	7.80±0.04 See also: 81KOB/.	(188) ARA.	(786)	8±2	33±9	77PED/RYL	3846-66-0
	(≤9.16) IP from 83GLE/H	(≤300) (AI2	(≤1255)	88.7	371.1	83GLE/HAI2	82865-42-7
	(≤9.02) IP from 83GLE/H	(≤294) [A I 2	(≤1231)	86.2	360.7	83GLE/HAI2	87753-95-5

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued												
ION Neutral	Ionization potential	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Nekcal/mol		Neutral reference	CAS registry number					
C ₁₂ H ₁₆ +	(7.5)	(196)	(821)	23	97	*EST	53011-74-8					
	IP is onset of pho											
	(≤8.9)	(≤223)	(≤934)	18	75	*EST	24139-32-0					
	(8.7) IP is onset of pho	(278) toelectron l	(1161) band.	77	322	*EST	5103-78-6					
	(≤8.22)	(≤326)	(≤1365)	137	572	*EST	24375-17-5					
	(8.6) IP from 81PAD/P	(231) AT.	(968)	33	138	*EST	262-30-6					
	(8.2) IP from 82SPA/K	(331) OR.	(1385)	142	594	*EST	64371-17-1					
С ₁₂ H ₁₆ Mo +	(≤6.1±0.1)	(≤226)	(≤943)	85±1	354±6	82PIL/SKI	39333-52-3					
C ₁₂ H ₁₆ N ₂ +	(7.3) IP is onset of photon	(201) toelectron b	(842) pand.	33	138	*EST	61-50-7					

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₁₂ H ₁₆ O ₂ +										
	8.5 IP is onset of photos	(133) toelectron ba	(558) and.	63	-262	*EST	21377-46-8			
	(8.9±0.01) IP from 84OLI/FI	(161) .E.	(675)	-44	-184	*EST	5011-61-0			
C ₁₂ H ₁₆ W ⁺										
₩ CH ₃	(5.8) IP is onset of pho	(220) coelectron ba	(919) and.	86±1	359±6	82PIL/SKI	39333-53-4			
C ₁₂ H ₁₇ N ⁺										
CH3	(7.1) IP is onset of photon	(169) coelectron ba	(706) and (82ROZ/HO	5 (U2).	21	*EST	7250-70-6			
CH ₃	(≤7.60) IP from 82ROZ/F		(≤918)	44	185	*EST	81506-12-9			
H ₃ C CH ₃	(7.0) IP is onset of phot	(199) coelectron ba	(834) and (82ROZ/HO	38 U2).	159	*EST	64175-53-7			
C ₁₂ H ₁₇ NO ₄ +										
H ₅ C ₂ OOC CH ₃ H ₃ C N COOC ₂ H ₅	(≤8.15) IP from 81CAU/C	(≤4) SIA.	(≤15)	-184	-77 1	*EST	2436-79-5			
						······································				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potenti		(Ion) ol kJ/mol	Δ _f H(N kcal/mol	eutral) kĴ/mol	Neutral reference	CAS registry number
C ₁₂ H ₁₇ N ₂ O ₆ + 0 NH	From proton a PA = (208) ko		(-251) ?-O'-isopropylic kJ/mol.	leneuridine (R	N 362-43-6).		
C ₁₂ H ₁₈ + n-C ₄ H ₉ C≡CC≡C(n-C ₄ H ₉) (8.67)	(258)	(1077)	58	241	77PED/RYL	1120-29-2
(tert-C ₄ H ₉ C≡C) ₂	(8.61±0.02)	(249)	(1040)	50±1	209±5	77KUP/SHI	6130-98-9
H3C(CH2)2	¹ 3 (≤8.31) IP from 80GLI	(≤176) E/HOP.	(≤736)	-16	-66	*EST	4815-57-0
(СН3)2НС	2 (8.35)	(175)	(732)	-18	-75	*EST	100-18-5
H ₅ C ₂ C ₂ H ₅	(8.32) IP from 84HO\	(173) W/GON.	(724)	-19	-79	*EST	102-25-0
H ₃ C CH ₃ CH ₃ CH ₃	7.85 See also: 84HO	160 W/GON.	670	−21±0.7	−87±3	77PED/RYL	87-85-4
CH3 CH3 CH3 CH3	(≤7.83)	(≤219)	(≤917)	39	162	78GRE/LIE	7641-77-2
	(≤9.05)	(≤198)	(≤830)	-10	-43	*EST	38992-78-8

Table 1. Positive Ion Table - Continued

	Tanie	1. 1 05111	ve ion table	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₁₈ +	(≤9.50±0.03)	(≤219)	(≤916)	-0.2±1	1±5	73ENG/AND2	53862-33-2
	(≤9.57±0.03)	(≤232)	(≤968)	11±2	45±8	73ENG/AND2	15914-95-1
	(8.3) IP is onset of pho	(232) stoelectron t	(972) pand.	41	171	*EST	40827-30-3
C ₁₂ H ₁₈ Hg ⁺ ((CH ₃) ₃ CC≡C) ₂ Hg	(9.03) IP is onset of pho	(285)	(1194) pand (81FUR/PIA	77 A).	323	*EST	73838-84-3
C ₁₂ H ₁₈ O ₄ + (CH ₃) ₃ C[C(=O)] ₄ C(CH ₃))3 (8.5) IP from 85GLE/I	(25) DOB.	(105)	-171	-715	*EST	19909-70-7
C ₁₂ H ₁₉ + H ₃ C H ₃ C CH ₃ CH ₃	From proton affii 867. kJ/mol.	138 nity of hexar	576 methylbenzene (F	N 87-85-4).	PA = 207.3 kcal	l/mol,	
C ₁₂ H ₁₉ N +	(≤7.82) IP from 82ROZ/I	(≤241) HOU2.	(≤1007)	60	253	*EST	81506-11-8
(CH ₃) ₃ C	(6.90) IP from 86ORL/N	(158) MIS. See als	(661) :o: 85BAI/MIS2.	-1.2	-4.9	85ORL/MIS	2909-79-7

Table 1. Positive Ion Table - Continued

			on ladie - C	ontini			
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ		∆ _f H(Ner cal/mol	utral) kJ/mol	Neutral reference	CAS registry number
C ₁₂ H ₁₉ N ⁺	6.93 IP from charge tra IP C ₆ H ₅ N(CH ₃) ₂	_	m constant deter	minatio	3 ns; reference	*EST standard:	2217-07-4
C ₁₂ H ₁₉ NO ⁺	(≤7.54) IP from 82PFI/GE	(≤138) (≤5° ER.	79) –3.	5	-148	*EST	3357-16-2
C ₁₂ H ₁₉ NO ₂ + OCH ₃ H ₃ CO CH ₃ NH	(7.2) IP is onset of phot	(87) (36 oelectron band	•		-329	*EST	79440-50-9
OCH ₃ H ₃ C	(6.8) IP is onset of phot	(80) (33 oelectron band			-321 LIA).	*EST	26011-50-7
H ₃ CO CH ₃ H ₃ CO CH ₃	(6.9) 2 IP is onset of photo	(85) (35) oelectron band (•	1	-310	*EST	56966-33-7
C ₁₂ H ₁₉ NO ₂ S + OCH ₃ H ₃ CO NH	(6.9) 2 IP is onset of photo	(92) (38: pelectron band (-	7	-281	*EST	79440-52-1
H ₃ CS OCH ₃ H ₃ CO CH ₃	(6.8) P ₂ IP is onset of photo	(91) (38) Delectron band (i	-273	*EST	61638-07-1
H ₃ CO — NH ₂	(6.9) IP is onset of photo	(94) (393 pelectron band (-		-273	*EST	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io	on)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV		kJ/mol	kcal/mol		reference	number
C ₁₂ H ₁₉ NO ₃ + OCH ₃ H ₃ CO CH ₃	t ₂ (≤8.09±0.06)	(≤88)	(±370)	-98	-411	*EST	22199-12-8
H ₃ CO CH ₃	(7.0) H2 IP is onset of pho	(54) otoelectron b	(224) pand (81DOM/E	–108 AT, 82LEV/	-451 LIA).	*EST	22199-15-1
H ₃ CO OCH ₃	² (≤7.76±0.06)	(≤67)	(≤279)	-112	–470	*EST	22199-16-2
H ₃ CO H ₃ CO H ₃ CO	H ₃ (≤8.44±0.40)	(≤101)	(≤421)	-94	-393	*EST	4838-96-4
C ₁₂ H ₂₀ +CH ₃	(9.15)	(159)	(664)	−52±0.7	-219±3	77STE/WAT	702-79-4
C2H5	(9.2)	(250)	(1049)	38±0.5	161±2	81GOD/SCH2	14451-87-7
	(8.6) IP is onset of pho	(233) otoelectron b	(976) pand (82SPA/GLI	35 E).	146	*EST	64601-40-7

$C_{12}H_{20}N^{+}$

 $H_3CH_2CH_2C - CH_2CH_3$ 138 578 From proton affinity of $C_6H_5N(n-C_3H_7)_2$ (RN 2217-07-4). PA = 228.6 kcal/mol, 956. kJ/mol.

Table 1. Positive Ion Table - Continued

			e ion rable	- Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₂₀ N ⁺			· · · · · · · · · · · · · · · · · · ·	····			
CICH3/3)H	+ From proton affin 229.3 kcal/mol, 95	152 nity of 2-(t-C 9. kJ/mol.	634 C ₄ H ₉)C ₆ H ₄ N(C	CH ₃) ₂ (RN 22	2025-87-2).		
C ₁₂ H ₂₀ N ₂ +							
CH ₃ N(CH ₃) ₂ N(CH ₃) ₂ CH ₃	(7.3) IP is onset of photon	(196) toelectron b	(822) and (81NEL/G	28 RE).	118	*EST	66102-30-5
H ₃ C N(CH ₃) ₂	(6.4) IP is onset of photon	(168) coelectron b	(704) and (81NEL/G	21 RE).	86	*EST	54929-05-4
C ₁₂ H ₂₁ N ⁺		······································					
$(CH_2 = C(CH_3)CH_2)_3N$	(7.8) IP from 79AUE/E	(208) 3OW.	(869)	28	116	*EST	
C ₁₂ H ₂₁ NO ⁺							
CH3 NH(1-C4H9)	(≤7.69) IP from 82PFI/GE		(≤464)	-66	-278	*EST	27336-61-4
H ₃ C NH(i-C ₄ H ₉)	(≤7.98) IP from 82PFI/GE		(≤513)	-61	-257	*EST	82663-49-8
H ₃ C N(C ₂ H ₅) ₂	(7.3) IP is onset of phot	(116) oelectron b	(486) and (82PFI/GE	-52 R).	-218	*EST	65115-73-3
C ₁₂ H ₂₁ NO ₂ +							
NOH	(8.99±0.03) IP from 79GOL/K	(132) IUL.	(552)	- 75	-315	*EST	4422-06-4
		····				·	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(kcal/mo		∆ _f H(N kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₂₁ O +							
(CH3)3 C H C (CH3)3	From the proton a PA = 213.4 kcal/a	-	-	ran (RN 4789	.40-6) (85HOU,	ROL).	
C ₁₂ H ₂₂ +	(0.00, 0.00)	·					
1-C ₁₂ H ₂₂	(9.90±0.02)	(228)	(956)	0.1	0.4	*EST	765-03-7
2-C ₁₂ H ₂₂	(9.29±0.02)	(210)	(878)	-4	-18	*EST	629-49-2
3-C ₁₂ H ₂₂	(9.17±0.02)	(207)	(868)	- 4	-17	*EST	6790-27-8
$^{4-C_{12}H_{22}}$	(9.14±0.03)	(207)	(865)	-4	-17	*EST	22058-01-1
5-C ₁₂ H ₂₂	(9.09±0.03)	(206)	(860)	-4	-17	*EST	19780-12-2
$CH_2 = C(t-C_4H_9)C(t-C_4H_9)$	H_9 = CH_2 (8.5) IP is onset of photon	(179) toelectron	(750) band (84HON/	–17 (ZHO).	-70	*EST	3378-20-9
trans, trans-((tert-C ₄ H ₉)C	$CH = CH)_2$ (8.23±0.04)	(168)	(704)	-22	-90	*EST	22430-49-5
(CH ₂) _{IO} (z)	(8.78±0.15)	(173)	(727)	-29	-120	76JEN	1129-89-1
(CH ₂) ₁₀ (E)	(8.74±0.15)	(173)	(725)	-28	-118	76JEN	1486-75-5
	(9.41)	(164.8)	(689.5)	−52.2±.7	−218.4±3.1	78MON/ROS	92-51-3
12H22CINO+	(9.18±0.03) IP from 79GOL/K	(160) TUL.	(668)	-52	-218	*EST	4806-74-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ H ₂₂ N + (CH ₂ =C(CH ₃)CH ₂) ₃ NH	From proton affir	(163) nity of (CH ₂	(684) = C(CH ₃)CH	H ₂) ₃ N. PA = (230.7) kcal/m	ol, (965.) kJ/mol.	.,74.
C ₁₂ H ₂₂ NO +							
(NH ₂) _H +	From proton affir PA = 220.0 kcal/i			3.0.0 ^{4,8}] dodeca	an-2-ol.		
C ₁₂ H ₂₂ O +							
	(8.96±0.03) IP from 79GOL/F	(123) KUL.	(514)	-84	-350	*EST	830-13-7
C ₁₂ H ₂₂ Si ₂ +		,			<u></u>		
(CH ₃) ₃ SiSi(CH ₃)	(8.45) 3 IP is onset of pho	(132) toelectron b	(554) and (82TRA,	-62 /RED).	-261	*EST	13183-70-5
C ₁₂ H ₂₃ Cl ⁺				***************************************			
CI	(9.04±0.03) IP from 79GOL/F	(≤143) KUL.	(≤598)	-65	-274	*EST	34039-83-3
C ₁₂ H ₂₃ NO ⁺							
NOH	(8.84±0.03) IP from 79GOL/F	(154) KUL.	(643)	-50	-210	*EST	946-89-4
C ₁₂ H ₂₄ +							
(Z)-(CH ₃) ₃ CCH ₂ C(CH ₃)	= CHC(CH ₃) ₃ (8.35±0.01)	(142)	(594)	-50	-211	*EST	27656-50-4
	(9.72±0.03) IP from 79GOL/I	(169) KUL.	(707)	-55±0.5	-230±2	77PED/RYL	294-62-2

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Tab	le - Continued		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mo	Neutral ol reference	CAS registry number
С ₁₂ H ₂₄ O +	(9.26±0.03) IP from 79GOL/I	(119) (499) KUL.	-94 -39 4	*EST	1724-39-6
C ₁₂ H ₂₄ O ₆ ⁺	8.9 IP is onset of pho	(-22) (-91) otoelectron band (83BAI	-227 -950 K/ARM, 82LEV/LIA).	*EST	17455-13-9
C ₁₂ H ₂₅ N ₂ +	-	117 490 nity of 1,6-diazabicyclo[4 /mol, 946. kJ/mol.	.4.4]tetradecane (RN 71	058-67-8).	
C ₁₂ H ₂₅ O ₆ ⁺	•	-91 -382 inity of 1,4,7,10,13,16-hex . PA = 230. kcal/mol, 96		3-Crown-6)	
C ₁₂ H ₂₆ N ₂ O ₄ +	(≤8.4) IP from 83BAK/	(≤52) (≤218) ARM.	-141 -592	*EST	23978-55-4
C ₁₂ H ₂₇ BO ₃ + (n-C ₄ H ₉ O) ₃ B	(≤10.72±0.74)	(≤−27) (≤−113)	-274±1 -1147	±4 77PED/RYL	688-74-4
C ₁₂ H ₂₇ N + (n-C ₄ H ₉) ₃ N		(118) (494) otoelectron band (82ELI value predicted from hyd		in good	102-82-9
C ₁₂ H ₂₇ P + (n-C ₄ H ₉) ₃ P	(7.5) IP is onset of pho	(160) (668) otoelectron band.	-13±8 -56±3	35 77PED/RYL	998-40-3
C ₁₂ H ₂₈ N ⁺ (n-C ₄ H ₉) ₃ NH	From proton affi 985 kJ/mol (85B	77 323 inity of (n-C ₄ H ₉) ₃ N (RN OL/HOU).	N 102-82-9). PA = 235.4	kcal/mol,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\rm f}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₁₂ H ₂₈ N ₂ + (n-C ₃ H ₇) ₂ NN(n-C ₃ H ₇) ₂		·····					
	(≤7.74)	(≤197)	(≤825)	19	78	*EST	60678-69-5
	Reported values are usually signif	-		-			
	geometry change					iige	
	,						
$(n-C_4H_9)_2NN(C_2H_5)_2$	(-7.77)	(≤198)	(*020)	19	78	*EST	60678-68-4
	(≤7.77) Reported values are usually signif geometry change	of IP's of hydicantly highe	r than the adia	mined by thres batic value be	hold measure	ements	00076-06-4
C ₁₂ H ₂₈ Sn +							
(C ₃ H ₇) ₄ Sn	(≤8.82)	(≤168)	(≤705)	-35±1	-146±6	77PED/RYL	2176-98-9
(iso-C ₃ H ₇) ₄ Sn	(≤8.46)	(≤166)	(≤693)	-29±2	-123±7	77PED/RYL	2949-42-0
C ₁₂ H ₃₀ Ge ₂ +							
$((C_2H_5)_3Ge)_2$	7.48±0.01	90	375	-83±2	-347±8	80TEL/RAB	993-62-4
C ₁₂ H ₃₀ N ₃ P ⁺							
$P(N(C_2H_5)_2)_3$	(≤7.19) IP from 82WOR/	(≤112) ⁄HAR.	(≤468)	-54±2	-226±10	77PED/RYL	2283-11-6
C ₁₂ H ₃₀ Sn ₂ +							
$[(C_2H_5)_3Sn]_2$	(6.60±0.02)	(115)	(482)	-37±2	-155±10	77PED/RYL	993-63-5
C ₁₂ H ₃₁ N ₃ OP +							
$HOP(N(C_2H_5)_2)_3$		9	37				
	From proton affi PA = 230.0 kcal/			LN 2622-07-3) ((85BOL/HO	J).	
C ₁₂ H ₃₆ Mo ₂ N ₆ ⁺			· · · · · · · · · · · · · · · · · · ·				
Mo ₂ ((CH ₃) ₂ N) ₆	(6.74)	(125)	(522)	-31±3	-128±13	79ADE/CAV	51956-20-8
C ₁₂ H ₃₆ N ₆ W ⁺							
W(N(CH ₃) ₂) ₆	(6.3)	(209)	(876)	64±3	268±14	79ADE/CAV	54935-70-5
	IP is onset of pho	toelectron b	and.				
C ₁₂ H ₃₆ N ₉ P ₃ +			.,				
(H3C)2N PN PNCH3)2 (7.85±0.05)	(76)	(318)	-105±3	-439±13	80TEL/RAB	974-68-5
(H3C)2N N(CH3)2							
C ₁₂ H ₃₆ Si ₅ +				·-,	***************************************		
Si(Si(CH ₃) ₃) ₄	(7.41±0.01)	(37)	(156)	-134±10	-559±40	77PED/RYL	4098-98-0

Table 1. Positive Ion Table - Continued

		· · · · · · · · · · · · · · · · · · ·					
ION Neutral	Ionization potential eV	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₂ O ₁₂ Os ₃ +	(7.6±0.3) IP is onset of pho	(-218) otoelectron b	(-911) band. See also: 81	–393±7 GRE/MIN,	-1644±28 82SHE/HAL.	80CON	15696-40-9
C ₁₂ O ₁₂ Ru ₃ +	(7.3) IP is onset of pho	(-267) otoelectron b	(-1116) pand. See also: 81	-435±6 GRE/MIN.	−1820±26	77PED/RYL	15243-33-1
C ₁₃ H ₇ N ₃ O +	(8.44)	(290)	(1211)	95	397	*EST	59019-84-0
C ₁₃ H ₈ O ₂ +	(8.42±0.03)	(174)	(727)	-20±2	−85±7	82JOH/KIM	90-47-1
C ₁₃ H ₉ ClO ⁺	9.64±0.04	(229)	(959)	7±2	29±8	*EST	134-85-0
C ₁₃ H ₉ N ⁺	7.8	249	1044	69±0.2	291±1	81KUD/KUD2	260-94-6
	(8.14±0.02)	(244)	(1019)	56±2	234±7	81STE/BAR	85-02-9

Table 1. Positive Ion Table - Continued

TON							
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₃ H ₉ N ⁺	(8.04±0.02)	(240)	(1007)	55±1	231±5	81STE/BAR	230-27-3
	(8.31±0.02)	(250)	(1046)	58±1	244±6	81STE/BAR	229-87-8
C ₁₃ H ₉ NO +	(7.45±0.02)	(222)	(930)	50	211	*EST	10399-73-2
C ₁₃ H ₁₀ +	7.89±0.03 Value of IP from ((80MAU, re-evalu			45±0.2 constant dete	187±1 erminations	81KUD/KUD	86-73-7
C ₁₃ H ₁₀ BrN ⁺		 					
C13H10BHV	(8.6) IP from 80GRU/S	(274) CH, 82LEV	(1146) //LIA.	76	316	*EST	74309-56-1
Br NO	(8.62)	(274)	(1148)	76	316	*EST	
Br N	(8.05) IP from 80GRU/Se	(262) CH.	(1098)	77	321	*EST	76293-40-8
Br	(8.05) IP from 80SCH/RA		(1081)	73	304	*EST	77275-12-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathrm{f}}H(1$		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
$C_{13}H_{10}BrN^+$							
Br ON	(≤8.15±0.05)	(≤258)	(≤1078)	70	292	*EST	5847-71-2
C ₁₃ H ₁₀ CIN+							
OC, NO	(8.6) IP from 80GRU/	(262) SCH, 82LE	(1096) V/LIA.	64	266	*EST	74309-55-0
cı O O	(8.58)	(261)	(1094)	64	266	*EST	
CI N	(8.07) IP from 80GRU/	(251) SCH.	(1051)	65	272	*EST	5350-12-9
CI	8.06±0.01 IP from 80SCH/F	(247) RAM, 82LE ^V	(1032) V/LIA.	61	254	*EST	6772-77-6
C ₁₃ H ₁₀ FN ⁺			· · · · · · · · · · · · · · · · · · ·				
IS NO	(8.66) IP from 82LEV/L	(223) JA, 80GRU	(931) I/SCH.	23	96	*EST	74309-53-8
	(8.68)	(223)	(933)	23	96	*EST	
F N	(≤8.1) IP from 80SCH/R	(≤207) AM.	(≤866)	20	84	*EST	77275-10-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Ic		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₁₃ H ₁₀ FN ⁺	(8.18) IP from 80GRU/S	(213) SCH.	(890)	24	101	*EST	76293-38-4
C ₁₃ H ₁₀ IN ⁺	- /						
	(8.3) IP from 80GRU/S	(281) SCH, 82LEV	(1175) //LIA.	89	374	*EST	74309-57-2
	(7.95) IP from 80GRU/S	(274) SCH.	(1147)	91	380	•EST	
	(7.95) IP from 80SCH/R.	(270) AM.	(1129)	86	362	*EST	6772-85-6
C ₁₃ H ₁₀ N ⁺						 	<u> </u>
	From proton affin 970. kJ/mol.	203 ity of acridi	851 ne. (RN 260-94-	6). PA = 23	1.9 kcal/mol,		
C ₁₃ H ₁₀ N ₂ O ₂ +	2.1						
C ₁₃ H ₁₀ N ₂ O ₂ +	(8.3) IP is onset of phot	(198) oelectron b	(828) and.	6	27	*EST	37790-20-8
O _{2N} O H	(8.4) IP is onset of phot	(240) oelectron ba	(1005) and.	47	195	*EST	69173-79-1
NO ₂ NO ₂	(8.30) IP from 80GRU/S	(259) CH.	(1086)	68	285	*EST	50385-24-5

Table 1. Positive Ion Table - Continued

Table 1. Fosture fon Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(l kcal/mo	ion) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₁₃ H ₁₀ N ₂ O ₂ +										
NO ₂	(8.3) IP from 80SCH/R	(255) AM.	(1069)	64	268	*EST	77340-84-2			
C ₁₃ H ₁₀ O +				· · · · · · · · · · · · · · · · · · ·						
сно	(8.47±0.03)	(210)	(879)	15±0.7	62±3	*EST	3218-36-8			
	9.05±0.05 IP from 78CEN/F	221 'RA, 82LE'	923 V/LIA.	12±0.7	50±3	78SAB/LAF3	119-61-9			
C ₁₃ H ₁₀ O ₂ +		***************************************			····					
	(8.3) IP is onset of pho	(160) toelectron	(670) band.	-31.2±2	-131±8	*EST	1137-42-4			
	8.99±0.02	173	724	−34±0.7	-143±3	77PED/RYL	93-99-2			
C ₁₃ H ₁₀ O ₃ +										
	(9.01±0.05)	(134)	(558)	−74±2	−311±9	77PED/RYL	102-09-0			
C ₁₃ H ₁₁ +						····				
(()) H ⁺	From proton affin	210 ity of fluor	880 ene (RN 86-73	3-7). PA = 200	.0 kcal/mol, 8:	37. kJ/mol.				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₁₃ H ₁₁ ClN ₂ O ⁺ OH OH CH ₃	(7.7) IP is onset of pho	(217) toelectron t	(910) pand (81MIL/MIL	40).	167	*EST	19116-23-5
CH ₃	-Cl (7.7) IP is onset of pho	(217) toelectron b	(910) pand (81MIL/MIL	40 .).	167	*EST	2491-56-7
C ₁₃ H ₁₁ N ⁺	7.9 IP is onset of pho	(232) toelectron b	(972) pand.	50	210	*EST	538-51-2
CH ₂	(8.65) See also: 80GRU/	(270) SCH.	(1130)	71	295	*EST	15260-65-8
CH ₂	(8.73)	(269)	(1125)	68	283	*EST	74309-58-3
CH ₂	(8.90)	(277)	(1159)	72	300	*EST	54813-56-8
	(8.15) IP from 80GRU/S	(264) CH.	(1105)	76	319	*EST	1519-59-1
	(≤7.99±0.05) See also: 80SCH/F	(≤252) RAM.	(≤1054)	68	283	*EST	538-49-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV		on) kJ/mol	Δ _f H(Net		Neutral	CAS registry
		Keal/moi	KJ/IIIOI	KCai/moi	KJ/IIIOI	reference	number
C ₁₃ H ₁₁ N ⁺	(≤8.10±0.05) See also: 80SCH/	(≤256) ⁄RAM.	(≤1072)	69	290	*EST	5097-91-6
NO C-I	(≤8.34±0.05) See also: 80SCH/	(≤261) 'RAM.	(≤1093)	69	288	*EST	5097-93-8
NH ₂	(7.25) IP is onset of pho	(216) otoelectron b	(904) pand (84GLE/	49 SCH).	205	*EST	7083-63-8
C ₁₃ H ₁₁ NO ⁺				·	·····		
CH ₃	(8.72) IP from 82LEV/I	(231) LIA, 80GRU	(966) J/SCH.	30	125	*EST	
C ₁₃ H ₁₁ N ₃ O ₃ + OH OH OH	2 (7.7) IP is onset of pho	(221) stoelectron b	(924) pand (81MIL/N	43 MIL).	181	*EST	1435-68-3
OH NO ₂	(≤8.19) IP from 81MIL/N	(≤232) ⁄IIL.	(≤971)	43	181	*EST	19020-84-9
C ₁₃ H ₁₁ O +	From proton affir 882. kJ/mol.	167 nity of (C ₆ H	698 ₅) ₂ CO (RN 11	19-61-9). PA =	210.9 kcal/r	nol,	

Table 1. Positive Ion Table - Continued

			e ion rabic					
ION Neutral	Ionization potential eV	Δ _f H(Id kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number	
C ₁₃ H ₁₂ +	8.55±0.03	230	965	33±0.7	140±3	77PED/RYL	101-81-5	
© CH₃	(8.10±0.02)	(228)	(954)	41±2	172±7	77PED/RYL	643-58-3	
©————————————————————————————————————	(7.95±0.02)	(219)	(917)	36±2	150±8	*EST	643-93-6	
Сн₃	(7.80±0.02)	(216)	(904)	36±2	151±8	*EST	644-08-6	
	(≤9.06) IP from 83HOU/F	(≤289) RON.	(≤1210)	79	330	*EST	74437-39-1	
	(8.0±0.1)	(266)	(1115)	82	343	*EST	29150-13-8	
C ₁₃ H ₁₂ N ₂ O + OH OH OH OH	(7.4) IP is onset of phot	(217) oelectron b	(910) and (81MIL/MIL	47 .).	196	*EST	952-47-6	
С ₁₃ H ₁₂ O + Сн ₃	(8.1) IP is onset of phot	(186) oelectron b	(780) and.	-0.5±3	-2±11	77PED/RYL	2484-16-4	

Table 1. Positive Ion Table - Continued

	Table	1. 1 05111	ve ton Tabi	e - Contini			· · · · · · · · · · · · · · · · · · ·
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₃ H ₁₂ S +							
5-CH2-(C)	(7.87±0.02)	(227)	(950)	46	191	*EST	831-91-4
C ₁₃ H ₁₃ P+	(≤8.28±0.05)	(≤235)	(≤984)	44	185	*EST	1486-28-8
	IP from 82IKU/K	EB.					
C ₁₃ H ₁₄ ⁺ CH ₃ CH ₃	(7.10)	(209)	(873)	45	188	*EST	941-81-1
CH ₂	≤8.95 IP from 84MAR/I	(≤222) KAY.	(≤929)	16	65	*EST	
C ₁₃ H ₁₄ O +							
ОН	(7.82) IP from 81DAL/N	(197) NIB.	(824)	17	70	81DAL/NIB	64353-61-3
C ₁₃ H ₁₄ OP ⁺							
H ₃ C .	From proton affir PA = 216. kcal/m	118 hity of (C ₆ H ool, 904. kJ/r	494 (₅) ₂ CH ₃ PO (I nol.	RN 2129-89-7) (86TRA/MU	N).	
C ₁₃ H ₁₄ P ⁺							
PCH ₃	From proton affir 963.5 kJ/mol.	180 nity of (C ₆ H	752 (₅) ₂ (CH ₃)P (I	RN 1486 -2 8-8).	PA = 230.3 l	ccal/mol,	
	· · · · · · · · · · · · · · · · · · ·						

Table 1. Positive Ion Table - Continued

			C 1011 Tubic				
ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₃ H ₁₄ Si +							
CH3 Si- H	(8.75±0.15)	(229)	(959)	27	115	*EST	776-76-1
C ₁₃ H ₁₅ MnO ₃ +							
OC CO H ₃ C Mn CH ₃ H ₃ C CH ₃	(7.0) IP is onset of phot	(14) oelectron b	(57) and (81CAL/HU	–148 B).	-618	*EST	34807-89-1
с́н ₃							
C ₁₃ H ₁₆ ⁺							
$\bigcirc -C = C - CH(C_2H_5)_2$	(8.24±0.08) IP from 81ELB/Ll	(239) IE.	(1000)	49	205	*EST	
C ₁₃ H ₁₆ N ₂ O ₂ +							
H ₃ CO CH ₂ CH ₂ NHCOCH	3 (7.03) IP is onset of phot	(109) oelectron b	(454) and (83CAN/HA	-54 M).	-224	*EST	
C ₁₃ H ₁₆ O +		***************************************					
(CH ₃) ₃ C - ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	(7.85) IP from 85ORL/M	(196) IS.	(820)	15	63	85ORL/MIS	
C ₁₃ H ₁₇ N ₂ +			<u> </u>				
H3CNH N(CH)3		78	327				
	From proton affini PA = 235.6 kcal/m			aphthalened	liamine (RN 207	23-57-0).	
C ₁₃ H ₁₈ ⁺					-	· · · · · · · · · · · · · · · · · · ·	
(CH ₂) ₇	(8.0) IP is onset of photo	(195) Delectron ba	(817) and.	11	45	*EST	3761-63-5

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	-	Neutral) ol kJ/mol	Neutral reference	CAS registry number			
C ₁₃ H ₁₈ N ₂ O + H ₃ CO CH ₂ CH ₂ N(CH ₃)	₂ (≤7.61±0.14)	(≤172)	(≤721)	-3	-13	*EST	1019-45-0			
C ₁₃ H ₁₉ N+ H ₃ C CH ₃	(≤7.70) IP from 82ROZ/I	(≤202) HOU2.	(≤844)	24	101	•EST	81506-14-1			
CH3 CH3	(7.35) IP is onset of pho	(185) toelectron b	(774) pand (82ROZ	16 /HOU2).	65	•est	81506-15-2			
C ₁₃ H ₂₁ NO ⁺	(≤7.67) IP from 82PFI/GI	(≤131) ER.	(≤546)	-46	-194	*EST	13358-76-4			
C ₁₃ H ₂₂ N ⁺ N C(CH ₃) ₃	From proton affir PA = (231.4) kca	-		idine (RN 299	939-31-9).					
(CH ₃) ₃ C	From proton affir PA = 233.4 kcal/i			idine (RN 585	5-48-4).					
C ₁₃ H ₂₃ N ⁺	(6.8) IP is onset of pho	(184) toelectron b	(770) vand (82ALD)	27 /ARR).	114	*EST	84509-55-7			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₃ H ₂₃ NO +	(≤8.07) IP from 82PFI/GI	(≤122) ∃R.	(≤512)	-64	-267	*EST	82663-50-1
C ₁₃ H ₂₄ + 1-C ₁₃ H ₂₄	(9.90±0.02)	(223)	(934)	-5	-21	*EST	26186-02-7
2-C ₁₃ H ₂₄	(9.28±0.02)	(205)	(856)	-9	-39	*EST	28467-75-6
$3-C_{13}H_{24}$	(9.14±0.03)	(202)	(844)	-9	-38	*EST	60186-78-9
4-C ₁₃ H ₂₄	(9.07±0.03)	(200)	(837)	- 9	-38	*EST	60186-79-0
5-C ₁₃ H ₂₄	(9.09±0.03)	(201)	(839)	-9	-38	*EST	60186-80-3
6-C ₁₃ H ₂₄	(9.05±0.03)	(200)	(835)	-9	-38	*EST	42371-66-4
(CH ₂) ₆ CH ₃	(8.37±0.02)	(232)	(969)	39±1	161±5	*EST	15232-86-7
C ₁₃ H ₂₄ Si ₂ ⁺ Si(CH ₃) ₃ CH ₂ Si(CH ₃) ₃	(8.26) IP is onset of phot	(152) coelectron b	(637) and (82TRA/RI	-38 3D).	-160	*EST	1899-74-7
C ₁₃ H ₂₅ N ⁺	(7.3) IP from 82ALD/A	(157) .RR.	(657)	-11	-47	81ALD/ARR	
C ₁₃ H ₂₆ ⁺ 1-C ₁₃ H ₂₆	(9.38) IP from 81HOL/F	(172) IN.	(719)	-44.5	-186.2	*EST	2437-56-1
((CH ₃) ₃ C) ₂ C = CHCH(C	H ₃) ₂ (8.31±0.01)	(136)	(569)	-56	-233	*EST	50787-12-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$		Δ _f <i>H</i> (N	leutral)	Neutral	CAS registry
Neutral	eV	kcal/mo	ol kJ/mol	kcal/mc	l kJ/mol	reference	number
C ₁₃ H ₂₆ N + (CH ₃) ₃ C H C(CH ₃) ₃	H+ From proton affin PA = 234.3 kcal/r	56 hity of 2,6- mol, 980. I	233 di-tert-butylpip cJ/mol.	eridine (RN 2	9939-31-9).		
H-W H+	From proton affin PA = 214.3 kcal/r			o[4.4.4]tetrad	ecane.		
C ₁₃ H ₃₀ N ₄ ⁺ H N N CH ₃ H ₃ C N N CH ₃	(≤8.0) IP from 83BAK/A	(≤185) .RM.	(≤775)	1	3	*EST	
C ₁₄ F ₁₀ + F F F F F F F F F F F F F F F F F F F	F (8.28±0.05) F	(-165)	(-691)	-356	-1490	*EST	1580-19-4
F F F	(8.75±0.05)	(~160)	(-669)	-362	-1513	*EST	1580-20-7
C ₁₄ H ₈ + H _C C	(7.91) IP from 81GLE/S0	(324) CH.	(1357)	142	594	*EST	67665-34-3
TOMO ((7.88) IP from 81GLE/S	(330) CH, 84GL	(1381) .E/SCH.	148	621	*EST	18067-44-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₄ H ₈ O ₂ +	9.25±0.03	190	797	-22.8±1.6	−95.2±6.6	77PED/RYL	84-65-1
	(8.64±0.03)	(166±1)	(695±5)	-33±1	-139±5	77PED/RYL	84-11-7
C ₁₄ H ₉ Br ⁺	(7.58) IP from 83KLA/K	(236) OV, 82LEV	(986) //LIA.	61	255	*EST	1564-64-3
C ₁₄ H ₉ Cl ⁺	(7.45±0.03) IP from 82LEV/L	(221) IA, 83KLA/	(924) KOV.	49	205	*EST	716-53-0
C ₁₄ H ₉ F ⁺	(7.46) IP from 83KLA/K	(179) OV, 82LEV	(751) //LIA.	7	31	*EST	529-85-1
C ₁₄ H ₉ NO ₂ ⁺	7.87±0.01 IP from 82LEV/LI	(233) (A, 83KLA/	(974) KOV,	51	215	*EST	602-60-8
C ₁₄ H ₁₀ +	7.90±0.02 See also: 81ELB/L	278 IE.	1165	96±1	403±4	82CHI/LIE	501-65-5

522 LIAS ET AL.

Table 1. Positive Ion Table - Continued

			e ton Table	Contin			
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/moi		Neutral reference	CAS registry number
C ₁₄ H ₁₀ +							
	7.45±0.03 See also: 83KLA/ equilibrium const				-	79KUD/KUD4	120-12-7
	7.86±0.02 Value of IP from (80MAU, re-evalu			49±0.2 constant det	207±1 ermination	79KUD/KUD4	85-01-8
	(7.55) IP from 81GLE/C	(293) GUB.	(1226)	119	498	*EST	40480-63-5
	(7.71) IP from 81GLE/C	(247) GUB.	(1036)	70	292	*EST	77669-79-5
C II o+							
C ₁₄ H ₁₀ O ⁺	(7.85)	(206)	(862)	25	105	80DEM/WUL	525-06-4
	(7.45)	(207)	(866)	35±4	147±18	*EST	257-05-6
	(8.83±0.03)	(211)	(883)	7	31	78KIM/WIN	90-44-8
C ₁₄ H ₁₀ O ₂ +	(8.5) IP is onset of phot	(183) toelectron b	(764) and.	-13±0.7	−56±3	77PED/RYL	134-81-6

			—————				
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne- kcal/mol		Neutral reference	CAS registry number
$C_{14}H_{10}O_2^+$							
	(7.28±0.02) IP from 81BOU/I	(153) OAG.	(639)	-15	-63	81BOU/DAG	
	(7.60±0.02) IP from 81BOU/I	(171) OAG.	(716)	-4	-17	81BOU/DAG	
C ₁₄ H ₁₁ +	· · · · · · · · · · · · · · · · · · ·						
	From proton affin 866. kJ/mol.	214 ity of anthr	894 acene (RN 120-12	2-7). PA =	207.0 kcal/mol,		
H2	From proton affin 831. kJ/mol.	216 ity of phens	906 anthrene (RN 85-	01-8). PA =	= 198.7 kcal/mol,		
C ₁₄ H ₁₂ +							
C=CH ₂	(8.00±0.02)	(243)	(1018)	59±1	246±4	77PED/RYL	530-48-3
C=C <h< td=""><td>(7.80±0.02)</td><td>(240)</td><td>(1005)</td><td>60.3±0.4</td><td>252.4±1.6</td><td>77PED/RYL</td><td>645-49-8</td></h<>	(7.80±0.02)	(240)	(1005)	60.3±0.4	252.4±1.6	77PED/RYL	645-49-8
© _H ′ c=c′ ^H	7.70±0.03	234	978	56±0.7	235±3	77PED/RYL	103-30-0
H ₂ C≈ _{CH} CH ² CH ₂	(7.72) IP from GLE/SCI	(252) ł.	(1054)	74	309	*EST	17935-66-9

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) il kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry
C ₁₄ H ₁₂ +	(7.55±0.02)	(216)	(903)	42±2	175±8	77SHA/GOL	776-35-2
F	(7.60) IP from 82GLE/C	(265) GUB.	(1107)	89	374	*EST	
C ₁₄ H ₁₂ CINO ₃ + O CI N-COCH ₃	(8.7) IP is onset of pho	(120) toelectron	(504) band (80RED/F	-80 RE).	-335	*EST	4497-72-7
С ₁₄ H ₁₂ O +	(9.13±0.05)	(217)	(907)	6.1±1	26±4	*EST	
(С+2°С — С	(8.50) IP is onset of pho	(201) toelectron	(842) band (78CEN/FI	5±1 RA).	22±5	77PED/RYL	451-40-1
С ₁₄ H ₁₃ +	From proton affin 887. kJ/mol.	213 hity of (C ₆)	889 H ₅) ₂ C = CH ₂ (R	N 530-48-3).	PA = 211.9 kcal	/mol,	
C ₁₄ H ₁₃ N ⁺	(7.7) IP is onset of phot	(236) toelectron	(988) band.	59	245	*EST	5877-55-4
CH3	(≤8.07)	(≤245)	(≤1024)	59	245	*EST	6906-25-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number
С ₁₄ H ₁₃ N ⁺	8.55 IP from 80GRU/S	(261) SCH.	(1092)	64	268	*EST	74309-54-9
H ₃ C CH ₂	(8.48)	(258)	(1080)	63	262	*EST	
H ₃ C CH ₂	(8.45)	(257)	(1077)	63	262	*EST	
CH3 N	8.01 IP from 80GRU/5	(249) SCH, 80SCF	(1040) I/RAM.	64	267	*EST	77275-11-7
H ₃ C H C N	(≤7.90±0.05)	(≤242)	(≤1012)	60	250	*EST	6892-33-7
H C=CH3	(≤8.39±0.05)	(≤254)	(≤1063)	60	253	*EST	18150-12-4
C ₁₄ H ₁₃ NO +							
H ₃ CO NO	(8.27)	(225)	(942)	34	144	*EST	
H ₃ CO NO	(8.15)	(222)	(930)	34	144	*EST	

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry number
C ₁₄ H ₁₃ NO +							
OCH3 NO	(7.87) IP from 80GRU/	(217) SCH.	(908)	36	149	*EST	62205-27-0
1 ₃ CO	(≤7.72±0.05)	(≤211)	(≤883)	33	138	*EST	5847-73-4
C ₁₄ H ₁₃ N ₃ O ₃ +		<u></u>					
ć _{rt} 3	(7.8) 102 IP is onset of pho	(229) toelectron l	(959) band (81MIL/MI	49 L.).	206	*EST	
C ₁₄ H ₁₄ +							
	(8.2) IP is onset of pho	(288) toelectron l	(1203) band.	99	412	*EST	39473-62-6
CH2-CH2	8.7±0.1	235	982	34.2±0.4	143.0±1.8	77PED/RYL	103-29-7
CH ₃	(8.05±0.02)	(214)	(895)	28	118	*EST	605-39-0
H ₃ C CH ₃	(7.85±0.02)	(208)	(871)	27	114	*EST	612-75-9
н ₃ с-СН ₃	(8.50)	(223)	(934)	27	114	*EST	613-33-2

Table 1. Positive Ion Table - Continued

	1 avic	1. 1 051114	e ion fable -	Contini	<u> </u>		
ION Neutral	Ionization potential	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₄ H ₁₄ + H ₃ C CH ₃	(7.7) IP is onset of pho	(261) otoelectron b	(1094) and (84AND/CEI	84 ?).	351	*EST	88635-77-2
C ₁₄ H ₁₄ Hg ⁺	and the second s						
H ₃ C	(7.94) 3 IP is onset of pho	(261) stoelectron ba	(1091) and (81FUR/PIA)	78	325	*EST	537-64-4
C ₁₄ H ₁₄ N ₂ +				·			
Q N	(8.35)	(265)	(1109)	72	303	*EST	6574-83-0
C ₁₄ H ₁₄ N ₂ O +	H ₃ (≤7.88) IP from 81MIL/M		(≤923)	39	163	*EST	19020-81-6
OH N-CH	(≤7.88) 3 IP from 81MIL/M		(≤923)	39	163	*EST	17739-97-8
CH ₃ O CH ₃	(7.3) IP is onset of phor			53	221	*EST	77046-80-1
C ₁₄ H ₁₄ N ₂ O ₂ +	*			··· ···			
OH OCH3 CH3	(≤7.85) IP from 81MIL/M		(≤802)	11	45	*EST	23375-56-6
OH OCH3	3 (≤7.76) IP from 81MIL/M		(≤794)	11	45	*EST	15096-05-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₁₄ H ₁₄ N ₂ O ₂ +	OCH ₃ (7.72) IP from 77NUY/I	(198) MES.	(830)	20	85	*EST	501-58-6
C ₁₄ H ₁₄ N ₂ O ₃ +	:H ₃ (≤8.06) IP from 81MIL/C	(≤202) CIL.	(≤844)	16	66	*EST	1562-94-3
C ₁₄ H ₁₄ O +	(≤7.78)	(≤161)	(≤674)	-18	-77	*EST	5040-51-7
C ₁₄ H ₁₄ OS +	(8.1) IP is onset of pho	(227) toelectron b	(950) and (84GLE/	40 BIS).	169	*EST	
sc(C)SCH2(C)	(≤8.45) IP from 81MOH/	(≤204) JIA.	(≤855)	10	40	*EST	
C ₁₄ H ₁₄ OSi ⁺	(8.0±0.1)	(158)	(661)	-27	-111	*EST	18414-62-5
O-SICH3	(~7.0) IP from 82TRA/R	(~57) EED.	(~240)	-104	-435	*EST	

Table 1. Positive Ion Table - Continued

			ve ion table	e - Contin			
ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
C ₁₄ H ₁₄ O ₂ S ⁺	(8.66±0.04)	(151)	(634)	-48±0.7	-202±3	77PED/RYL	599-66-6
C ₁₄ H ₁₄ O ₂ S ₂ +	¹ 3 7.6 IP from 82GIO/B	(161) OC.	(674)	-14	-59	*EST	5335-87-5
C ₁₄ H ₁₄ S ⁺	(8.05±0.02)	(232)	(969)	46±1	192±4	77PED/RYL	538-74-9
C ₁₄ H ₁₄ SSi +	(7.45) IP is onset of pho-	(206) toelectron	(864) band (82TRA/	35 RED). See also	145 o: 81TRA/RE	*EST D.	61431-08-1
C ₁₄ H ₁₄ S ₂ + cн ₃ -{O}-ss-{O}-сн ₃	7.5 IP is onset of phos	(215) toelectron	(901) band (82GIO/	42 BOC).	177	*EST	103-19-5
C ₁₄ H ₁₄ S ₂ Si ⁺	(8.4) IP is onset of pho	(220) toelectron	(919) band (83AND)	26 /CAU).	109	*EST	57864-56-9
C ₁₄ H ₁₄ Se +	(≤7.96) IP from 81BAK/A	(≤243) ARM.	(≤1015)	59	247	*EST	1842-38-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry
C ₁₄ H ₁₄ Si +	(7.4) IP is onset of pho	(178) toelectron	(743) band.	7	29	*EST	13688-68-1
C ₁₄ H ₁₅ +	From proton affir	205 nity of C ₆ H	859 ₅ CH ₂ CH ₂ C ₆ H	I _S (RN 103-29	-7). PA = 194	4.6 kcal/mol,	·
C ₁₄ H ₁₅ BrO +	(≤8.57) IP from 82PFI/GI Br	(≤184) 3R.	(≤770)	-14	-57	*EST	72036-54-5
C ₁₄ H ₁₅ ClO ⁺	(8.67) IP from 82PFI/GI	(173) BR.	(724)	-27	-113	*EST	59344-32-0
C ₁₄ H ₁₅ FO +	(8.90) IP from 82PFI/GI	(124) ER.	(518)	-82	-341	*EST	72036-55-6
C ₁₄ H ₁₅ NO ₃ +	(≤9.28) IP from 82PFI/GI N ^O 2	(≤193) ∃R.	(≤806)	-21	-89	*EST	29339-45-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io		Δ _f <i>H</i> (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₁₄ H ₁₆ + H ₃ C CH ₃ CH ₃	(≤7.60±0.03)	(≤180)	(≤754)	5±0.7	21±3	*EST	1134-40-3
	(7.95±0.05) IP from 81HEI/K	(241) OV.	(1007)	57	240	*EST	54922-12-2
C ₁₄ H ₁₆ Cr ⁺ Cr+ Cr- CH ₃ CH ₃	(≤5.24±0.1) See also: 82CAB/	(≤86) COW.	(≤360)	-35	-146	*EST	12087-58-0
C ₁₄ H ₁₆ O +	(≤8.90) IP from 82PFI/GI	(≤187) ER.	(≤781)	-19	-78	*EST	36047-17-3
C ₁₄ H ₁₆ Si +	(8.5) IP from 81TRA/R	(209) RED.	(875)	13	55	*est	778-24-5
C ₁₄ H ₁₇ NO +	(≤7.85) IP from 82PFI/GE	(≤163) ER.	(≤683)	-18	-74	*EST	72036-57-8
C ₁₄ H ₁₈ ⁺	(7.86) IP from charge tra	(172) ansfer equili	(721) brium consta	−9±0.7 nt determinatio	-37±3 ns (80MAU).	77PED/RYL	1079-71-6

Table 1. Positive Ion Table - Continued

		. 1 05101	ve ton Table	- Conti			
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/moi		Neutral) ol kJ/mol	Neutral reference	CAS registry number
C ₁₄ H ₁₈ +	7.89 IP from charge tra	174 ansfer equi	727 librium constan	−8±2 t determinat	-34±8 tions (80MAU).	77SHA/GOL	5325-97-3
	(≤8.37) IP from 80GLE/F	(≤246) IOP.	(≤1029)	53	221	*EST	
C ₁₄ H ₁₈ N ₂ ⁺ NICH ₃ N ₂ NICH ₃ N ₂	(6.70±0.02)	(200)	(839)	46	193	*EST	10075-69-1
(H ₃ C) ₂ N N(CH ₃) ₂	(6.45±0.02)	(212)	(884)	63	262	*EST	20734-58-1
C ₁₄ H ₁₈ N ₄ ⁺ N(CH ₃) ₂ N(CH ₃) ₂	(7.3) IP is onset of phor	(244) toelectron	(1021) band (83DOB/)	76 HIL).	317	*EST	85698-56-2
C ₁₄ H ₁₉ +			<u> </u>				
()) H ⁺	From proton affir PA = 202.6 kcal/i	154 hity of 1,2,3 mol, 848. k.	645 ,4,5,6,7,8-octahy J/mol.	droanthrace	ene (RN 1079-71-	s).	
(H ⁺	From proton affir PA = 204.7 kcal/1			ydrophenant	hrene (RN 5325-9	97-3).	

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₄ H ₁₉ N ₂ +	+ From proton affir PA = 241.8 kcal/i	186 nity of N,N, nol, 1012. k	780 N',N'-tetramethy J/mol.	d-1,8-naphth	alenediamine (R	N 20734-58-1).	
C ₁₄ H ₂₀ +	(≤8.17) IP from 80GLE/F	(≤190) IOP.	(≤795)	2	7	*EST	4685-74-9
	(8.93)	(171.1)	(717.1)	-34.5	-144.5	79CLA/KNO	2292-79-7
C ₁₄ H ₂₀ O ₂ +	9.0±0.05 IP from 84OLI/FI	(141) .E.	(589)	-67	-279	*EST	950-21-0
C ₁₄ H ₂₀ O ₅ +	(≤8.0) IP from 83BAK/A	(≤19) RM.	(≤80)	-165	-692	*EST	14098-44-3
C ₁₄ H ₂₁ N ⁺ H ₅ C ₂ C ₂ H ₅	(≤7.60) IP from 82ROZ/H	(≤208) OU2.	(≤869)	33	136	*EST	81506-13-0
C ₁₄ H ₂₂ +	(≤8.40) IP from 80GLE/H	(≤163) OP. See als	(≤681) io: 85BAI/MIS.	−31±1.4	-129±6	84NES/VER	1571-86-4

534

Table 1. Positive Ion Table - Continued

Table 1. Fositive fon Table - Continued										
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) ol kJ/mol	Δ _f H(No kcal/mol		Neutral reference	CAS registry number			
C ₁₄ H ₂₂ + C(CH ₃) ₃ C(CH ₃) ₃	(≤8.60±0.07)	(≤185)	(≤774)	-13	-56	*EST	1012-76-6			
(CH3)3C C(CH3)	3 (8.71±0.07)	(171)	(713)	−30±1.4	−127±6	84NES/VER	1014-60-4			
(CH3)3C	3 ⁾ 3 8.24±0.01 IP from 82LEV/I	(161) LIA, 84HO	(673) W/GON, 86O	–29 RL/MIS. See als	-122 so: 85BAI/MIS.	85ORL/MIS	1012-72-2			
C ₁₄ H ₂₂ O + OH CICH ₃	3 ³ 3 (7.70±0.02) See also: 83CET/	(112) LAP.	(468)	-66	-275	*EST	128-39-2			
(CH3)3C C(CH3	(7.90±0.02)	(109)	(455)	-73	-307	*EST	1138-52-9			
C ₁₄ H ₂₃ N ⁺ H ₅ C ₂ NC ₂ H ₅ C ₂ H ₅	(≤7.77) IP from 82ROZ/I	(≤207) HOU2.	(≤867)	28	117	*EST	81506-16-3			
C ₁₄ H ₂₃ NO + O O O O O O O O O O O O O O O O O O	(≤7.75) IP from 82PFI/GI	(≤116) ER.	(≤486)	-63	-262	*EST	1500-76-1			

Table 1. Positive Ion Table - Continued

ION IO	onization potential $\Delta_f H(\text{Ion})$ $\Delta_f H(\text{Neutral})$					Neutral	CAS registry
Neutral	onization potential eV	kcal/mol		kcal/mol		reference	number
C ₁₄ H ₂₄ +							
	(8.8) IP is onset of photon	(145) toelectron b	(606) and (84HEI/HO		-243.2±3.8	77PED/RYL	
	(9.0) IP is onset of phot	(158) coelectron b	(660) and (84HEI/HO	-50 N).	-208	71ALL/WUE	
C ₁₄ H ₂₄ O ₄ +							<u> </u>
	(≤9.2) IP from 83BAK/A	(≤39) .RM.	(≤162)	174	~72 6	*EST	
C ₁₄ H ₂₆ ⁺							
1-C ₁₄ H ₂₆	(9.89±0.02)	(218)	(913)	-10	-41	*EST	765-10-6
2-C ₁₄ H ₂₆	(9.26±0.03)	(199)	(833)	-14	-60	*EST	638-60-8
3-C ₁₄ H ₂₆	(9.17±0.02)	(197)	(826)	-14	-59	*EST	60212-32-0
4-C ₁₄ H ₂₆	(9.11±0.03)	(196)	(820)	-14	-59	*EST	60212-33-1
5-C ₁₄ H ₂₆	(9.10±0.03)	(196)	(819)	-14	-5 9	*EST	60212-34-2
6-C ₁₄ H ₂₆	(9.09±0.02)	(196)	(818)	-14	-59	*EST	3730-08-3
7-C ₁₄ H ₂₆	(9.03±0.04)	(194)	(812)	-14	-59	*EST	35216-11-6
C ₁₄ H ₂₆ S ₂ Si ₂ +							
(CH3/3Si~CH2~S~COH3/3	(7.0) IP is onset of photo	(23) oelectron ba	(96) and (82TRA/RE	-138 D).	- 579	*EST	69209-20-7
$C_{14}H_{28}^+$ ((CH ₃) ₃ C) ₂ C=CHC(CH ₃) ₃	(8.17±0.01)	(131)	(550)	-57	-238	81HOL/FIN	28923-90-2

Table 1. Positive Ion Table - Continued

	Table	I. Positive	ion Table -	Continu	1ea		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol k		Δ _f H(Neι kcal/mol		Neutral reference	CAS registry
C ₁₄ H ₂₈ N ⁺							
(H3C)3C (CH3)3)	H ⁺ From proton affin PA = 239.2 kcal/r	ity of 1-methy	250 1-2,6-di-tert-buty 101.	lpiperidine	3.		
C ₁₄ H ₃₂ N ₄ ⁺						*	
H ₃ C N N CH ₃	(≤8.0) IP from 83BAK/A		:770) -	-0.5	-2	*EST	
C ₁₅ F ₁₈ ⁺ F F F F F F F F F F F F F	11.3 IP is onset of phot		•	-790	-3306	*EST	33021-47-5
C ₁₅ H ₉ N ⁺	(7.80±0.03) See also: 83KLA/l		1114)	87±0.2	362±1	*EST	1210-12-4
С ₁₅ H ₁₀ O +	7.69±0.03	(204) (8	352)	26.3±2	110±8	*EST	642-31-9
	(8.1) IP is onset of phot		•	76±2	318±8	85STE/GAM	886-38-4
C ₁₅ H ₁₂ +							
	(7.6) IP is onset of phot		•	57±0.7	237±3	*EST	256-81-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(N kcal/mo	eutral) kJ/mol	Neutral reference	CAS registry
C ₁₅ H ₁₂ +	(7.37) IP from charge tra	(215) ansfer equili	(898) ibrium constant	45 determinati	187 ons (80MAU).	*EST	613-12-7
CH3	7.24±0.03 See also: 80MAU	(215) , 83KLA/KO	(899) DV.	48	201	*EST	779-02-2
СНЗ	7.7±0.03	(217)	(907)	39±2	164±7	*EST	832-69-9
СН3	(7.7)	(217)	(907)	39±2	164±7	*EST	2531-84-2
CH3	(7.68±0.01)	(216)	(905)	39	164	*EST	832-71-3
H ₃ C	(7.70±0.02)	(222)	(929)	44±4	186±15	*EST	832-64-4
	(7.45)	(282)	(1180)	110	461	*EST	24168-52-3
CH ₃	7.46±0.03	(214)	(897)	42±0.2	177±1	*EST	883-20-5

Table 1. Positive Ion Table - Continued

	Table	1. PUSILI	ve Ion Tabl	e - Contin			
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₅ H ₁₂ AlF ₉ O ₆ ⁺ C _F	(8.7) IP is onset of pho	(–580) stoelectron l	(−2428) ∋and.	-781±3	-3267±13	80TEL/RAB	14354-59-7
C ₁₅ H ₁₂ O ₂ +	(8.3) IP is onset of pho	(131) toelectron t	(550) oand.	-60±0.7	-251±3	81FER/RIB	120-46-7
C ₁₅ H ₁₃ +	+ From proton affin	200 nity of 2-me	837 thylanthracen	e (RN 613-12-7)	. PA = 210.3	s kcal/mol,	
CH3 CH3 L2	From proton affir 895. kJ/mol.	200 nity of 9-me	836 thylanthracen	e (RN 779-02-2 ₎). PA = 213.9	kcal/mol,	
C15H14+ CH3	(≤8.10±0.05)	(≤236)	(≤986)	49	204	*EST	833-81-8
	(8.20)	(249)	(1043)	60±0.5	252±2	77PED/RYL	1138-48-3
	(8.05)	(243)	(1016)	57±0.7	239±3	77PED/RYL	1138-47-2
	(8.0) IP is onset of pho	(351) otoelectron l	(1469) band.	167	697	*EST	73045-27-9

Table 1. Positive Ion Table - Continued

		2. 105.01	re ion iadi	e - Contin			
ION Neutral	Ionization potential eV		on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₅ H ₁₄ +							
	(7.6) IP is onset of pho	(386) otoelectron t	(1616) pand.	211	883	*EST	73050-58-5
C ₁₅ H ₁₅ La +							
	(7.9±0.3)	(218)	(912)	36±2	150±7	77PED/RYL	1272-23-7
C ₁₅ H ₁₅ N ⁺		<u> </u>					
N(CH ₃) ₂	(7.1) IP is onset of pho	(216) stoelectron t	(905) pand (84GLE	53 /SCH).	220	*EST	92013-89-3
C ₁₅ H ₁₅ NO +				1.1500000		· · · · · · · · · · · · · · · · · · ·	
H ₃ C CN	(≤9.20) IP from 82PFI/G	(≤226) ER.	(≤946)	14	58	*EST	72036-56-7
C ₁₅ H ₁₅ Pr +							
	(7.68±0.1)	(200)	(838)	23±2	97±9	77PED/RYL	11077-59-1
C ₁₅ H ₁₅ Tm +			· · · · · · · · · · · · · · · · · · ·				
	(7.43±0.1)	(186)	(779)	15±1	62±6	77PED/RYL	1272-26-0
C ₁₅ H ₁₅ Yb +							
©	(7.5±0.3)	(206)	(862)	33±1	138±6	77PED/RYL	1295-20-1

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table -	Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne		Neutral reference	CAS registry number
C ₁₅ H ₁₆ N ₂ +	(7.50±0.05)	(253)	(1059)	80	335	*EST	63378-86-9
C ₁₅ H ₁₆ OS ⁺	(8.15) IP is onset of pho	(213) toelectron t	(890) pand (84GLE/BIS	25).	104	*EST	
C ₁₅ H ₁₈ + CH ₃ CH ₃ CH ₃ CH ₃	(7.1) IP is onset of pho	(219) toelectron t	(918) pand (84AND/CE	56 R).	233	*EST	88635-76-1
	(7.85±0.05) IP from 81HEI/K	(205) OV.	(857)	24	100	*EST	1206-79-7
C ₁₅ H ₁₈ CrO ₃ + H ₃ C Cr(CO) ₃ CH ₃ H ₃ C CH ₃ CH ₃	(6.35±0.1)	(10)	(42)	-136±3	−571±13	77PED/RYL	12088-11-8
C ₁₅ H ₁₈ O + O CH	(≤8.59) IP from 82PFI/GE 3	(≤172) ER.	(≤718)	-26	-111	*EST	72036-52-3
C ₁₅ H ₁₈ OP +	From proton affin PA = 216. kcal/m			N 2959-75-3	3)(86TRA/MUN)).	

Table 1. Positive Ion Table - Continued

					·		
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₅ H ₁₈ O ₂ + O O O	(≤8.26) IP from 82PFI/GI	(≤136) ER.	(≤568)	-55	-229	*EST	29339-44-4
C ₁₅ H ₁₉ +	f From proton affir PA = 233. kcal/m			oylazulene (I	RN 489-84-9).		
C ₁₅ H ₂₀ + —c≡cc(c ₂ H ₅) ₃	(8.29±0.08) IP from 81ELB/L	(230) IE.	(962)	39	162	*EST	80025-09-8
C ₁₅ H ₂₁ AlO ₆ ⁺ H ₃ C C ₁₅ H ₂₁ AlO ₆ H ₃ C CH ₃	(7.78±0.05) IP from 81WES/R	(-220) ŒI.	(-919)	−399±1	−1669±4	80TEL/RAB	13963-57-0
C ₁₅ H ₂₁ CrO ₆ ⁺ H ₃ C CH ₃ CH ₃ CH ₃ CH ₃	6.95±0.2 IP is onset of phot		(-760) and(81WES/REI	-342±2).	−1431±7	82PIL/SKI	21679-31-2
C ₁₅ H ₂₁ FeO ₆ ⁺ H ₃ C O CH ₃ CH ₃ CH ₃	(7.55) IP is onset of phot		(–515) and. See also: 81\	−297±1 WES/REI.	−1244±6	77PED/RYL	14024-18-1
C ₁₅ H ₂₁ MnO ₆ + CH ₃	(7.58±0.05) IP from 81WES/RI		(-564)	−310±1	−1295±6	77PED/RYL	14284-89-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(New kcal/mol		Neutral reference	CAS registry number
C ₁₅ H ₂₄ + (CH ₃) ₂ HC — CH(CH ₃) ₂ (CH ₃) ₂ HC	(8.24) IP from 84HOW,	(158) /GON.	(661)	-32	-134	*EST	717-74-8
C ₁₅ H ₂₄ O + OH CICH ₃) ₃ CH ₃	(≤7.80) IP from 83CET/I	(≤107) _AP.	(≤449)	-73	-304	*EST	128-37-0
C ₁₆ F ₁₀ + F F F F F F F F F F F F F F F F F F F	(8.36±0.05)	(-167)	(-697)	-359	-1504	*EST	1493-68-1
C ₁₆ F ₁₆ + F F F F F F F F F F F F F F F F F F F	10.1 IP is onset of pho	(–347) stoelectron b	(-1451) and (84HEI/\	-580 VIR).	-2425	*EST	42858-85-5
C ₁₆ H ₈ F ₂ O ₄ +	(8.7) —F IP is onset of pho	(39) stoelectron b	(165) vand (85GLE/	–161 DOB).	-674	*EST	97245-28-8
C ₁₆ H ₁₀ ⁺ H C C C C C C C C C C C C C C C C C C	(8.2) IP is onset of pho	(340) toelectron b	(1421) and (81GLE/	151 SCH).	630	*EST	18442-29-0
	7.41 See also: 81CLA/ equilibrium const			_		79KUD/KUD2	129-00-0

Table 1. Positive Ion Table - Continued

	Table :	l. Positiv	e Ion Table -	Continu	1ed		
ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Net		Neutral reference	CAS registry number
C ₁₆ H ₁₀ +	(7.95±0.04)	(253)	(1056)	69.2±0.3	289.4±1.1	81KUD/KUD	206-44-0
C ₁₆ H ₁₀ O ₄ +							
	(8.5) IP is onset of photo	(130) oelectron b	(544) eand (85GLE/DO	−66 B).	-276	*EST	19909-44-5
C ₁₆ H ₁₁ +	From proton affin	211 ity of pyren	884 e (RN 129-00-0).	PA = 206.1	l kcal/mol, 862. k	J/mol.	
H+	From proton affin 834. kJ/mol.	235 ity of fluora	985 anthene (RN 206-4	14-0). PA =	- 199.3 kcal/mol,		
C ₁₆ H ₁₂ +							
C=c-c	(7.5) IP is onset of phot	(276) oelectron b	(1154) and (80AND/BIC	103 E).	430	*EST	13343-79-8
CH ₃ CH ₃ C U	(7.48) IP from 84GLE/S6	(311) CH.	(1304)	139	582	*EST	22360-77-6
CH ₂	(7.6) IP is onset of phot	(233) oelectron b	(976) and.	58±3	243±12	*EST	3302-51-0
	(7.7) IP is onset of photo	(253) Delectron ba	(1060) and (82HAS/NEU	76 J).	317	*EST	

Table 1. Positive Ion Table - Continued

Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₆ H ₁₄ +	7.55	237	993	63	265	69STU/WES	538-81-8
H ₃ C	^{CH} 3 7.99±0.04	218	914	34±0.5	143±2	77PED/RYL	1576-69-8
H ₃ C CH ₃	7.56±0.1	220	924	46±1	194±6	77PED/RYL	3674-69-9
H ₃ C CH ₃	(8.01±0.05)	(225)	(940)	40±2	167±9	77PED/RYL	604-83-1
	(8.1) IP is onset of phot	(224) oelectron b	(936) and (82HAS/NE)	37 U).	155	*EST	
C ₁₆ H ₁₆ ⁺	(8.2±0.1) IP from 84GRO/C	(247) :HE.	(1035)	58	244	84GRO/CHE	20071-09-4
© CH ₃	(7.9) IP from 81KLY/SI	(235) HU.	(984)	53	222	*EST	14161-72-9
О Сн ₃	(7.9) IP from 81KLY/SI	(232) HU.	(971)	50	209	*EST	14161-73-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₆ H ₁₆ ⁺	7.9 IP is onset of pho	(223) toelectron b	(933) vand.	41±2	171±7	77PED/RYL	2319-97-3
	7.8±0.1 IP from 82LEV/L	239 JA, 82GLE	998 /ECK. See also: 8	59±0.7 1ZHO/KO	246±3 V.	80NIS/SAK	1633-22-3
C ₁₆ H ₁₆ BrN +							
(CH ₃) ₂ N-\(\) -C \(\) H	(≤7.04) _{Br} IP from 85CAU/F	(≤200) ™R.	(≤835)	37	156	*EST	2844-19-1
C ₁₆ H ₁₆ CIN+							
(CH ₃) ₂ N-C-CI	(≤7.05) IP from 85CAU/F	(≤190) FUR.	(≤796)	28	116	*EST	69957-42-2
C ₁₆ H ₁₆ CrO ₄ +				·			
н ₃ соос-	(≤5.77) IP from 82CAB/C	(≤35) COW.	(≤147)	-98	-410	*EST	1272-35-1
C ₁₆ H ₁₆ FN+			<u> </u>				
(CH3)2N-C-F	(6.39) IP is onset of photon	(160) toelectron b	(671) and (85CAU/FU	13 R).	54	*EST	38695-34-0
C ₁₆ H ₁₆ O +							
10 10 (CH ₂) ₅	(8.0) IP is onset of phot	(217) toelectron b	(909) and.	33±3	137±12	77PED/RYL	25401-39-2

546

Table 1. Positive Ion Table - Continued

	Table	1. Positive Ion Table	- Continued		
ION Neutral	Ionization potential	$\Delta_{ m f} H({ m Ion})$ kcal/mol kJ/mol	Δ _f H(Neutral) kcal/mol kJ/mol	Neutral reference	CAS registry
C ₁₆ H ₁₆ U +	≤6.17±0.03	(≤247) (≤1035)	105±3 439±13	77TEL/RAB	11079-26-8
C ₁₆ H ₁₇ +					
H ₃ C CH ₃		193 809 nity of $(4-CH_3C_6H_4)_2C =$	CH ₂ (RN 2919-20-2). PA =	= 215.4 kcal/mol,	
C ₁₆ H ₁₈ N ₂ O ₃ +					
C2H50-0-0C2H	(7.2) IP is onset of pho	(166) (695) toelectron band (81MIL/C	0 0 XL).	*EST	4792-83-0
C ₁₆ H ₁₉ ⁺	From proton affir 820. kJ/mol.	194 810 anity of C_6H_5 (CH_2) $_4C_6H_5$	(RN 1083-56-3). PA = 195	.9 kcal/mol,	
С16Н20Ст+	(≤5.21) IP from 82CAB/0	(≤105) (≤439) COW.	-15 -64	*EST	12092-21-6
C ₁₆ H ₂₀ OP ⁺					
(H ³ C) ³ C H	From proton affir PA = 216 kcal/m		(RN 56598-35-7) (86TRA/I	MUN).	
C ₁₆ H ₂₈ +					
	(9.1) IP is onset of pho	(173) (726) toelectron band (84GLE/S	-36±3 −152±13 PA).	77PED/RYL	283-68-1

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potentia eV		on) kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
C ₁₆ H ₃₂ N ₂ O ₅ +	(≤7.7)	(≤7)	(≤31)	-170	-712	*EST	31364-42-8
	IP from 83BAK	/AKM.					
C ₁₆ H ₃₄ N ₂ + (E)-((CH ₃) ₃ CCH ₂ C(CH ₃	3)2)2N2						
	(≤8.00)	(≤137)	(≤575)	-47±2	-197±9	80ENG	55204-43-8
C ₁₆ H ₃₆ Sn +	,,						
$(C_4H_9)_4$ Sn	(8.0) IP is onset of ph	(132) notoelectron b	(553) pand.	-52±1	-219±4	77PED/RYL	1461-25-2
(iso-C ₄ H ₉) ₄ Sn	(≤8.68)	(≤165)	(≤689)	-35	-148	*EST	3531-43-9
C ₁₆ H ₄₄ Si ₄ Ti ⁺ [(CH ₃) ₃ SiCH ₂] ₄ Ti		<u>,,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,</u>					
((CH3)30)(CH2)411	(8.0) IP is onset of ph	(-3)	(-14)	-188±8	-786±33	86SIM/BEA	33948-28-6
C ₁₆ H ₄₄ Si ₄ Zr ⁺ ((CH ₃) ₃ SiCH ₂) ₄ Zr	(8.2) IP is onset of ph	(-9) notoelectron t	(-36) pand.	-198±8	-827±33	86SIM/BEA	32665-18-2
C ₁₇ H ₁₂ ⁺	(7.53) IP from 84GLE	(349) /SCH.	(1458)	(175)	(732)	*EST	32137-40-9
C ₁₇ H ₁₆ N ₂ +	N (≤7.31) IP from 85CAU	(≤261) /FUR.	(≤1094)	93	389	*EST	,
C ₁₇ H ₁₈ +	(7.6) IP is onset of ph	(226) notoelectron t	(947) pand (81ZHO)	51 KOV).	214	*EST	24262-07-5

Table 1. Positive Ion Table - Continued

Table 1. Toshtve fon Table – Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number			
C ₁₇ H ₁₉ NO +										
(CH3/2N————————————————————————————————————	(6.16) IP is onset of pho	(166) toelectron b	(696) and (85CAU/FU	24 JR).	102	*EST	2844-24-8			
C ₁₇ H ₂₀ N ₂ + NICH ₃ I ₂ NICH ₃ I ₂	(6.7) IP is onset of photon	(226) toelectron ba	(945) and (84GLE/SCI	71 H).	299	*EST	86943-85-3			
$C_{17}H_{26}O^{+}$ C_{1	(8.0) IP is onset of phot	(104) toelectron ba	(437) and (78CEN/FR	-80 A).	-335	*EST	2234-14-2			
C ₁₇ H ₂₉ N ⁺ (H ₃ C) ₃ C N C(CH ₃) ₃	8.20 IP is onset of phot	(133) coelectron ba	(558) and.	-56	-233	*EST	20336-15-6			
C ₁₈ H ₁₂ ⁺	7.43±0.03 See also: 81AKI/H	239 IAR.	1001	68±0.2	284±1	79KUD/KUD2	56-55-3			
	7.60	245	1024	70±0.2	291±1	79KUD/KUD2	195-19-7			
	7.59±0.02 Value of IP from c (80MAU) is in agr					79KUD/KUD2	218-01-9			
	6.97±0.02 See also: 84STA/N	229 1AQ, 80SHU	956 J/BOY.	68±0.2	284±1	79KUD/KUD2	92-24-0			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _ξ <i>H</i> (Ne		Neutral reference	CAS registry number
C ₁₈ H ₁₂ +	7.84±0.01 Value of IP from c (80MAU) is in agr				270±1 erminations	79KUD/KUD2	217-59-4
C ₁₈ H ₁₃ +			· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·
	From proton affini 911. kJ/mol.	216 ity of naphth	903 hacene (RN 92-2	4-0). PA =	217.8 kcal/mol,		
(OO) H-	From proton affini 843. kJ/mol.	227 ity of chryse	950 ne (RN 218-01-9). PA = 20	1.6 kcal/mol,		
H ⁺	From proton affini 830.5 kJ/mol.	232 ty of tripher	970 nylene (RN 217-5	9-4). PA =	- 198.5 kcal/mol,		
C ₁₈ H ₁₄ +							
	(7.50) IP from 84GLE/SC		(1434)	170	710	*EST	32137-39-6
	(≤7.96)	(≤280) ((≤1170)	96±4	402±15	77PED/RYL	2175-90-8
	8.0 IP is onset of photo		(1054) nd (83KOB, 82L	68 EV/LIA).	283	*EST	84-15-1
	8.01±0.01 IP from 82LEV/LIA		(1056) 83KOB.	68	283	*EST	92-06-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcai/moi		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₈ H ₁₄ +							
	7.78±0.01	(247)	(1034)	68	283	*EST	92-94-4
$C_{18}H_{14}O_4^{+}$							
СН3—С-С-С-С-С-С-С-С-С	(≤8.8) IP from 85GLE/I	(≤121) OOB.	(≤507)	-82	-342	*EST	19909-64-9
C ₁₈ H ₁₅ As +	7.32±0.05	266	1114	98±3	408±11	79STE	603-32-7
C ₁₈ H ₁₅ B+					, , , , , , , , , , , , , , , , , , , ,	***	
B—(C)	(8.60±0.03)	(229)	(960)	31±2	130±8	77PED/RYL	960-71-4
C ₁₈ H ₁₅ Bi +	7.45±0.05	317	1328	146±2	609±10	79STE	603-33-8
C ₁₈ H ₁₅ N ⁺	6.80±0.04	176	734	19±0.2	78±1	78STE	603-34-9
C ₁₈ H ₁₅ P ⁺	7.39±0.03 IP from 82IKU/K	249 EB, <i>7</i> 7ROS,	1041 /DRA, 82LEV	78±5 /LIA.	328±21	79STE	603-35-0

Table 1. Positive Ion Table - Continued

Table 1. Fositive fon Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₁₈ H ₁₅ Sb ⁺	7.26±0.05	271	1135	104±4	435±19	<i>7</i> 9STE	603-36-1		
C ₁₈ H ₁₆ +	(7.4) IP is onset of pho	(275) toelectron b	(1152) pand (82GLE/	105 ECK).	438	*EST			
C ₁₈ H ₁₆ As +		·							
(From proton affin 904. kJ/mol.	247 nity of (C ₆ H	1034 (₅) ₃ As (RN 60	3-32-7)(86TRA	/MUN). PA	= 216. kcal/mol,			
C ₁₈ H ₁₆ AsO +	From proton affir 904. kJ/mol.	198 nity of (C ₆ H	827 5)3AsO (RN	1153-05-5) (86T	TRA/MUN).	PA = 216. kcal/mc	Ι,		
C ₁₈ H ₁₆ N ⁺	From proton affir PA = 216. kcal/m	•	_	-34-9)(86TRA/	MUN).				
C ₁₈ H ₁₆ OP +						· · · · · · · · · · · · · · · · · · ·			
O OH	From proton affin 904. kJ/mol.	154 nity of (C ₆ H	644 ₅) ₃ PO (RN 79	91-28-6)(86TR.A	/MUN). PA	= 216. kcal/mol,			
C ₁₈ H ₁₆ P+	From proton affin	214 hity of (C ₆ H	896 ₅) ₃ P (RN 603-	.35-0). PA = (:	230) kcal/mol	, (962) kJ/mol.			

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued									
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₁₈ H ₁₆ PS+	From proton affin 904. kJ/mol.	206 uity of (C ₆ H	860 (₅) ₃ PS (RN 3878	3-45-3)(86TR	A/MUN). PA =	216. kcal/mol,			
C ₁₈ H ₁₆ Sb ⁺									
H Sb	From proton affin 846. kJ/mol.	267 ity of (C ₆ H	1119 (₅) ₃ Sb (RN 603-	36-1)(86TRA	v/MUN). PA =	202. kcai/mol,			
C ₁₈ H ₁₆ Si +						., .			
Si-Co	(8.4) IP is onset of phot	(257) coelectron b	(1075) vand.	63	265	*EST	789-25-3		
C ₁₈ H ₁₈ +	(6.60) IP from 82BAU/E	(276) BUN.	(1156)	124±5	519±20	74OTH/BUN	2040-73-5		
CICH ₃) ₃	(7.13) IP from 78KLA/K	(201) OV, 83KL&	(843) A/KOV.	37	156	*EST	62337-65-9		
CICH ³ 1 ³	7.13 IP from 83KLA/K	(201) OV.	(843)	37	155	*EST	13719-97-6		
H ₃ C CH ₃ CH	(7.8±0.1)	(210)	(879)	30±1	126±6	77PED/RYL	7396-38-5		
H ₃ C CH ₃ CH ₃	(7.5±0.1)	(211)	(881)	38±1	157±6	77PED/RYL	7343-06-8		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		∆ _f H(New kcal/mol		Neutral reference	CAS registry number
C ₁₈ H ₁₈ +							
	(7.3) IP is onset of photon	(221) toelectron b	(926) and (84ZHO/HE	53 I).	222	*EST	
	7.8 IP is onset of photon	(222) toelectron b	(931) vand.	43	178	*EST	
	7.8	(236)	(987)	56	234	*EST	58002-98-5
	7.4 IP is onset of phot	(212) toelectron b	(886) and.	41	172	*EST	27165-88-4
C ₁₈ H ₁₈ N ₂ +							
-18-18-72	(7.4) IP is onset of photon	(275) toelectron b	(1150) and (81ZHO/HE	104 I).	436	*EST	
	(7.6) IP is onset of photon	(279) toelectron b	(1169) vand (81ZHO/HE	104 I).	436	*EST	
C ₁₈ H ₂₀ +	(≤7.85±0.05) IP from 81ZHO/F	(≤225) ⟨OV.	(≤939)	43	182	*EST	
	(7.4) IP is onset of photon	(214) toelectron b	(897) and (81ZHO/KO	44 V).	183	*EST	

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued										
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₁₈ H ₂₀ +	(≤7.85±0.05) IP from 81ZHO/F	(≤225) KOV.	(≤939)	43	182	*EST				
	(8.12±0.08) IP from 81ELB/L	(240) IE.	(1002)	52	219	*EST				
С ₁₈ H ₂₀ U +	(≤6.08) IP from 83GRE/P	(≤229) AY.	(≤959)	89	373	*EST	41367-67-3			
C ₁₈ H ₂₂ N ₂ O ₃ +	(≤7.64) IP from 81MIL/C	(≤167) IL.	(≤697)	-10	-40	*EST	23315-55-1			
C ₁₈ H ₂₄ +	(7.70±0.05) IP from 81HEI/K	(175) OV.	(732)	-3	-11	*EST	1610-39-5			
C ₁₈ H ₂₄ Cr ⁺ CH ₃ CH ₃ CH ₃ CH ₃ H ₃ C Cr H ₃ C	(≤5.04) IP from 82CAB/C	(≤134) OW.	(≤562)	18	76	*EST	57820-96-9			
H ₃ C CH ₃ H ₃ C CH ₃ CH ₃	4.97 IP from 82CAB/C	130 OW.	543	15±3	64±12	82PIL/SKI	1274-07-3			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₁₈ H ₂₉ Br + (CH ₃) ₃ C C(CH ₃) ₃ C(CH ₃) ₃	8.0 IP is onset of pho	, ,	(631) and (83CET/LA	-33 P).	-140	*EST	3975-77-7
C ₁₈ H ₂₉ I + I C(CH ₃) ₃ C C(CH ₃) ₃)3 7.5 IP is onset of pho		(651) and (83CET/LA		-73	*EST	31039-82-4
C ₁₈ H ₂₉ NO + NO C(CH ₃) ₃ C C(CH ₃) ₃) ₃ (≤8.69) IP from 83CET/L	(≤184) .AP.	(≤768)	-17	-70	*EST	24973-59-9
C ₁₈ H ₂₉ NO ₂ + NO ₂ C(CH ₃) ₃ C(CH ₃) ₃ C(CH ₃) ₃	93 (≤8.78) IP from 83CET/L	(≤154) .AP.	(≤646)	-48	-201	*EST	3463-37-4
C ₁₈ H ₃₀ + CCH ₃ I ₃ CCCH ₃ I ₃	(≤8.60±0.07)		(≤687)	-34±1.4	-143±6	67ARN/SAN	1459-11-6
(CH ₃) ₃ C C(CH ₃) ₃	(8.19) IP from 84HOW/ ¹ 3 ⁾ 3	(131) /GON. See a	(548) lso: 83CET/LAP	58±1	-242±4	77PED/RYL	1460-02-2
C ₁₈ H ₃₀ O + OH C(CH ₃) ₃ C C(CH ₃) ₃	3/3 (7.5) IP is onset of pho	(80) otoelectron b	(335) and (83CBT/LA	-93 P).	-389	*EST	732-26-3

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₁₈ H ₃₁ N + (CH ₃) ₃ C C(CH ₃) ₃	(6.9) IP is onset of pho	(110) toelectron t	(460) pand (83CET/LA	–49 .P).	-206	*EST	
C ₁₈ H ₃₆ N ₂ O ₆ +							
N O O N	(≤7.8) IP from 83BAK/A		(≤−118)	-208	-871	*EST	23978-09-8
C ₁₈ H ₄₂ N ₃ P +							···
$P(N(n-C_3H_7)_2)_3$	(≤7.05) IP from 82WOR/	(≤78) HAR.	(≤325)	-85	-355	*EST	5848-64-6
С ₁₉ Н ₁₄ + Çн ₃						· · · · · · · · · · · · · · · · · · ·	
	(7.46±0.03) IP from 81SHA/A	(226) AKI.	(944)	54	224	*EST	3351-28-8
00°C+	¹³ (7.49±0.03) IP from 81SHA/A	(226) AKI.	(947)	54	224	*EST	3351-32-4
OO CH	d3 (7.46±0.03) IP from 81SHA/A	(226) AKI.	(944)	54	224	*EST	3351-31-3
CH ₃	(7.44±0.03) IP from 81SHA/A	(230) AKI.	(963)	59	245	*EST	3351-30-2
CH ₃	(7.40±0.03) IP from 81SHA/A	(229) aKI.	(959)	59	245	*EST	3697-24-3

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne		Neutral reference	CAS registry
C ₁₉ H ₁₄ ⁺ CH ₃	(7.44±0.03) (7.44±0.03) (7.44±0.03)	(228) I.	(953)	57	236	*EST	1705-85-7
CH ₃	(7.30) (IP from 81AKI/HA)	(224) R.	(938)	56	234	*EST	2498-76-2
	[⊣] 3 (7.29) (IP from 81AKI/HAI	(224) R.	(937)	56	234	*EST	2498-75-1
000 ch	(7.30) (3 IP from 81AKI/HAI	(224) R.	(938)	56	234	*EST	316-49-4
OOO CH3	(7.33) (IP from 81AKI/HAF		(941)	56	234	*EST	316-14-3
CH ₃	(7.24) (7.24) (7.24) (7.24) (7.24)		(933)	56	234	*EST	2541-69-7
CH ₃	(7.33) (7.33) (7.33) (7.33) (7.33)		(941)	56	234	*EST	2381-31-9
H ₃ C 000	(7.31) (7.31) (7.31) (7.31) (7.31)		(939)	56	234	*EST	2381-16-0

Table 1. Positive Ion Table - Continued

		I. FUSILI	ve ion Table	- Contin	lucu		
ION Neutral	Ionization potential eV	∆ _f <i>H</i> (I kcal/mol	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₁₉ H ₁₄ +	(7.30) IP from 81AKI/H	(224) AR.	(938)	56	234	*EST	2381-15-9
CH ₃	(7.30) IP from 81AKI/H	(224) AR.	(938)	56	234	*EST	6111-78-0
CH ₃	(7.27) IP from 81AKI/H	(243) AR.	(1015)	75	314	*EST	2422-79-9
C ₁₉ H ₁₆ +		<u> </u>					
	(7.48) IP from 84GLE/S	(337) CH.	(1411)	165	690	*EST	87842-94-2
CH—	8.34±0.03	257	1076	65±1	271±4	77PED/RYL	519-73-3
C ₁₉ H ₂₂ +	(7.3) IP is onset of photon	(207) toelectron l	(867) pand (81ZHO)	39 KOV).	163	*EST	
$\begin{array}{c c} C_{20}F_{24}^{+} \\ & & \\ & & \\ F_{2} & & \\ & & \\ & & \\ \end{array}$	10.75 IP is onset of pho	(-761) toelectron l	(-3183) pand (84HEI/\	-1009 VIR).	-4220	*EST	32936-99-5

Table 1. Positive Ion Table - Continued

	Table .	2. 1 051617	e Ion Table	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Ic		Δ _f H(Ne kcal/mol	utral) kJ/moi	Neutral reference	CAS registry number
C ₂₀ H ₁₂ +	7.12±0.01	233	976	69	289	77STE/GOL	50-32-8
	7.41 IP from 79CLA/S	(233) CH.	(976)	62	261	77STE/GOL	192-97-2
	6.90±0.01	233	974	74±1	308±4	77PED/RYL	198-55-0
000	6.84 IP from 81SAT/SI	(270) EK.	(1129)	112	469	*EST	4670-86-4
0000	(6.58)	(269)	(1126)	117	491	*EST	54100-60-6
	(6.76)	(273)	(1143)	117	491	*EST	6580-41-2
C ₂₀ H ₁₂ Br ₂ ⁺ Br	(8.1) IP from 83MAR/N	(265) MAY.	(1107)	78	326	*EST	
C ₂₀ H ₁₃ ⁺	From proton affin	228 ity of peryle	954 ene (RN 198-55-0)). PA = 21	1.4 kcal/mol, 884.	kJ/mol.	

Table 1. Positive Ion Table - Continued

	Table	I. Positi	ve Ion Table -	Continu	ued 		
ION Neutral	Ionization potential eV	Δ _f H(Io	on) kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry
C ₂₀ H ₁₃ Br ⁺	(7.9) IP is onset of phot	(260) toelectron t	(1086) pand (83MAR/MA	77 .Y).	324	*EST	
C ₂₀ H ₁₄ +	(7.8) IP is onset of phot	(257) coelectron t	(1074) pand (83MAR/MA	77±3 .Y, 82HAS/	322±13 NEU).	77PED/RYL	
C ₂₀ H ₁₄ N ₄ +	6.6 IP from 80DUP/R	-86.4 OB.	-361.5	-238.6±0.4	-998.3±1.7	70LON/FIN	101-60-0
C ₂₀ H ₁₄ O ₂ +	(7.08±0.02) IP from 81BOU/E	(172))AG.	(721)	9	38	81BOU/DAG	75694-46-1
C ₂₀ H ₁₆ +	(7.9) IP is onset of phot	(354) oelectron b	(1481) pand (81GLE/SCH	172 I).	719	*EST	
H ₃ C OOO CH	3 (7.20) IP from 81AKI/HA	(210) AR.	(878)	43.9±0.9	183.7±3.9	77PED/RYL	316-51-8
СН3 СН	3 (7.18) 3 IP from 81AKI/HA	(232) AR.	(971)	66	278	*EST	35187-19-0
CH ₃ CH ₃	(7.10) IP from 81AKI/HA	(230) AR.	(963)	66.4±1.0	277.7±4.4	77PED/RYL	57-97-6

Table 1. Positive Ion Table - Continued

	Table	I. FUSIC	ive ion labi	e - Contin	<u>-</u>		
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	(Ion) ol kJ/mol	Δ _f H(No kcal/mol	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂₀ H ₁₆ ClN ₂ O ₃ + H ₂ N O NH ₂	(7.80±0.05) IP from 81TIM/K	(157) OR.	(656)	-23	-9 7	*EST	
C ₂₀ H ₁₈ +	(7.4) IP is onset of pho	(244) toelectron	(1020) a band.	73	306	*EST	4432-72-8
C ₂₀ H ₂₀ +	(7.6) IP is onset of pho	(233)	(975) band.	58	242	*EST	
	(7.4) IP is onset of photon	(226) coelectron	(944) band.	55	230	*EST	
	(7.35) IP is onset of phot	(237) coelectron	(993) band (81ZHO/	68 HEI).	284	*EST	
C ₂₀ H ₂₀ NP ⁺ PN-C ₂ H ₅	(≤7.43)	(≤216)	(≤903)	44±2	186±9	77PED/RYL	47182-04-7
С ₂₀ H ₂₀ O + 0	(≤8.88) IP from 82PFI/GE	(≤186) ER.	(≤778)	-19	79	*EST	72036-53-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Ion) kcal/mol kJ/mo	Δ _f H(Ne l kcal/mol		Neutral reference	CAS registry number
C ₂₀ H ₂₀ U+	(≤6.02) IP from 83GRE/	(≤300) (≤1256) PAY.) 161	675	*EST	70377-87-6
C ₂₀ H ₂₄ +	(7.2) IP is onset of pho	(200) (838) otoelectron band (81	34 ZHO/KOV).	144	*EST	
	(≤7.55±0.05) IP from 81ZHO/	(≤209) (≤872) KOV.	34	144	•EST	
	≤7.60±0.05 IP from 81ZHO/	(≤210) (≤877) KOV.	34	144	*EST	
C ₂₀ H ₂₄ O ₆ +	(7.5) IP is onset of pho	(1.8) (7.6) stoelectron band (83)	-171 BAK/ARM).	-716	*EST	
C ₂₀ H ₂₄ U+ C ₂₁ ts	(5.9) IP is onset of pho	(215) (900) stoelectron band (836	79 GRE/PAY).	331	*EST	37274-10-5
C ₂₀ H ₂₆ N ₂ O ₃ +	(≤7.61) IP from 81MIL/C ~ ^{O(CH} 2 ¹ ,CH ₃	(≤156) (≤654) CIL.	-19	-80	*EST	17051-01-3

Table 1. Positive Ion Table - Continued

Table 1. Positive ion Table - Continued										
ION Neutral	Ionization potential	•	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number			
C ₂₀ H ₂₈ Cr ⁺ C ₁₀ CH ₂ CH ₂ CH ₂ CH ₂ CH ₃	(≤5.23) IP from 82CAB/	(≤128) COW.	(≤538)	8	33	*EST	51951-64-5			
CH ₃	(≤4.85) IP from 82CAB/	(≤108) COW.	(≤454)	-3	-14	*EST	57820-98-1			
C ₂₀ H ₃₀ Cl ₂ Zr ⁺ CH(CH ₃ l ₂ CH(CH ₃ l ₂ CI CI CH(CH ₃ l ₂ CI CI CI CH(CH ₃ l ₂ CI CI CH(CH ₃ l ₂ CH(CH ₃ CH(CH ₃ l ₂ CH(CH ₃ CH	7.1 IP is onset of pho	(60) otoelectron t	(252) pand (81CIL/Co	-103±1 DN).	-433±4	82PIL/SKI	54039-38-2			
C ₂₀ H ₃₀ S ₂ +	(7.5) IP is onset of pho	(125) otoelectron b	(524) pand.	-48	-200	*EST	34895-45-9			
С20Н36+	(5.9) IP is onset of pho	(226) otoelectron b	(946) eand.	90±5.5	377±23	*EST	66809-05-0			
(CH ₃) ₃ C (CH ₃) ₃	(7.1) IP is onset of pho	(257) otoelectron b	(1076) vand.	93±5.5	391±23	*EST	66809-06-1			
C ₂₀ H ₃₆ O ₆ +	(8.6) IP is onset of pho	(–59) otoelectron b	(-248) and.	-258	-1078	*EST	16069-36-6			
C ₂₀ H ₄₄ Hf ⁺ ((CH ₃) ₃ CCH ₂) ₄ Hf	(8.1) IP is onset of pho	(132)	(554) and.	-54±9	-228±33	86SIM/BEA	50654-35-8			

Table 1. Positive Ion Table - Continued

	·	ve ion Table	- Contin			
Ionization potential eV					Neutral reference	CAS registry number
(7.7) IP is onset of pho	(140) toelectron t	(586) band.	-38±8	-157±33	86SIM/BEA	36945-13-8
(7.7) IP is onset of phot	(345) toelectron t	(1442) pand (81GLE/S	167 SCH).	699	*EST	
(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(217) AR.	(909)	54	228	*EST	35187-24-7
(≤7.55±0.05) IP from 81ZHO/k	(≤199) KOV.	(\$831)	25	103	*EST	
(8.17) 3 IP from 84HOW/0	(111) GON.	(466)	-77	-322	*EST	21411-39-2
7.15 See also: 80MAU.	237	992	72	302	77STE/GOL	191-24-2
(6.92±0.04)	(233)	(978)	74	310	77STE/GOL	191-26-4
(8.07±0.05)	(196)	(823)	10±2	44±9	77PED/RYL	3029-32-1
	(7.7) IP is onset of photo (7.7) IP is onset of photo (7.7) IP is onset of photo (3.17) IP from 81ZHO/F (8.17) IP from 84HOW/6 7.15 See also: 80MAU.	eV kcal/mol (7.7) (140) IP is onset of photoelectron is (7.7) (345) IP is onset of photoelectron is (7.06±0.03) (217) IP from 81AKI/HAR. (≤7.55±0.05) (≤199) IP from 81ZHO/KOV. (8.17) (111) IP from 84HOW/GON. 7.15 237 See also: 80MAU.	(7.7) (140) (586) IP is onset of photoelectron band. (7.7) (345) (1442) IP is onset of photoelectron band (81GLE/S) (7.06±0.03) (217) (909) IP from 81AKI/HAR. (≤7.55±0.05) (≤199) (≤831) IP from 81ZHO/KOV. (8.17) (111) (466) IP from 84HOW/GON. 7.15 237 992 See also: 80MAU.	eV kcal/mol kJ/mol kcal/mol (7.7) (140) (586) -38±8 IP is onset of photoelectron band. (7.7) (345) (1442) 167 IP is onset of photoelectron band (81GLE/SCH). 3 (7.06±0.03) (217) (909) 54 IP from 81AKI/HAR. (≤7.55±0.05) (≤199) (≤831) 25 IP from 81ZHO/KOV. (8.17) (111) (466) -77 IP from 84HOW/GON. 7.15 237 992 72 See also: 80MAU. (6.92±0.04) (233) (978) 74	eV kcal/mol kJ/mol kcal/mol kJ/mol kcal/mol kJ/mol (7.7) (140) (586) -38±8 -157±33 IP is onset of photoelectron band. (7.7) (345) (1442) 167 699 IP is onset of photoelectron band (81GLE/SCH). 3 (7.06±0.03) (217) (909) 54 228 IP from 81AKI/HAR. (≤7.55±0.05) (≤199) (≤831) 25 103 IP from 81ZHO/KOV. (8.17) (111) (466) -77 -322 IP from 84HOW/GON. 7.15 237 992 72 302 See also: 80MAU.	eV kcal/mol kJ/mol kcal/mol kJ/mol reference (7.7) (140) (586) -38±8 -157±33 86SIM/BEA IP is onset of photoelectron band. (7.7) (345) (1442) 167 699 *EST IP is onset of photoelectron band (81GLE/SCH). 3 (7.06±0.03) (217) (909) 54 228 *EST IP from 81AKI/HAR. (57.55±0.05) (≤199) (≤831) 25 103 *EST IP from 81ZHO/KOV. (8.17) (111) (466) -77 -322 *EST IP from 84HOW/GON. 7.15 237 992 72 302 77STE/GOL See also: 80MAU.

Table 1. Positive Ion Table - Continued

Table 1. Positive foil Table - Continued											
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(New kcal/mol		Neutral reference	CAS registry number				
C ₂₂ H ₁₃ +	From proton affin H [†] 872. kJ/mol.	229 ity of 1,12-b	960 enzoperylene (RN	N 191-24-2).	PA = 208.5 kca	l/mol,					
$C_{22}H_{14}^{+}$											
	6.61±0.02 See also: 84STA/N	(237) MAQ.	(992)	85	354	*EST	135-48-8				
0000	7.00 See also: 75CLA/S	(244) SCH.	(1020)	82	345	*EST	226-88-0				
	7.27±0.02 See also: 79CLA/S	(250) SCH.	(1046)	82	345	*EST	222-93-5				
	7.47±0.04 See also: 75CLA/S	(269) SCH.	(1127)	97	406	*EST	188-52-3				
	7.39±0.02 See also: 75CLA/S	251 SCH, 79CLA	1049 \/SCH.	80	336	77STE/GOL	215-58-7				
© PO_C	7.38±0.04 See also: 75CLA/S	250 SCH.	1048	80	336	77STE/GOL	53-70-3				
	(7.40±0.02) See also: 75CLA/S	(251) SCH.	(1050)	80	336	77STE/GOL	224-41-9				

Table 1. Positive Ion Table - Continued

	Table .	1. Positive Ion Tabl	e - Contin	uea		
ION Neutral	Ionization potential eV	Δ _f H(Ion) kcal/mol kJ/mol	Δ _f H(Ne	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂₂ H ₁₄ +						
©PoPo		(250) (1048) ansfer equilibrium consta	78 nt determinatio	326 ons (80MAU),	*EST in	213-46-7
	(7.14±0.04)	(245) (1024)	80	336	*EST	214-17-5
C ₂₂ H ₁₅ +			· · · - · · · · · · · · · · · · · · · ·			
	From proton affin	240 1005 ity of picene (RN 213-46	-7). PA = 203.	4 kcal/mol, 851	. kJ/mol.	
C ₂₂ H ₂₂ ⁺	(7.35) IP is onset of phot	(256) (1072) coelectron band (84ZHO	87 /HEI).	363	*EST	
C ₂₂ H ₂₂ O ₄ +						
H ₃ C 0 0 0 CH ₃ C - C - C - C - CH ₃	(≤8.6) 3 IP from 85GLE/D	(≤76) (≤318) OOB.	-122	-512	*EST	19909-65-0
C ₂₂ H ₂₈ +						
	(7.0) IP is onset of phot	(176) (737) coelectron band (81ZHO)	15 /KOV).	62	*EST	
C ₂₂ H ₂₈ O+						
CH3)2CH————————————————————————————————————	(7.9) IP is onset of phot	(137) (574) coelectron band (78CEN/	-45±2 FRA).	−189±7	82INA/MUR	33574-11-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Io		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
C ₂₂ H ₃₀ N ₂ O ₃ +	15 ^H 11 (≤7.63) IP from 81MIL/C	(≤147) XIL.	(≤616)	-29	-120	*EST	19482-05-4
C ₂₃ H ₃₀ +	(≤7.40±0.05) IP from 81ZHO/	(≤182) KOV.	(≤763)	12	49	*EST	
C ₂₃ H ₃₀ O +	(≤8.15±0.03)	(≤150)	(≤626)	−38±4	-160±15	77PED/RYL	25401-43-8
СН ₃ 1 ₂ HC — СНСН ₃ 1 ₂ СН3	(7.6) IP is onset of pho	(125) stoelectron t	(523) pand (78CEN/F	-50 RA).	-210	*EST	78823-28-6
C ₂₄ H ₁₂ ⁺	7.29 IP at 298 K from See also: 81CLA/		1026 sfer equilibria, î	77 7.26 eV (80M.A	323 M. re-evaluated	<i>77S</i> TE/GOL i).	191-07-1
С ₂₄ H ₁₃ ⁺	From proton affi	238 nity of coror	995 nene (RN 191-0	7-1). PA = 20	05.0 kcal/mol, 8:	58. kJ/mol.	
C ₂₄ H ₁₄ ⁺	(6.95) IP from 79CLA/5	(243) SCH.	(1018)	83	348	77STE/GOL	189-55-9

Table 1. Positive Ion Table - Continued

	Table	1. Positiv	e Ion Table	- Contin	ued		
ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry
C ₂₄ H ₁₆ ⁺	(7.48)	(321)	(1342)	148	620	*EST	14620-98-5
	IP from 82GLE/C		(13.2)	210	320	231	11020-50-5
	7.58 IP from 82GLE/C	(323) GUB.	(1351)	148	620	*EST	15065-28-8
	(7.1) IP is onset of photo	(305) toelectron b	(1274) eand.	141	589	*EST	43012-17-5
C ₂₄ H ₂₀ +							
Syn	(7.0) IP is onset of phot	(250) coelectron b	(1046) and.	89	371	*EST	14724-91-5
© © ©	(7.3) IP is onset of phot	(257) oelectron b	(1075) and.	89	371	*EST	17341-02-5
achiral	(6.8) IP is onset of phot	(245) oelectron b	(1027) and.	89	371	*EST	54835-57-3
chiral	(7.1) IP is onset of phot	(253) oelectron ba	(1058) and.	89	373	*EST	54835-57-3
00 00	7 (7.3) IP is onset of photo	(240) oelectron ba	(1005) and.	72	301	*EST	73608-51-2

Table 1. Positive Ion Table - Continued

			- Ton Tubic				
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₂₄ H ₂₀ +	(7.0) IP is onset of phot	(317) coelectron b	(1325) and.	155	650	*EST	7130-24-7
C ₂₄ H ₂₀ Ge +	(8.1) IP is onset of phot	(293) coelectron b	(1226) and (84NOV/F	(106±6) POT).	(445±24)	77PED/RYL	1048-05-1
C ₂₄ H ₂₀ Pb ⁺	(8.0) IP is onset of phot	(346) oelectron b	(1446) and (84NOV/F	161±4 POT).	674±15	78STE	595-89-1
C ₂₄ H ₂₀ Si ⁺	(8.50±0.03) See also: 84NOV/	(278) POT.	(1162)	82±1	342±6	82PIL/SKI	1048-08-4
C ₂₄ H ₂₀ Sn +	(8.34±0.03) See also: 84NOV/I	(329) POT.	(1378)	137±2	573±8	77KAN/MOR	595-90-4
C ₂₄ H ₂₄ +	(7.3) IP is onset of phot	(253) oelectron b	(1057) and.	84	353	*EST	60144-50-5
C ₂₄ H ₂₄ Cr ₂ N ₄ O ₄ ⁺	(6.5) IP is onset of photo		(-171) and.	-191±2	-798±9	81CAV/GAR	67634-82-6

Table 1. Positive Ion Table - Continued

	Table	1. 1 03111	VC TOIL TABLE	- Contin			
ION Neutral	Ionization potential	∆ _f H(l kcal/mol	ion) kJ/moi	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂₄ H ₂₄ M ₀₂ N ₄ O ₄ +	(5.5) IP is onset of pho	(-16) toelectron	(-66) band.	-143±2	−597±9	81CAV/GAR	67634-80-4
C ₂₄ H ₃₂ +	(6.9) IP is onset of pho	(168) toelectron	(702) band (81ZHO)	9 /KOV).	36	*EST	
C ₂₄ H ₃₂ U+	(≤6.05) IP from 83GRE/I	(≤199) 'AY.	(≤831)	59	247	*EST	37274-12-7
C(CH3)3	(≤6.03) IP from 83GRE/I	(≤193) 'AY.	(≤809)	54	227	*EST	63230-70-6
C II N O +)-n-C ₆ H ₁₃ (≤7.55) IP from 81MIL/C	(≤136) IIL.	(≤568)	-38	-160	*EST	2587-42-0
C24H36Cr + H3C CH3 H3C CCH3 H3C CCCH3 H3C CCCCH3 H3C CCCCH3 H3C CCCCCH3	(≤4.68)	(≤87)	(≤364)	−21±3	-88±12	82PIL/SKI	12243-39-9
C ₂₅ H ₁₆ ⁺	(7.5) IP is onset of pho	(286) toelectron	(1199) band.	114	475	*EST	159-66-0

Table 1. Positive Ion Table - Continued

ION	l Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Nekcal/mol		Neutral reference	CAS registry number
C ₂₄	H ₁₄ +	(6.89)	(240)	(1004)	81	339	*EST	197-70-6
		(7.35) IP from 79CLA/S	(253) CH.	(1057)	83	348	*EST	193-09-9
		7.39 IP from 79CLA/S	(249) CH.	(1042)	79	329	*EST	192-51-8
		(6.71)	(237)	(991)	82	344	*EST	191-85-5
		(6.82) IP from 79CLA/So	(243) CH.	(1015)	85	357	*EST	
		(6.82) IP from 79CLA/Se	(240) CH.	(1006)	83	348	77STE/GOL	189-64-0
		(7.11) IP from 79CLA/So	(245) CH.	(1025)	81	339	*EST	
		(7.07) IP from 79CLA/S0	(245) CH.	(1026)	82	344	*EST	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f <i>H</i> (Io	on)	$\Delta_f H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
C ₂₅ H ₂₀ +	(8.0) IP is onset of pho	(280) otoelectron b	(1170) pand (84NOV/PC	95±1 OT).	398±4	77PED/RYL	630-76-2
C ₂₆ H ₁₄ +	(7.12)	(248)	(1038)	84	351	*EST	190-95-4
© <u></u>	6.72±0.02	(241)	(1008)	86	360	*EST	188-96-5
	(6.99)	(247)	(1034)	86	360	*EST	5869-30-7
	(6.96)	(244)	(1022)	84	351	*EST	190-84-1
	(6.82±0.04)	(243)	(1018)	86	360	*EST	188-89-6
C ₂₆ H ₁₆ +	(7.37)	(290)	(1213)	120	502	*EST	187-83-7
00000	(6.61±0.02)	(251)	(1050)	99	413	*EST	239-98-5

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne		Neutral reference	CAS registry
C ₂₆ H ₁₆ ⁺	7.17±0.02	(267)	(1117)	102	425	*EST	217-42-5
	(7.36)	(262)	(1095)	92	385	*EST	217-37-8
	6.97±0.02 See also: 75CLA/5	(255) SCH, 79CL₄	(1067) A/SCH.	94	394	*EST	216-00-2
8000	(6.99±0.02) See also: 75CLA/5	(258) SCH.	(1078)	96	403	*EST	227-04-3
	(6.97±0.04)	(257)	(1076)	96	403	*EST	217-54-9
	7.20±0.02 See also: 75CLA/S	(256) SCH, 79CLA	(1072) A/SCH.	90	377	*EST	191-68-4
	(6.36±0.02) See also: 75CLA/S	(247) SCH.	(1035)	101	422	*EST	258-31-1
	(6.92±0.02)	(258)	(1080)	99	413	*EST	222-78-6

Table 1. Positive Ion Table - Continued

	Table	1. Positi	ve Ion Table	- Contin	ued		
ION Neutral	Ionization potential	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(No	eutral) kJ/mol	Neutral reference	CAS registry number
C ₂₆ H ₁₆ +	(7.19±0.02)	(253)	(1057)	87	363	*EST	220-77-9
	7.15±0.02	(258)	(1080)	93	390	*EST	196-64-5
	(6.83±0.02)	(254)	(1062)	96	403	*EST	220-82-6
900	7.40±0.02 See also: 75CLA/	(263) SCH.	(1099)	92	385	*EST	215-26-9
	(7.20±0.02)	(262)	(1098)	96	403	*EST	222-54-8
C ₂₆ H ₂₅ CIN ₂ O ₃ + C ₂ H ₅ N O NC ₂ CI CC ₂ CC ₂ H	IP from 81TIM/K	(115) OR.	(483)	-45	-187	*EST	989-38-8
C ₂₆ H ₃₈ N ₂ O ₃ +	∕0-n-C ₇ H ₁₅ (≤7.57) IP from 81MIL/C	(≤127) IL.	(≤530)	-48	-200	*EST	2635-26-9
C ₂₆ H ₄₆ + СH ₃ (CH ₂) ₁₆ -СH-СH ₂ CH	3 (8.95±0.10)	(123)	(516)	-83±1.2	-348±5	77PED/RYL	72557-70-1

Table 1. Positive Ion Table - Continued

		20 2 00101	e ion fable	- Continued				
ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number	
C ₂₈ H ₁₄ ⁺	(7.08)	(248)	(1037)	84	353	*EST	190-70-5	
	(6.92±0.04)	(249)	(1040)	89	372	*EST	190-71-6	
	(6.30)	(234)	(980)	89	372	*EST	190-39-6	
C ₂₈ H ₁₆ ⁺	(6.51)	(252)	(1055)	102	426	*EST	191-87-7	
	(6.64)	(247)	(1033)	94	392	*EST	191-81-1	
	(6.51)	(247)	(1035)	97	406	*EST	190-36-3	
	(6.96) IP from 79CLA/S0	(262) CH.	(1098)	102	426	*EST	191-20-8	
	(6.99) IP from 79CLA/SO	(256) CH.	(1072)	95	397	*EST	192-47-2	

Table 1. Positive Ion Table - Continued

			- Ton Tubic	Continuou			
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₂₈ H ₁₆ +	(6.85)	(253)	(1058)	95	397	*EST	197-69-3
	(6.83) IP from 79CLA/S	(257) CH.	(1075)	99	416	*EST	
	(7.00) IP from 79CLA/S	(252) CH.	(1055)	91	380	*EST	
	(7.00±0.04)	(250)	(1044)	88	369	*EST	385-14-8
	(6.57) IP from 79CLA/S	(253) CH.	(1059)	102	425	*EST	196-45-2
	(6.82)	(254)	(1064)	97	406	*EST	14147-38-7
	(6.95) IP from 79CLA/St	(260) CH.	(1086)	99	416	*EST	193-11-3
	(6.86)	(253)	(1059)	95	397	*EST	197-74-0

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Nekcal/mol		Neutral reference	CAS registry
C ₂₈ H ₁₆ +	(7.33±0.04) See also: 79CLA/5	(264) SCH.	(1104)	95	397	*EST	192-59-6
C ₂₈ H ₃₂ ClN ₂ O ₃ +							
(C ₂ H ₅) ₂ N O N(C ₂ H ₅) ₂	(6.70±0.05) IP from 81TIM/K	(109) OR.	(455)	-4 6	-191	*EST	
C ₃₀ H ₁₄ ⁺	(6.50)	(244)	(1021)	94	394	*EST	190-31-8
	(6.42±0.02)	(244)	(1022)	96	403	*EST	190-55-6
C ₃₀ H ₁₆ ⁺	(7.04)	(269)	(1125)	107	446	*EST	14258-76-5
] (6.78)	(265)	(1110)	109	455	*EST	5869-31-8
	(6.97)	(254)	(1063)	93	391	•EST	190-87-4
	(6.90±0.04)	(259)	(1086)	100	420	*EST	385-13-7

Table 1. Positive Ion Table - Continued

		1. FUSILIV	re Iuii Tabi	le - Contin	ucu ———————		
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C30H16+	(6.42±0.02)	(246)	(1029)	98	409	*EST	188-72-7
	(7.13)	(260)	(1088)	96	400	*EST	190-81-8
	(6.77)	(256)	(1072)	100	419	*EST	190-85-2
C30H18+	(7.35±0.02)	(280)	(1171)	110	462	*EST	196-62-3
00000	(6.59±0.02)	(280)	(1172)	128	536	*EST	222-81-1
	(7.19±0.02)	(273)	(1144)	108	450	*EST	27798-46-5
	6.62±0.02 See also: 75CLA/S	(263) SCH.	(1101)	110	462	*EST	216-08-0
90000	(6.64±0.02)	(264)	(1103)	110	462	*EST	227-09-8

Table 1. Positive Ion Table - Continued

Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number		
C ₃₀ H ₁₈ +	(7.17±0.02)	(276)	(1154)	110	462	*EST	213-44-5		
0000	(6.89±0.02)	(274)	(1145)	115	480	*EST	222-75-3		
	(7.04±0.02)	(275)	(1150)	113	472	*EST	222-58-2		
	(7.25)	(314)	(1315)	147	616	*EST	16914-68-4		
	7.43±0.02 See also: 75CLA/S	(275) SCH.	(1151)	104	434	*EST	215-11-2		
	(6.99±0.02) See also: 75CLA/S	(269) SCH.	(1127)	108	453	*EST	215-96-3		
C ₃₀ H ₃₆ CIN ₂ O ₃ +			**************************************						
(C ₂ H ₅) ₂ N	(6.58±0.05) IP from 81TIM/KC	(99) DR.	(416)	-52	-219	*EST			
C ₃₂ H ₁₄ +	6.71 See also: 81CLA/F	254 ROB.	1062	99	415	77STE/GOL	190-26-1		

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	∆ _f H(1 kcal/mol	on) l kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry			
C ₃₂ H ₁₆ +	(7.04)	(263)	(1101)	101	422	*EST	190-66-9			
	(6.92)	(260)	(1089)	101	422	*EST	190-72-7			
	(6.88)	(264)	(1104)	105	440	*EST	190-74-9			
C ₃₂ H ₁₈ ⁺	(6.65) IP from 79CLA/S	(269) CH.	(1125)	115	483	*EST	189-43-5			
	(6.94) IP from 79CLA/S	(274) CH.	(1145)	114	475	*EST				
00000	(6.91) IP from 79CLA/S	(270) CH.	(1132)	111	465	*EST	192-60-9			
	(6.42) IP from 79CLA/S0	(264) CH.	(1103)	115	483	*EST				
	(7.02) IP from 79CLA/S0	(276) CH.	(1153)	114	476	*EST				

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne-		Neutral reference	CAS registry
C ₃₂ H ₁₈ +	(6.99) IP from 79CLA/S	(277) CH.	(1153)	116	485	*EST	
	(6.36) IP from 79CLA/S	(264) CH.	(1107)	118	493	*EST	196-46-3
	(7.30±0.04)	(279)	(1169)	111	465	*EST	192-54-1
C34H16+	(6.74±0.02)	(261)	(1093)	106	443	*EST	188-11-4
	6.82±0.02	(261)	(1092)	104	434	*EST	187-94-0
C34H18+	(6.59±0.02)	(265)	(1109)	113	473	*EST	
	(6.48±0.02)	(263)	(1102)	114	477	*EST	
	(6.42±0.02)	(262)	(1097)	114	477	*EST	190-93-2

Table 1. Positive Ion Table - Continued

	Table 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H() kcal/mo	lon) l kJ/mol		leutral) l kJ/mol	Neutral reference	CAS registry number			
C34H18+	(6.59±0.02)	(265)	(1109)	113	473	*EST	191-46-8			
	(6.84)	(267)	(1119)	110	459	*EST	313-63-3			
	(6.27±0.02)	(256)	(1073)	112	468	*EST	191-79-7			
	(6.22±0.02)	(260)	(1088)	117	488	*EST	188-13-6			
	6.58	(276)	(1155)	124	520	*EST	191-53-7			
C ₃₄ H ₂₀ +	(7.15)	(327)	(1370)	162	680	*EST	20495-12-9			
	(6.83±0.02)	(280)	(1172)	123	513	*EST	385-15-9			
)] (6.90±0.02)	(286)	(1196)	127	530	*EST	214-87-9			

Table 1. Positive Ion Table - Continued

	Table	I. PUSILIV	e ion table	1able 1. Positive Ion Table - Continued									
ION Neutral	Ionization potential eV	Δ _f H(Ic		Δ _f H(Net kcal/mol		Neutral reference	CAS registry						
C ₃₄ H ₂₀ +	(7.00±0.02)	(281)	(1177)	120	502	*EST	215-95-2						
	(6.73±0.02)	(278)	(1162)	122	513	*EST	385-16-0						
C ₃₆ H ₁₆ +	(6.76±0.02)	(267)	(1117)	111	464	*EST	53086-28-5						
	(6.70±0.04)	(265)	(1111)	111	464	*EST	190-47-6						
C36H18+	(≤7.10)	(≤284)	(≤1187)	120	502	*EST	188-00-1						
	(6.88) IP from 79CLA/S	(306) CH.	(1282)	148	618	*EST							
	(6.88)	(271)	(1135)	113	471	*EST	313-62-2						
C ₃₆ H ₂₀ +	(6.68)	(284)	(1190)	130	545	*EST	197-73-9						

Table 1. Positive Ion Table - Continued

	Table	1. 1 05111	C IUII Tab	le - Contin	ucu		
ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
C ₃₆ H ₂₀ +	(6.82)	(287)	(1202)	130	544	*EST	36474-85-8
	(6.95) IP from 79CLA/S	(286) CCH.	(1195)	125	525	*EST	
0000	(6.74) IP from 79CLA/S	(283) CH.	(1183)	127	533	*EST	
C38H16+	(6.81±0.02)	(271)	(1134)	114	477	*EST	41163-25-1
C38H18 ⁺	(6.38±0.02)	(270)	(1132)	123	516	*EST	190-90-9
	(6.50±0.02)	(277)	(1158)	127	531	*EST	190-89-6
C ₃₈ H ₂₀ ⁺	(6.58) IP from 79CLA/S	(282) CH.	(1181)	130	546	*EST	
	(6.06±0.02)	(266)	(1112)	126	528	*EST	187-96-2

Table 1. Positive Ion Table - Continued

ION							
ION Neutral	Ionization potential eV	∆ _f <i>H</i> (Io kcal/mol		$\Delta_{\mathbf{f}}H$ (Ne kcal/mol		Neutral reference	CAS registry number
C38H20+	(6.40±0.02)	(273)	(1144)	126	527	*EST	34814-77-2
000000	(6.72)	(285)	(1193)	130	545	*EST	14529-73-8
C ₃₈ H ₂₂ +							
	(7.07)	(365)	(1527)	202	844	*EST	20495-14-1
	6.65±0.02 See also: 75CLA/5	(290) SCH.	(1212)	136	570	*EST	216-07-9
C ₄₀ H ₂₀ +			···				
	(6.11±0.02)	(270)	(1128)	129	539	*EST	188-73-8
C ₄₂ H ₁₈ ⁺	6.87±0.02	(280)	(1170)	121	508	*EST	190-24-9
C ₄₂ H ₂₀ +	(6.72±0.02)	(287)	(1199)	132	551	*EST	34814-80-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	Ion) i kJ/mol	Δ _f H(Ne- kcal/mol		Neutral reference	CAS registry number
C ₄₂ H ₂₂ +	(6.22) IP from 79CLA/S	(294) CH.	(1231)	151	631	*EST	190-09-0
	(6.71±0.02)	(283)	(1186)	129	538	*EST	190-22-7
	(6.18±0.02)	(282)	(1181)	140	585	*EST	34814-82-9
C ₄₂ H ₂₄ +	(6.99)	(390)	(1633)	229	959	*EST	57520-29-3
	(7.52±0.02)	(356)	(1491)	183	765	*EST	190-23-8
0000	(6.85±0.02)	(317)	(1326)	159	665	*EST	214-77-7
C ₄₂ H ₂₈ +	6.41 IP from 81SAT/S	334 EK.	1399	187±5	781±22	77PED/RYL	517-51-1
C ₄₄ H ₂₀ +	(6.79±0.02)	(287)	(1199)	130	544	*EST	70346-75-7

Table 1. Positive Ion Table - Continued

	Tubic .	1. 1 OSICIV	C TOIL TUDIC	Contin			
ION Neutral	Ionization potential eV	∆ _f H(Io		Δ _f H(Nekcal/mol		Neutral reference	CAS registry number
C ₄₄ H ₂₂ +	(6.80) IP from 79CLA/S	(333) CH.	(1394)	176	738	*EST	
C ₄₆ H ₂₆ +	(6.95)	(417)	(1744)	256	1073	*EST	57468-45-8
	(6.88±0.02)	(325)	(1360)	166	696	*EST	62662-49-1
C48H24+	(6.75)	(297)	(1242)	141	590	*EST	1065-80-1
C ₅₀ H ₂₆ ⁺	(6.70) IP from 79CLA/S	(329) СН.	(1379)	175	732	*EST	72382-92-4
C ₅₀ H ₂₈ +	(6.93)	(444)	(1856)	284	1187	*EST	57468-46-9
C ₅₄ H ₃₀ ⁺	(6.91)	(470)	(1968)	311	1302	*EST	24386-06-9
——————————————————————————————————————	····						

Table 1. Positive Ion Table - Continued

		1. Positi	ve ion table	e - Continu	iea		<u></u>
ION Neutral	Ionization potential eV	Δ _f H(kcal/mo	lon) I kJ/mol	Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
C ₅₈ H ₃₂ +				<u> </u>			
000	(6.88)	(497)	(2080)	338	1416	*EST	57483-71-3
Ca ⁺							
Ca	6.11321±0.00002	183.6 183.5	768.0 767.5	42.6 <i>42.5</i>	178.2 177.7	82TN270	7440-70-2
CaCl ⁺						 -	
CaCl	5.61±0.13	106 <i>106</i>	443 444		-103.4±5.0 -102.7±5.0	87GAR/PAR	15606-71-0
	IP and $\Delta_f H(Ion)$	derived fro	om onset of end	othermic reacti	on (84MEY/S	CH).	
CaCl ₂ +							
CaCl ₂	(≤10.0)	(≤118)	(≤494)	-113	-471	82TN270	10043-52-4
_		(≤118)	(≤493)	-113	-472		
	See also: 82EMO	/KIE, 79LI	BE/POT2.				
CaH ⁺							
CaH	(5.86±0.09)	(190)	(794)	55	229	82TN270	14452-75-6
	Value for Δ _f H(Io good agreement (55 ergy of endother	230 rmic reaction is	s in	
CaHO+							
СаОН	5.7	(89)	(371)	-42.0	-175.7	87GAR/PAR	12177-67-2
	$\Delta_f H$ (Ion) from or 0 K values.	nset of end	othermic reacti	on (83MUR).	See also: 81MU	JR.	
CaI+							
CaI	(6.1±0.3)	(139)	(584)	-1±21	-5±84	79HUB/HER	15923-87-2
		(137)	(572)	-4	-17		
CaI ₂ +							
Cal ₂	(8.7)	(139)	(581)	-62±4	-258±17	85JANAF	10102-68-8
2	()	(140)	(584)	-61±4	-255±17		30202 00 0
	IP is onset of pho					•	
CaO+			, , , , , , , , , , , , , , , , , , , 				
CaO	(6.9) IP from 83MUR.	(166)	(693)	(6±4)	(27±17)	83PED/MAR	1305-78-8
CaO ₄ W ⁺							
CaWO ₄	(9.8)	(0)	(0)	-226	-946	76DEL/HAL	
	V /						
Cd+		AC 1 =	000		440.5	0.000	- 446
Cd	8.993	234.2	979.7	26.8	112.0	82TN270	7440-43-9
		<u>234.2</u>	<u>979.8</u>	<i>26.8</i>	112.1		

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Ce +							
Се	5.5387±0.0004	229	957	101	423	82TN270	7440-45-1
		229	957	101.1	423.4		
CeI ₃ +		-					
CeI ₃	8.7	101	422	-100	-4 17	82TN270	
	IP is onset of pho	toelectron b	and (83RUS/	G00).			
CeO +				······································			
CeO	(4.90±0.1)	(81)	(339)	-32±3	-134±12	83PED/MAR	12014-74-3
		(81)	(341)	-32	-132		
CeS+				-			
CeS	(6.0±0.6)	(170)	(710)	31	131	82TN270	12014-82-3
	, ,	(170)	(713)	32	134	-	•
Tea+							
Ce ₂ + Ce ₂	(5.6±0.4)	(273)	(1142)	144	602	82TN270	12595-88-9
4	` ,	(274)	(1147)	145	607	-	
Cr+							
Cf	6.3	192	804	47	196	85KLE/WAR	7440-71-3
	See: 81CHE/GAE						
CI +							A
Cl	12.967	328	1372	29.0	121.3	85JANAF	22537-15-1
		328	1371	28.6	119.6		
	See also: 81KIM/k	KAT.					
ClCs +							
CsCl	(7.84±0.05)	(122)	(510)	-59	-247	84PAR/WEX	7647-17-8
		(122)	(512)	-58.4±1.8	-244.4±7.5		
	A value of 8.32±0.	1 eV has also	o been report	ed for the ioniz	ation potentia	l.	
CICsNa +					 -		· · · · · · · · · · · · · · · · · · ·
NaCsCl	3.9±0.1	(21)	(88)	-69	-288	*EST	95860-64-3
	IP from 85KAP/R						
CICs ₂ +	<u> </u>					· · · · · · · · · · · · · · · · · · ·	
Cs ₂ Cl	3.4±0.2	-1	-4	<i>−79±6</i>	-332±25	85KAP/RAD	87331-16-6
<i>t</i> a	IP from 85KAP/R						
ClCu ⁺							
CICu ⁺ CuCl	(10.7±0.2)	(265)	(1110)	10	70	70HI 1D/IIIP	7750 On 6
CuCl	(10.7±0.3) 0 K values.	(265)	(1110)	19	78	79HUB/HER	7758-89-6
CIF + CIF	12.65±0.01	280	1170	_10.0.01	_50.2+0.4	OCTANIAD	7700 00 0
C.I.	12.03±0.01	280 280	1170 1170	-12.0±0.1 -12.0±0.1		85JANAF	7790-89-8
	See also: 84DYK/J			12.040.1	~~·#±V:7		

Table 1. Positive Ion Table - Continued

	Table	I. Posit	ive Ion Table	= Conti			
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo		•	Neutral) ol kJ/mol	Neutral reference	CAS registry
CIFO ₂ + CIO ₂ F	(12.41±0.10) IP from 80BAL/N	(278) ⁄IK.	(1164)	-8	-33	73BAR	13637-83-7
CIFO ₂ S +							
SO ₂ FCI	(12.4) IP is onset of photo	(151) toelectron	(632) band.	-135	-564	81WOO	13637-84-8
CIFO ₃ +							
ClO ₃ F	(12.945±0.005)	(293) (295)	(1225) <i>(1234)</i>	-6 -4	-24 -15	82TN270	7616-94-6
CIF ₂ +							
CIF ₂	(12.77 \pm 0.05) $\Delta_{ m f}H({ m Ion})$ derived in CIF3 is 261 kcal			−25 al (13.78±0.01	-105 7 eV)	62ARM/KRI	24801-48-7
CIF ₃ +		· · · · · · · · · · · · · · · · · · ·					
CIF ₃	(12.65±0.05)	(253) (254)	(1057) <i>(1061)</i>	-39 -38	-163 -159	82BAU/COX	7790-91-2
CIF ₅ S ⁺							
SF ₅ CI	(12.335±0.005)	(34) <i>(37)</i>	(142) <i>(155)</i>	-250 <i>-247</i>	-1048 -1035	82TN270	13780-57-9
CIH+							
HCI	12.747	271.9 271.4	1137.6 1137.7	<i>−22.0±0</i> .	04 -92.3±0.2 04 -92.1±0.2	85JANAF	7647-01-0
	IP for formation of IP for formation of	of HCl ⁺ (² of HCl ⁺ (²	π _{3/2}) from 79F π _{1/2}) = 12.828 (IUB/HER, 82 eV. See also:	2NAT/PEN, 77R 82VON/ASB, 84	OS/DRA, 82LEV/I WAN/DIL, 81KIM	JA. /KAT.
CID+							
DCI	12.754	271.8 <i>271.9</i>	1137.3 <i>1137.6</i>	−22.3±0.	05 -93.3±0.2 05 -93.1±0.2	85JANAF	7698-05-7
	IP for formation of	of DCI(² II ₂	_{3/2}) from 79HU	B/HER, 83P	EN/NAT.		
CIHO+							
HOCI	(11.12±0.01)	(238) <i>(239)</i>	(995) <i>(998)</i>	–19 <i>–18</i>	-78 - <i>75</i>	82BAU/COX	7790-92-3
CIH ₂ +				<u>"</u>			
H ₂ Cl	From proton affin standard (84LIA/)	•	•	•		d relative to CO	
CIH ₂ N ⁺ NH ₂ CI	(9.85±0.02)	(240)	(1003)	13	53	*EST	10599-90-3
	, , , , , , ,		<u> </u>		· <u>-</u> ·- ·-		
ClH ₃ Si ⁺ SiH ₃ Cl	11.4 IP is onset of phot	(215)	(899)	-48	-201	81BEL/PER	13465-78-6

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$	on)	$\Delta_{\mathbf{f}}H(Ne$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
CII+							
ICI	10.088±0.01	236.8	990.8	4.2±0.02	17.5±0.1	85JANAF	7790-99-0
		237.2	992.4	4.6±0.2	19.1±0.1		
	See also: 84DYK/	JOS, 71PO	Г/PRI. 				
ClIn +							
ClIn	(9.51)	(201)	(843)	-18	~75	82TN270	13465-10-6
		(204)	(852)	-15	-65		
CIK+							
KCl	(8.0±0.4)	(133)	(557)	-51.3±0.1	-214.7±0.4	85JANAF	7447-40-7
		(134)	(559)	-50.9±0.1	-212.9±0.4		
CIKNa ⁺							
NaKCl	4.0±0.1	(26)	(107)	-67	-279	*EST	95860-66 -5
	IP from 85KAP/R						
CIK ₂ +							W-h
K ₂ Cl	3.5±0.2	10	44	-70±4	-294±17	85KAP/RAD	95386-61-1
2	IP from 85KAP/R	AD. 0 K val	ues.				
CILi ⁺							
LiCl	9.57	174	728	-47±3	-196±13	85JANAF	7447-41-8
		174	728	-47±3	-196±13	3521 41 12 12	
CINO+		······································					
NOCI NOCI	10.87±0.01	263	1101	12	52	82BAU/COX	2696-92-6
11001	10.87±0.01	264	1101	13	54	82BAU/CUX	2070-72-0
	See also: 83BIN.		-				
CINO ₂ +							
CINO ₂	(11.84)	(276)	(1155)	3	13	82BAU/COX	13444-90-1
2	(,	(277)	(1160)	4	18	522. 10,00A	25 70-1
CIN. +		·					
CIN ₃ + CIN ₃	(10.20±0.01)	(313.9)	(1313.4)	<i>7</i> 8.7	329.3	83DEW/RZE	13973-88-1
	(10.2020.01)	(010.7)	(1010.7)	70.7	Juj.J	OJDEW/RZE	137/3-00-1
CINa ⁺							
NaCl	8.92±0.06	162	679	-43±0.5	-181±2	85JANAF	7647-14 - 5
		163	681	~43±0.5	-180±2		
CINa ₂ +							· · · · · · · · · · · · · · · · · · ·
Na ₂ Cl	4.1±0.1	36	152	-58±4	-244±17	85KAP/RAD	84008-89-9
	IP from 85KAP/R	AD. 0 K val	ues.				
CINi ⁺							
NiCl	(11.4±0.5)	(306)	(1282)	43±1	182±4	85JANAF	13931-83-4
	,,	(306)	(1282)	43±1	182±4		10701 00-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
CIO+							
CIO	10.95	277	1158	24.4	101.9	82BAU/COX	14989-30-1
		277	1158	24.3	101.8		
	IP is onset of ph	otoelectron b	and.				
CIOP+							
POCI	(11.5)	(205)	(859)	-60	-251	83BIN/LAK	21295-50-1
	IP from 83BIN.						
Closb+							
SbOCl	(10.7)	(247)	(1032)	0	0	83BIN	7791-08-4
	IP from 83BIN.						
ClO ₂ +							
OCIO OCIO	10.36±0.02	262	1097	23±2	97±8	82BAU/COX	10049-04-4
		263	1099	24	99	, = = = =	
	See also: 80BAL	/NIK.					
CIRb +					· · · · · · · · · · · · · · · · · · ·		
RbCl	(8.50±0.03)	(141)	(591)	-55	-229	82TN270	7791-11-9
		(142)	(593)	-54	-227		
CISr+			·				
SrCl	5.10±0.06	(88)	(368)	-30±2	-124±8	85JANAF	14989-33-4
		(88)	(370)	-29±2	−122±8		
	See also: 84MEY	//SCH.					
CITI +							
TICI	9.70±0.03	207	868	-16	-68	82TN270	7791-12-0
		207	868	-16	-68		
	See also: 83BAN	I/BRI.					
Cl ₂ +							
Cl ₂	11.480±0.005	265	1108	0	0	*DEF	7782-50-5
		265	1108	0	0		
	Cited ionization					. 2	
	(77ROS/DRA, 8			, 84DYK/JOS))). Formation (of $Cl_2^+(^2\Pi_{1/2})$	
	requires 11.56 eV	/. See also: 8	81KIM/KAT.				
Cl ₂ Co +							
CoCl ₂	(10.4)	(217)	(909)	-22±2	-94±8	85JANAF	7646-79-9
		(217)	(908)	-23±2	-95±8		
	IP is onset of pho	otoelectron ba	and.				
Cl ₂ Cr ⁺							
CrCl ₂	(9.4)	(186)	(779)	-31	-128	82TN270	10049-05-5
-	IP is onset of pho	otoelectron ba	and.				

Table 1. Positive Ion Table - Continued

Neutral Cl ₂ CrO ₂ + Cl ₂ CrO ₂	Ionization potential eV 11.6	∆ _f H(Io kcal/mol		∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
	11.6		······································				
	11.6						
		(139)	(581)	-129	-538	82TN270	14977-61-8
		(140)	(585)	-1 28	-534		
	IP is onset of pho	otoelectron b	and.				
Cl ₂ Cs ₂ +							
CI	(≤9.15)	(≤53)	(≤223)	-158	-660	81LIN/BES	12258-95-6
Cs		(≤54)	(≤227)	-157	-656		
CI CI							
Cl ₂ F ₄ N ₃ P ₃ +						- , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
F2PNPCI	(10.97±0.3)	(-150)	(-629)	-403	-1687	*EST	29871-62-3
N D N	IP from 81CLA/S		(-02)	403	-1007	131	29071-02-3
F C							
Cl ₂ Fe ⁺		···		· · · ·	 -		
FeCl ₂	(10.0)	(197)	(824)	-34	-141	85JANAF	7758-94-3
	TD.	(197)	(823)	-34	-142		
	IP is onset of pho	otoelectron b	and.				
Cl ₂ Ge ⁺							
GeCl ₂	(10.20 ± 0.05)	(194)	(813)	-41±1	-171±5	79TPIS	10060-11-4
	IP from 82JON/V	(195)	(814)	-41	-170		
	IP from 82JUN/	AN.					
Cl ₂ HN+							
NHCl ₂	(9.98±0.05)	(269)	(1124)	38	161	*EST	3400-09-7
Cl ₂ H ₂ Si ⁺						, , , , , , , , , , , , , , , , , , ,	
SiH ₂ Cl ₂	11.4	(183)	(765)	-80	-335	81BEL/PER	4109-96-0
	IP is onset of pho	toelectron b	and.				
Cl ₂ Hg ⁺					·		
HgCl ₂	11.380±0.003	227	952	-35±1	-146±6	71JANAF	7487-94-7
- .	Cited ionization	potential (fro	om 83LIN/BR	O) refers to for	mation of Hg	$Cl_2^+(^2\Pi_{3/2g}).$	
	Ionization potent See also: 81LEE/	ial for forma	ition of HgCl ₂	$e^{+(2\pi_{1/2g})}$ is 1	1.505±0.003 e	v.	
Cl ₂ K ₂ +							
CI	(≤9.60)	(≤72)	(≤303)	-149	-623	82TN270	12258-97-8
K _ CI _ K	<u> </u>	\- \ -/	ν <i>γ</i>				

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	•		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Cl ₂ Li ₂ +							
	10.00	00	200	140	604	0000 1000	10045 57.0
_C!	10.20	93 <i>94</i>	390 <i>393</i>	-142 <i>-141</i>	-594 -591	82TN270	12345-57-2
لأكلا		71	575	141	371		
Cir							
Cl ₂ Mg ⁺							
MgCl ₂	(8.5)	(102)	(428)	-94	-392	85JANAF	7786-30-3
- -		(102)	(427)	-94	-393		
	IP is onset of pl	notoelectron b	and. See also:	77LEE/POT2.			
Cl ₂ Mn ⁺							
MnCl ₂	(10.8)	(186)	(778)	-63	-264	82TN270	7773-01-5
	IP is onset of pl	notoelectron b	and.				· · · · · · · · · · · · · · · · · · ·
Cl ₂ MoO ₂ +							
MoO ₂ Cl ₂	(11.93±0.02)	(124)	(517)	-152	-634	82TN270	13637-68-8
Cl ₂ Na ₂ +							
ے C1 ر	(≤10.30)	(≤102)	(≤428)	-135±2	-566±8	85JANAF	12258-98-9
Na CI Na	(23323)	(≤103)	(≤432)	-134±2	-562±8		
Cl ₂ Ni ⁺							
NiCl ₂	(10.8)	(231)	(968)	-18±0.1	-74±0.3	82JANAF	7718-54-9
	TD:	(231)	(968)	−18±0.1	<i>−74±0.3</i>		
	IP is onset of ph	notoelectron b	and.				
Cl ₂ O +							
Cl ₂ O	10.94	271	1136	19	80	82BAU/COX	7791-21-1
	···	272	1138	20	82		
Cl ₂ OS+							
soci ₂	10.96	(202)	(844)	-51	-213	82TN270	7719-09-7
		(203)	(847)	-50	-210		
Cl ₂ O ₂ S +							
SO ₂ Cl ₂	12.05	193	808	-85	-355	85JANAF	7791-25-5
		195	814	-83	-349		
Cl ₂ Pb ⁺							
PbCl ₂	(10.0)	(189)	(791)	-42±0.3	-174±1	85JANAF	7758-95-4
~		(189)	(793)	-41±0.3	-172±1		
	IP is onset of ph	otoelectron b	and. (See: 841)	NOV/POT2).			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
Cl ₂ Rb ₂ +					· - · · · · · · · · · · · · · · · · · ·		
Rb CI Rb	(≤9.30)	(≤64) <i>(≤65)</i>	(≤269) (≤271)	-150 -150	-628 -626	82TN270	12265-61-1
Cl ₂ S ⁺							
SCI ₂	9.45±0.03	214 <i>214</i>	894 <i>895</i>	-4 -4	-18 -16	85JANAF	10545-99-0
	IP from 81KAU/V			·	10		
Cl ₂ S ₂ + S ₂ Cl ₂	(9.66±0.03)	(218)	(914)	-4	-18	82TN270	10025-67-9
22.2	IP from 81KAU/V	(219)	(915)	-4	-17	62111270	10025-07-9
Cl ₂ Se ⁺							
SeCl ₂	9.25 IP is onset of pho-	(206) toelectron b	(860) and.	-8	-32	82TN270	14457-70-6
Cl ₂ Se ₂ +							
Se ₂ Cl ₂	(9.4) IP is onset of pho-	(221) toelectron b	(924) and.	4	17	82TN270	10025-68-0
Cl ₂ Si ⁺							
SiCl ₂	(10.93±0.10)	(212) <i>(212)</i>	(889) <i>(889)</i>	-40 -40	-166 -166	82TN270	13569-32-9
Cl ₂ Sn ⁺							
SnCl ₂	(10.0)	(182) (183)	(762) (764)	-49 -49±2	-203 -201±10	82TPIS	7772-99-8
	IP is onset of photo-	toelectron b	and (84NOV/I	POT2, 82LEV/	LIA).		
Cl ₂ Sr ⁺ SrCl ₂	9.70±0.1 See also: 82EMO/	<i>(115)</i> /KIE, 79LEI	<i>(481)</i> E/POT2. 0 K vi	<i>–109</i> alues.	-455	82EMO/KIE	10476-85-4
Cl ₂ Zn+							
ZnCl ₂	11.85 IP is onset of photon	210 toelectron b	877 and.	-64	-266	82TN270	7 646-85-7
Cl ₃ Cu ₃ +							
Çû Cı Cı. Çu	(≤9.52)	(≤158) (≤158)	(≤660) <i>(≤660)</i>	-62±0.5 -62±0.5	-259±2 -259±2	85JANAF	11093-65-5

596

Table 1. Positive Ion Table - Continued

YOM							CAC
ION Neutral	Ionization potentia eV	•	Ion) i kJ/moi	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
Cl ₃ F ₃ N ₃ P ₃ +							
CI P F	(10.76±0.03) IP from 81CLA	(-5) /SOW.	(-22)	-253	-1060	*EST	25251-05-2
Cl ₃ Ga +							
GaCl ₃	11.52	159	664	-107	-448	82TN270	13450-90-3
Cl ₃ HSi ⁺ SiHCl ₃	(11.7)	(155) <i>(156)</i>	(647) (652)	-115 -114	-482 -477	81BEL/PER	10025-78-2
	IP is onset of pl			-114	-4 //		
Cl ₃ In ⁺							
InCl ₃	(11.4)	(173) <i>(173)</i>	(722) <i>(724)</i>	−90 − <i>90±2</i>	−378 <i>−376±7</i>	82TPIS	10025-82-8
Cl ₃ La ⁺ LaCl ₃	(10.6) IP is onset of pl	(67) notoelectron	(282) band (83RUS/	-177 GOO).	-741	82TN270	10099-58-8
Cl ₃ Li ₃ +							
ci ^{Li} ~ci ^{Li} .ci,Li	(10.17)	(5) <i>(6)</i>	(19) (26)	-230 -228	-962 -955	82TN270	59217-69-5
Cl ₃ Lu ⁺ LuCl ₃	(11.5±0.5)	(110)	(461)	-155	-649	82TN270	10099-66-8
Cl ₃ N ⁺							
NCl ₃	(10.12±0.1)	(297)	(1244)	64	268	*EST	10025-85-1
Cl ₃ NbO ⁺ NbOCl ₃	≤12.14	≤100.1 ≤100.8	≤419.0 ≤421.7	-179.8 -179.1	-752.3 -749.6	82TN270	13597-20-1
Cl ₃ OP +				<u> </u>			
POCl ₃	11.36±0.02	129 <i>130</i>	538 <i>543</i>	-133 -132	-558 -553	82TN270	10025-87-3
Cl ₃ OV+					<u> </u>		
VOCI3	(11.6)	(101) (102)	(423) (426)	-166 -166	-696 -693	82TN270	7727-18-6
	IP is onset of ph	otoelectron	Dand.				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H({ m Id}$	on)	∆ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Cl ₃ P ⁺						···	
PCI ₃	9.91	160	667	-69	-289	85JANAF	7719-12-2
		160	671	-68	-286		
	See also: 83OZC	3, 81CHA/FI	N.				
Cl ₃ PS ⁺							
PSCI ₃	9.71±0.03	137	574	-87	-363	71JANAF	3982-91-0
Cl ₃ Sb ⁺							
SbCl ₃	(10.1±0.1)	(158)	(660)	-75	-314	82TN270	10025-91-9
	IP is onset of pho	otoelectron b	and. See also:	83OZG.			
Cl ₃ Si ⁺							
SiCl ₃		(108)	(454)				19165-34-5
	From appearanc	e potentials,	11.91 eV in Si	HCl ₃ and 11.90	eV in CH ₃ Si	Cl ₃ .	
Cl ₄ F ₂ N ₃ P ₃ +							
Clape	(10.48±0.03)	(-53)	(-222)	-295	-1233	*EST	25251-04-1
N N F	IP from 81CLA/						
F P CI							
Cl ₄ Ge ⁺							
GeCl ₄	11.68±0.05	(151)	(631)	119	-496	82TN270	10038-98-9
		(151)	(633)	-118	-494 		
Cl ₄ Hf ⁺							
HfCl ₄	(11.7)	(59)	(246)	-211	-883	81SPE	13499-05-3
	IP is onset of pho	otoelectron b	and. 				
Cl ₄ Mo+							
MoCl ₄	(10.5 ± 0.1)	(152)	(636)	-90	-377	82TN270	13320-71-3
	IP from 83MAK	VER.					
CI ₄ Si ⁺	-						
SiCl ₄	11.79±0.01	126	528	-146	-610	81BEL/PER	10026-04-7
		124	520	-148	-618		
Cl ₄ Sn +							
SnCl ₄	(11.88±0.05)	(161)	(674)	-113	-472	82TN270	7646-78-8
•		(162)	(677)	-112	-469		
Cl ₄ Th ⁺							
ThCl ₄	(12.7±0.3)	(62)	(259)	-231	-966	82TN270	10026-08-1
4	(/	(62)	(260)	-230.8	-965.6		
Cl ₄ Ti ⁺							
TiCl ₄	11.65±0.15	(86)	(361)	-182	-763	85JANAF	7550-45-0
4	11.00 10.10	(86)	(362)	-182 -182	-762	222 H 1/ H	.550-15-0

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{f})$	Ion)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV		l kJ/mol	kcal/mol		reference	number
						-	
Cl ₄ U ⁺							
UCI ₄	9.18	18	76	-193	-810	82TN270	10026-10-5
Cl ₄ V ⁺							
VCI ₄	(9.2)	(86)	(362)	-126	-526	82TN270	7632-51-1
·		(87)	(364)	-125	-524		
	IP is onset of pho	toelectron	band.				
Cl ₄ W ⁺	<u> </u>						
WCl ₄	(8.0)	(104)	(436)	-80±8	-336±33	85JANAF	13470-13-8
7	` ,	(104)	(436)	-80±8	−336±33		
		<u></u>					
Cl ₄ Zr ⁺ ZrCl ₄	(11.2)	(50)	(211)	-208	-870	82TN270	10026-11-6
4	(11.2)	(51)	(211)	-208 -208	-869	041142/0	10020-11-0
	IP is onset of pho			_30			
Cl ₅ Mo ⁺	<u> </u>						
MoCl ₅	(8.7)	(94)	(392)	-107	-448	85JANAF	10241-05-1
	(6.7)	(94)	(393)	-106	-446	003111111	10271 03-1
	IP is onset of pho						
Cl ₅ Nb ⁺							<u> </u>
NbCl ₅	(10.97)	(85)	(355)	-168	-703	85JANAF	10026-12-7
- · · · · · · · · · · · · · · · · · · ·	(===,)	(85)	(357)	-168	-701		
Cl ₅ P ⁺							
PCl ₅	10.7	(157)	(657)	-90	-375	82TN270	10026-13-8
3		(158)	(662)	-88	-370	3021.273	10020 10 0
	IP is onset of pho						
Cl ₅ Re ⁺		· · · · · · · · ·					
ReCl ₅	(9.2)	(136)	(570)	-76	-318	82TN270	13596-35-5
3	IP is onset of pho						
Cl ₅ Sb ⁺							
SbCl ₅	(10.8)	(155)	(648)	-94	-394	82TN270	7647-18-9
· ·-•	\ /	(155)	(650)	-94	-392	.2. 3.2	====
	IP is onset of pho						
Cl ₅ Ta ⁺			·	500 - 500	**		
TaCl ₅	11.08	73	304	-183	-765	85JANAF	7721-01-9
3		73	306	-182	-763		· · • • •
Cl ₅ W ⁺							
WCI ₅	(8.5)	(97)	(407)	-99±8	-413±33	85JANAF	13470-14-9
11 015	(0.2)	(98)	(407)	−98±8	-411±33	0001 H 1121	20110-27-7
	IP is onset of pho			- 3=0			

Table 1. Positive Ion Table - Continued

TON.				- Contin			0.45
ION Neutral	Ionization potentia eV	l Δ _f H(Io kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
Cl ₆ Ga ₂ +							
CI CI O	(11.4)	(00)	(105)			and the same	
Ga Ga	(11.4) IP is onset of pl	(30) otoelectron b	(125) and.	-233	-975	82TN270	15654-66-7
CI/ CI/ CI	•						
Cl ₆ N ₃ P ₃ +							· · · · · · · · · · · · · · · · · · ·
Cl ₂	9.8	(51)	(213)	-175	-732	69BEN/CRU	940-71-6
CI2P N PCI2			and. See also: 81			07DEN, CRO	740-71-0
Cl ₆ Si ₂ +							
Si ₂ Cl ₆	(10.4) See also: 81KH	(-4) V/ZYK.	(-16)	-244	-1019	81BEL/PER	13465-77-5
Cl ₆ W+	-	······································					
WCI ₆	(9.5)	(83)	(347)	-136	-570	81WOO	13283-01-7
				<i>–136</i>	-570 		
Cl ₉ Re ₃ +							
CI. Re CI	(8.7)	(64)	(266)	-137	-573	82TN270	14973-59-2
CI. Re CI	IP is onset of ph			101	373	02114210	14710372
Cm +							
Cm	6.09±0.02	233 E/C A B	974	92	386	85KLE/WAR	7440-51-9
	See also: 81CHI						
Co+							
Co	7.864±0.001	283 <i>282</i>	1184 <i>1182</i>	102 <i>101</i>	425 <i>423</i>	82TN270	7440-48-4
	See also: 82DYI		1102	101	443		
CoH +							
CoH	(7.3±0.1)	(287)	(1203)	(119)	(496)	81ARM/BEA	14994-20-8
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from						
	See also: 81ARN	A/HAL. IP fro	om 81ARM/BEA	. 0 K values	3.		
Соно+			·····				
СоОН		220	920				12314-24-8
	$\Delta_{\mathbf{f}}H(Ion)$ from	photodissocia	tion onset, proto	n affinity of	CoO(84CAS/	FRE). 0 K values.	
C ₀ O +							
CoO	8.9±0.2	(277)	(1159)	72±3	301±13	79HUB/HER	1307-96-6
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from \mathbf{f}	B1ARM/HAL	, 82ARM/HAL.	See also: 81	KAP/STA. 0 1	C values.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$		Δ _f H(Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Cr+							
Cr	6.766	250.8	1049.4	94.8	396.6	82TN270	7440-47-3
		250.3	1047.3	94.3	394.5		
CrF+							
CrF	(8.4±0.3)	(199)	(831)	5	21	81WOO	13943-42-5
CrF ₂ +							
CrF ₂	(10.1±0.3)	(181)	(758)	-52	-216	81WOO	10049-10-2
CrF ₃ +							
CrF ₃	(12.2±0.3)	(124)	(517)	-158	-660	81WOO	7788-97-8
CrH+							
CrH	A **** \ 0	(274)	(1145)	(0/T) T/ 17/ 17	MAN Co. : 1-	01 4 D M // T 4 Y	13966-79-5
	$\Delta_{\mathbf{f}}H$ (Ion) from or 0 K values.	iset of endo	inermic reacti	on (80ELK/AR	uvi). See also:	81AKW/HAL	
CrO+		- <u></u>					
CrO	7.85±0.02	(233)	(975)	52±7	218±29	83PED/MAR	12018-00-7
		(230)	(961)	49±3	203±12		
	IP from 83DYK/C	•		m 81ARM/HA	L, 82ARM/HA	AL.	
	See also: 81BAL/	GIG, 81KAI	P/STA.				
CrO ₂ +			_				
CrO_2	(10.3 ± 0.5)	(223)	(935)	-14	-59	82TN270	12018-01-8
	0 K values.						
CrO ₂ P+		····					
CrPO ₂	(8.0±0.5)	(236)	(989)	52±3	218±13	81BAL/GIG	
	IP from 81BAL/C	iIG. 0 K valı	ies.				
CrO ₃ +							
CrO ₃	(11.6±0.5)	(175)	(733)	-92	-386	82TN270	1333-82-0
Cs+			·			·	
Cs	3.894	108.0	451.8	18.2	76.1	82TN270	7440-46-2
		108.3	453.3	18.5	77.6		
	See also: 84ASA/	YAS, 85SCF	I/WEI.				
CsF +			· · · · · · · · · · · · · · · · · · ·				
CsF	(8.80±0.10)	(117)	(488)	-86	-361	84PAR/WEX	13400-13-0
	•	(117)	(490)		-359.0±7.5	· · · ·	
CsHO+							
СѕОН	(7.3±0.15)	(106)	(445)	-62	-259	81LIN/BES	21351-79-1
CsH ₂ O +		· ····					
CsOH ₂		36	149				
-	$\Delta_f H(Ion)$ from eq	uilibrium co	onstant deterr	nination (69SE	A/DZI).		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
CsI +							
CsI	7.10±0.05	127	531	-37	-154	84PAR/WEX	7789-17-5
	See also: 82EMO	<i>128</i> /HOR_821.1	<i>535</i> FL/BAL 84V	<i>−35.9±3.4</i> IS/HII .	−150±14		
						· · · · · · · · · · · · · · · · · · ·	
CsK ⁺	(0.0.04)	44.0)	(400)	(0.0)	****		
KCs	(3.9±0.1) IP from 85KAP/S	<i>(119)</i> CH. 0 K val	<i>(498)</i> ues.	(29)	(122)	79HUB/HER	
CsLi ⁺							
LiCs	(4.1±0.1)	(134)	(562)	(40)	(166)	79HUB/HER	12018-59-6
	IP from 85KAP/S	CH. 0 K val	ues.				
CsNa ⁺							
NaCs	(4.05±0.04)	(128)	(535)	(35)	(144)	79HUB/HER	12018-60-9
	IP from 85KAP/S	CH. 0 K val	ues.				
CsO+	- -						
CsO	6.22	153.6	642.8	10.2	42.7	82TPIS	24774-39-8
	IP from 84BUT/K	154.1	644.9	10.7±5	44.8±21		
	1F 1F0m 84BU1/K	.UD.					
CsRb ⁺							
RbCs	3.7±0.1	96	401	11	44	86IGE/WED	12331-83-8
	IP from 85KAP/S	CH.					
Cs ₂ +							
Cs ₂	3.7±0.1	(111)	(464)	26±0.1	107±0.3	85JANAF	12184-83-7
	YN C OCYCL DA	(112)	(469)	27±0.1	112±0.3		
	IP from 85KAP/R	AD, 85KAI	2/SCH. See al	ISO: 83HEL/MC)L. —————		
Cs ₂ MoO ₄ +							
Cs ₂ MoO ₄	(7.0)	(-114)	(-479)	-276	-1154	81LIN/BES	
Cs ₂ O+							
Cs ₂ O	4.41±0.03	(80)	(333)	-22	-92	81LIN/BES	20281-00-9
	IP from 77ROS/D	RA, 84BU	r/KUD.				
Cu+							
Cu	7.72634±0.00002	259.0	1083.8	80.9	338.3	82TN270	7440-50-8
		<u>258.8</u>	1082.7	80.6	337.2		
CuF +							
CuF	10.15±0.02	(235)	(984)	1	5	81WOO	13478-41-6
		(231)	(967)	-3	-12		
	IP from 80DYK/F	AY. See als	:o: 77EHL/W	AN.			
CuF ₂ +							
CuF ₂	(12.7)	(229)	(958)	-64	-267	81WOO	7789-19-7
-		(230)	(960)	-63	-265		
	IP is onset of phot					aN.	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
CuH+							
CuH	(9.5)	(289)	(1208)	70	291	79HUB/HER	
	$\Delta_f H(Ion)$ from on	set of endo	thermic reactio	n (86ELK/AF	M4). IP is		
	$\Delta_{\mathbf{f}}H(\text{Ion}) - \Delta_{\mathbf{f}}H(\mathbf{f})$	Veutral). 0 I	Cvalues.				
CuO+		···					
CuO		(286±8)	(1197±33)	73±10	306±41	85JANAF	1317-38-0
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from (8	1KAP/STA). Ion/molecule	bracketing re	sults.		
CuSn +						<u> </u>	
CuSn	(7.2±1.0)	(277)	(1161)	111	466	79HUB/HER	12054-11-4
	0 K values.						
Cu ₂ +				·····			
Cu ₂	7.894±0.015	298	1247	116	485	85JANAF	12190-70-4
4		298	1247	116	485		
	IP from 83POW/F	IAN.					
D ⁺		· · · · · · · · · · · · · · · · · · ·					
_ D	13.602	<u>366.6</u>	<u>1534.0</u>	52.98	221.67	82TN270	16873-17-9
		366.2	<u>1532.1</u>	52.52	219.76		
DH ⁺							
HD	15.44477±0.00007	356.2	<u>1490.5</u>	.077	.32	85JANAF	13983-20-5
IID	13. 747 //±0.0000/	<u>356.2</u>	1490.5	.079	.32	onviavi.	13703-20-3
			<u> </u>				·
DLi+	77.01	(011)	(00.4)	22.7	144.1	0.000 70.00	105051111
LiD	7.7±0.1	(211)	(884)	33.7	141.1	82TN270	13587-16-1
		(211)	(884)	33.7	141.1		
D ₂ +							
D_2	15.46660±0.0001	<u>356.7</u>	1492.2	0	0	*DEF	7782-39-0
	TD 4 MAY17	<u>356.7</u>	<u>1492.2</u>	0	0		
	IP from 79HUB/H	IEK.					
D ₂ O +							
D_2O	12.635±0.007	231.8	<u>970.0</u>	-59.56	-249.20	85JANAF	7789-20-0
		<u>232.5</u>	<u>972.8</u>	-58.85 	-246.25		
D ₃ O +							
D ₃ O	4.3±0.1						24847-51-6
	IP from 84GEL/P	OR.					
Dy ⁺			• • • • • • • • • • • • • • • • • • • •				
Dy	5.9390±0.0006	206	863	69	290	82TN270	7429-91-6
		207.0	866.1	70.0	293.1		
DyF +						······································	
DyF	(6.0±0.3)	(101)	(422)	-38	-157	79HUB/HER	
•	0 K values.	\ >	·/				

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
DyO +							· · · · · · · · · · · · · · · · · · ·
DyO	(6.08±0.1)	(122) <i>(121)</i>	(512) <i>(508)</i>	−18±10 −19	-75±42 - <i>79</i>	83PED/MAR	12175-28-9
Er+				· · · · · · · · · · · · · · · · · · ·			
Er	6.1077±0.0006	217 <i>216.9</i>	906 <i>907.6</i>	76 76.1	317 <i>318.3</i>	82TN270	7440-52-0
ErF+							
ErF	(6.3±0.3) 0 K values.	(105)	(441)	-40	-167	79HUB/HER	
ErF ₂ +							
ErF ₂	(7.0±0.3)	(-3)	(-11)	-164	-686	82TN270	
ErI ₃ +						······································	
ErI ₃	9.0 IP is onset of pho	125 toelectron b	524 and (83RUS/	-8 2 GOO).	-344	82TN270	13813-42-8
ErO +							
ErO	(6.30±0.1)	(135) <i>(132)</i>	(566) <i>(554)</i>	-10±5 -13	-42±21 -54	83PED/MAR	12280-61-4
	See also: 80MUR,	HIL.					
Es+							
Es	6.52±0.10	182	762	31.8±3	133±13	85KLE/WAR	7429-92-7
Eu +							
Eu	5.67045±0.0003	172 173.1	722 724.2	42 42.3	175 <i>177.1</i>	82TN270	7440-53-1
EuO ⁺						······	
EuO	(6.48±0.1) See also: 81BAL/6	(139) GIG, 85BA	(582) L/GIG.	-10	-43	83PED/MAR	12020-60-9
EuO ₂ V ⁺		······································					
EuVO ₂	(8) IP from 83BAL/C	<i>(108)</i> SIG. 0 K val	<i>(450)</i> ues.	-77	-322	83BAL/GIG	88762-30-5
EuO ₃ Ti ⁺							
EuTiO ₃	(6.5±0.5) IP from 85BAL/G	(-62) BIG.	(-260)	-212±7	-887±28	85BAL/GIG	12020-61-0
EuO ₃ V ⁺							
EuVO ₃	8.1±0.5 IP from 83BAL/C	(4) SIG. 0 K val	<i>(17)</i> ues.	(-183)	(-764)	83BAL/GIG	39432-21-8
EuS+							
EuS	(6.8±0.3)	(184) <i>(180)</i>	(769) <i>(751)</i>	27 23	113 <i>95</i>	82TN270	12020-65-4

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/mol		Δ _f H(Net kcal/mol	itral) kJ/mol	Neutral reference	CAS registry number
F+ F	17.422	<u>420.7</u> <u>420.2</u>	1760.2 1758.2	19.0±0.1 18.5±0.1	79.4±0.3 77.4±0.3	85JANAF	14762-94-8
FGa ⁺ GaF	(9.6±0.5) A value of 10.7±0	(167) <i>(167)</i> 0.6 eV has als	(699) (700) so been report	–54 <i>–54</i> sed for this ioniz	-227 -226 cation potentia	79HUB/HER	13966-78-4
FGe ⁺ GeF	7.46 IP from 79HUB/	166 <i>166</i> 'HER.	694 <i>694</i>	-6 -6	-26 -26	81WOO	14929-46-5
FH ⁺ HF	16.044±0.003 See also: 81KIM	304.9 <i>304.9</i> /KAT, 81BIE	1275.5 <i>1275.5</i> //ASB.		−272.5±0.8 −272.5±0.8	85JANAF	7664-39-3
FHO ⁺	12.71±0.01	270	1128	-23±1	−98±4	82BAU/COX	14034-79-8
FH ₂ + _{H₂F}							
	From proton affi derived from the 489.5 kJ/mol.						
	derived from the	nity of HF (F appearance	RN 7664-39-3) potential of th				13537-33-2
FH3Si ⁺ SiH3F	derived from the 489.5 kJ/mol. 11.7	nity of HF (F appearance	RN 7664-39-3) potential of th	nis ion from (HI	?) ₂ . PA = 117	kcal/mol,	
FH ₃ Si ⁺ SiH ₃ F FH ₀ ⁺ HoF	derived from the 489.5 kJ/mol. 11.7 IP is onset of photosome (6.1±0.3)	(180) otoelectron b (103)	(752) and.	uis ion from (HI -90±5	-377±21 -377±21 -158	kcal/mol, 78JANAF	
FH ₃ Si ⁺ SiH ₃ F FHo ⁺ HoF FI ⁺ IF	derived from the 489.5 kJ/mol. 11.7 IP is onset of photo (6.1±0.3) 0 K values.	(180) otoelectron b (103)	(752) and. (431)	-90±5 -38	-377±21 -377±21 -158	real/mol, 78JANAF 79HUB/HER	16087-66-4
FH ₃ Si + SiH ₃ F FHo + HoF FI + IF	derived from the 489.5 kJ/mol. 11.7 IP is onset of pho (6.1±0.3) 0 K values. 10.62 IP from 84DYK/ (9.6±0.5)	(180) otoelectron b (103) 222.2 222.7 JOS.	(752) and. (431) 929.9 931.8	-90±5 -38 -22.7±0.9 -22.2±0.9 -44	-377±21 -377±21 -158 -94.8±3.8 -92.9±3.8	78JANAF 79HUB/HER 85JANAF	16087-66-4 13873-84-2

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	ı Δ _f H(Io	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
FMo ⁺						······································	
MoF	(8.0±0.3)	(249)	(1044)	65	272	81WOO	60388-18-3
FN+			· · · · · · · · · · · · · · · · · · ·				
NF	12.26±0.01	338	1415	55.5±0.5	232.2±2.1	84BER/GRE	13967-06-1
	IP from 82DYK	/JON. Δ _f <i>H</i> (Ια	on) from 84Bl	ER/GRE. See a	lso: 79DUD/E	BAL. 0 K values.	
FNO +							
NOF	12.63±0.03	275	1152	-16	-67	82TN270	7789-25-5
		276	1154	-16	-65		
FNO ₂ +						, , , , , , , , , , , , , , , , , , ,	
NO ₂ F	(13.09)	(276)	(1154)	-26±5	-109±21	85JANAF	10022-50-1
	•	(277)	(1160)	-25±5	-103±21		
FNS ⁺	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				<u></u>		
NSF	11.51±0.04	260	1090	-5±0.9	-21±4	73LAR/JOH	18820-63-8
				 			
FNa ₂ +	40.04	E	20	07. 2	266 46	0517	00000 10 5
Na ₂ F	4.0±0.1 IP from 85KAP/	5 RAD 0 K val	20	-87±3	-366±13	85KAP/RAD	87331-13-3
	II Holli oskar/						
FNd ⁺							
FNd	(5.0±0.3)	(81)	(338)	-34	-144	81WOO	
	A 298 K heat of or -159 kJ/mol, -					r NdF	
			(
•			·····				
FO ⁺ OF	12.77	320	1341	26±2	109±8	82BAU/COX	12061-70-0
	12.77	320 <i>320</i>	1341 <i>1341</i>				12061-70-0
OF	12.77			26±2	109±8		12061-70-0
OF	12.77 (12.6±0.2)	(294)	(1229)	26±2 26 3±0.5	109±8 109		12061-70-0 15499-23-7
оғ FO ₂ +		320	1341	26±2 26	109±8 109	82BAU/COX	
OF FO ₂ + O ₂ F		(294)	(1229)	26±2 26 3±0.5	109±8 109	82BAU/COX	
OF FO ₂ + O ₂ F		(294) (294)	(1229)	26±2 26 3±0.5	109±8 109	82BAU/COX	
OF FO ₂ + O ₂ F	(12.6±0.2) (≤9.74±0.01)	(294) (294) (294) (≤212) (≤212)	(1229) (1230) (≤887) (≤888)	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5	109±8 109 13±2 14±2 -52±21 -51±21	82BAU/COX 85JANAF 85JANAF	15499-23-7 16027-92-2
OF FO ₂ + O ₂ F	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) otential determ	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5	109±8 109 13±2 14±2 -52±21 -51±21	82BAU/COX 85JANAF	15499-23-7 16027-92-2
OF FO ₂ + O ₂ F	(12.6±0.2) (≤9.74±0.01)	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) otential determ	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5	109±8 109 13±2 14±2 -52±21 -51±21	82BAU/COX 85JANAF 85JANAF	15499-23-7 16027-92-2
OF FO ₂ + O ₂ F FP + PF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) otential determ	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5	109±8 109 13±2 14±2 -52±21 -51±21	82BAU/COX 85JANAF 85JANAF	15499-23-7 16027-92-2
OF FO ₂ + O ₂ F FP + PF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a	(294) (294) (294) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) otential determ	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5	109±8 109 13±2 14±2 -52±21 -51±21	82BAU/COX 85JANAF 85JANAF	15499-23-7 16027-92-2
OF FO2+ O2F FP+ PF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a See also: 75TOR	(294) (294) (≤212) (≤212) (≤212) appearance po	(1229) (1230) (≤887) (≤888) otential deterr	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5 minations (84BI	109±8 109 13±2 14±2 -52±21 -51±21 ER/GRE). IP	82BAU/COX 85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2
OF FO2 + O2F FP+ PF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a See also: 75TOR	(294) (294) (≤212) (≤212) (≤212) (yWES, 82LEY	(1229) (1230) (≤887) (≤888) otential deterry/LIA.	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5 minations (84BI	109±8 109 13±2 14±2 -52±21 -51±21 3R/GRE). IP	82BAU/COX 85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2
OF FO2 + O2F FP+ PF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a See also: 75TOR	(294) (294) (≤212) (≤212) (sppearance po /WES, 82LEV (154) (154)	(1229) (1230) (≤887) (≤888) otential deterry//LIA. (644) (646)	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5 minations (84BI	109±8 109 13±2 14±2 -52±21 -51±21 ER/GRE). IP	82BAU/COX 85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2
OF FO2 + O2F FP + PF FPb + PbF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a See also: 75TOR	(294) (294) (≤212) (≤212) (≤212) (yWES, 82LEY	(1229) (1230) (≤887) (≤888) otential deterry/LIA.	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5 minations (84BI	109±8 109 13±2 14±2 -52±21 -51±21 3R/GRE). IP	82BAU/COX 85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2
FO ₂ + O ₂ F FP + PF FPb + PbF	(12.6±0.2) (≤9.74±0.01) Δ _f H(Ion) from a See also: 75TOR (7.5±0.3)	(294) (294) (≤212) (≤212) (s212) (s212) (ppearance po /WES, 82LE* (154) (154) (236) (233) (233)	(1229) (1230) (≤887) (≤888) otential deterry/LIA. (644) (646)	26±2 26 3±0.5 3±0.5 -12.5±5 -12±5 minations (84BI -19 -19	109±8 109 13±2 14±2 -52±21 -51±21 BR/GRE). IP -80 -78	82BAU/COX 85JANAF 85JANAF from 82DYK/JON2	15499-23-7 16027-92-2 2. 14986-72-2

Table 1. Positive Ion Table - Continued

	Table	1. Posit	ive Ion Table	e - Contin	ued		
ION Neutral	Ionization potential eV	Δ _f H((Ion) ol kJ/mol	Δ _f <i>H</i> (Ne kcal/mol		Neutral reference	CAS registry number
FS ₂ +							
SSF		194	811				
	From appearance	potential	determinations	(85LOS/WIL).			
FSi ⁺							
SiF	7.28	163	682	-5±6	-20±25	83WAL	11128-24-8
		166	680	−5±6	-22±25		
	IP from 79HUB/I	HER.					
·Sm +							
SmF	(5.7±0.3)	(68)	(286)	-63	-264	79HUB/HER	17209-59-5
		(73)	(307)	-58	-243		
₹Sn ⁺							
SnF	(7.04)	(142)	(593)	-21	-86	81WOO	13966-74-0
	,						
FSr ⁺							
SrF	(5.0±0.3)	(45)	(188)		-294.6±8.4	85JANAF	13569-27-2
		(45)	(189.5)	-70.0±2.0	-292.9±8.4		
TI+							
TiF	10.52	199	833	-43	-182	82TN270	7789-27-7
		199	833	-43	-182		
rw+							
WF	(8.5±1)	(282)	(1180)	86	360	81WOO	51621-16-0
FXe +							
XeF	(10.3)	(252)	(1057)	15.3	64.0	79HUB/HER	16757-14-5
	$\Delta_{\mathbf{f}}H(\mathbf{Ion})$ from ap				0.10	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10/5/-14-5
	IP is $\Delta_f H(Ion) - \Delta_f$						
ry+							
YF	(6.3±0.3)	(121)	(507)	-24	-101	79HUB/HER	13981-88-9
	0 K values.	(121)	(507)	24	101	7911OB/11ER	13701-00-7
, <u>.</u>							
72 +	45.408.0000	0.00					
F ₂	15.697±0.003	362.0 <i>362.0</i>	1514.5	0	0	*DEF	7782-41-4
	IP from 84VAN/L		1514.5 also: 84DYK/J	OS. 81KIM/KA	T. 81BIE/ASE	.	
				-,	-,		
F ₂ Fe ⁺							
FeF ₂	(11.3±0.3)	(177)	(740)	-84	-350	81WOO	7789-28-8
		(177)	(741)	-83	-349		
G2Ge+							
GeF ₂	(11.65)	(132)	(551)	-137	-573	81WOO	13940-63-1
-	IP from 82JON/V		-				
F ₂ HN ⁺				· · · · · · · · · · · · · · · · · · ·			
HNF ₂	(11.53±0.08)	(250)	(1047)	-16±1	-65±6	60D A N1/712D	10405 27 2
'- Z	(11.5510.00)	(200)	(107/)	1021	03±0	69PAN/ZER	10405-27-3

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry				
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number				
F ₂ HO ₂ S ⁺											
F ₂ SOOH		38	159								
	From proton affinity of F ₂ SO ₂ (RN 2699-79-8) (85MCM/KEB, 85MCM/KEB2)										
	re-evaluated relative to CO standard (84LIA/LIE). PA = 146.2 kcal/mol,										
	612. kJ/mol.										
F ₂ H ₂ Si ⁺											
SiH ₂ F ₂	12.2	(92)	(386)	-189±5	-791±21	85JANAF	13824-36-7				
2 2		(94)	(395)	−187±5	-782±21						
	IP is onset of pho	toelectron b	and.								
e ro+											
F ₂ IP + PF ₂ I +	(9.8)	(84)	(350)	1422.7	-595.4±4.2	84BER/GRE	13819-11-9				
11.21	IP is onset of pho				-393.414.2	84BER/ORE	13619-11-9				
	11 to other or pilo			· · · · · · · · · · · · · · · · · · ·							
F ₂ Kr ⁺											
KrF ₂	13.1±0.05	317	1325	14±0.7	60±3	67GUN	13773-81-4				
F ₂ Mg ⁺											
MgF ₂	(13.4±0.4)	(136)	(569)	-173	-724	82TN270	7783-40-6				
2	(====	(137)	(571)	-172	-722						
	<u></u>		······································								
F ₂ Mn ⁺	(11.4)	(105)	(CMC)	105	505	0177/00	7700 (4.1				
MnF ₂	(11.4)	(137)	(575)	-125	-525	81WOO	7782-64-1				
F ₂ Mo ⁺											
MoF ₂	(9.00±0.15)	(167)	(700)	-40	-168	81WOO	20205-60-1				
				·							
F ₂ M ₀ O ₂ +	(10.0.00)	(#4)	(00()	0.40	1010	04334000	10004 577 0				
MoO ₂ F ₂	(13.0±0.3)	(56)	(236)	-243	-1018	81WOO	13824-57-2				
F ₂ N ⁺											
NF ₂	11.628±0.01	275	1153	8	31	84BER/GRE	3744-07-8				
		276.5	1156.8	8.3	34.9						
	IP from 84BER/G	RE. See als	o: 79DUD/B <i>t</i>	AL.							
F ₂ NS ⁺											
NSF ₂		253	1060								
1101.2	From appearance			SF ₂ .							
		4		<i>J</i>							
F ₂ N ₂ +											
$(E)-N_2F_2$	(12.8)	(315)	(1316)	19±1	81±5	85JANAF	13776-62-0				
		(316)	(1321)	21±1	86±5						
F ₂ Nd ⁺			<u> </u>								
F ₂ Nd	(5.6±0.3)	(-29)	(-120)	-158	-660	81WOO					
	• •	<u> </u>	· ·	· · · · · · · · · · · · · · · · · · ·							
F ₂ O +											
OF ₂	13.11±0.01	308	1290	5.9±0.4	24.5±1.6	85JANAF	7783-41-7				
		309	1292	6.4±0.4	26.8±1.6						

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆cH	(Ion)	$\Delta_{\mathbf{f}}H(\mathbf{N})$	eutral)	Neutral	CAS registry
Neutral	eV		ol kJ/mol	-	kJ/mol	reference	number
F ₂ OS ⁺				·			
SOF ₂	12.25	(164)	(688)	-118±8	-494±32	87HER	7783-42-8
-		(166)	(693)	−117±8	-489±32		
	See also: 81COS/l	LLO.					
F ₂ O ₂ S ⁺							
SO ₂ F ₂	13.04±0.01	119	499	-181±2	-759±8	87HER	2699-79-8
		121	508	-179±2	<i>−750±8</i>		
F ₂ O ₂ W ⁺							
WO ₂ F ₂	(12.5±0.3)	(70)	(291)	-219	-915	81WOO	14118-73-1
2 2	IP from 81MAL/						
F ₂ P ⁺				, ,			
PF ₂	8.847±0.010	90	378.5	-115±0.5	-482±2.1	84BER/GRE	13873-52-4
		90	375		5 -478.6±2.1		
	IP from 84BER/C	RE. See	also: 75TOR/WI				
F ₂ Pb ⁺					<u></u>		
PbF ₂	(11.5)	(162)	(677)	-103	-432	81WOO	7783-46-2
#		(163)	(681)	-102	-429		
	IP is onset of pho		• •				
F ₂ Pt +							
PtF ₂	(11.85±0.25)	(247)	(1032)	-26±6	-111±25	83KOR/BON	18820-56-9
-	IP from 83KOR/E		•				
F ₂ S +					····		
SF ₂	(10.08)	(161)	(676)	-71±4	-297±17	87HER	13814-25-0
_		(162)	(678)	-70±4	-295±17		
	See also: 80GOM	/HAA, 85	LOS/WIL.				
F ₂ S ₂ +							
FSSF	10.62±0.02	176	739	-68±2	-286±10	87HER	13709-35-8
		177	742	-67±2	−283±10		-
	IP from 85LOS/W	TL.					
SSF ₂	10.41±0.02	169	707	−71±2	-297±10	87HER	101947-30-2
4	IP from 85LOS/W						50-2
F ₂ Si ⁺				***************************************			
SiF ₂	10.78±0.05	(108)	(450)	-141±2	-590±8	83WAL	13966-66-0
4		(108)	(451)	-141±2	-589±8	·· - *	10.00 00 0
F ₂ Sn ⁺							
SnF ₂	(11.1)	(140)	(586)	-116	-485	81WOO	7783-47-3
2	IP is onset of phot		• •		•		
F ₂ Ti ⁺							
TiF ₂	(12.2±0.5)	(125)	(524)	-156	-653	81WOO	13814-20-5
		()	()	-20	000	0100	10014-20-0

Table 1. Positive Ion Table - Continued

ION	Ionization potentia	l Δ _f H(Ic	on)	$\Delta_{\mathbf{f}}H(\mathrm{Ne})$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
F ₂ W ⁺							·-
WF ₂	(9.0±0.3)	(182)	(763)	-25	-105	81WOO	22062 15 4
2	(7.010.3)	(162)				81WOO	33963-15-4
F ₂ Xe +							
XeF ₂	12.35±0.01	259	1085	-26±0.2	-107±1	72JOH/MAL	13709-36-9
F ₂ Zr ⁺							
F ₂ Zr	(12.0±0.5)	(143)	(600)	-133±5	-558±21	85JANAF	13842-94-9
2	, ,	(144)	(602)	-133±5	-556±21		200.27.7
			.				
F ₃ Fe ⁺ FeF ₃	(12.5.0.2)	(101)	(421)	100	30 5	017700	2202 50 0
rerg	(12.5±0.3)	(101) <i>(101)</i>	(421) <i>(424)</i>	188 <i>187</i>	-785 - <i>782</i>	81WOO	7783-50-8
		(201)	·····	107			
F ₃ HN ⁺							
F ₂ NFH	~ -	199	832		~~.\		
	From proton af CO standard (8	_				d relative to	
	CO standard (8	TUR/LIE). P			11101.	· · · · · · · · · · · · · · · · · · ·	
F ₃ HOP ⁺							
P(OH)F ₃		91	-383				
	From proton af	finity of POF ₃	3 (RN 13478-2	$0-1$). PA = 16°	7.8 kcal/mol, 70	02. kJ/mol.	
F ₃ HP ⁺							
* J-**							
HPF ₂		-20	-86				
HPF ₃	From proton af). PA = 166.5	kcal/mol, 697.	kJ/mol.	
	From proton af). PA = 166.5	kcal/mol, 697.	kJ/mol.	
F ₃ HSi ⁺		finity of PF ₃ (RN 7783-55-3				124/5 71 0
	From proton af	(36)	RN 7783-55-3 (150)	−287±5	-1201±21	kJ/mol. 85JANAF	13465-71-9
F ₃ HSi ⁺	(14.0)	(36) (37)	(150) (157)				13465-71-9
F ₃ HSi ⁺ SiHF ₃		(36) (37)	(150) (157)	−287±5	-1201±21		13465-71-9
F ₃ HSi ⁺ SiHF ₃ F ₃ H ₂ OSi ⁺	(14.0)	(36) (37) notoelectron b	(150) (157) (and.	−287±5	-1201±21		13465-71-9
F ₃ HSi ⁺ SiHF ₃	(14.0) IP is onset of ph	(36) (37) notoelectron b	(150) (157) vand.	−287±5 −285±5	1201±21 1194±21	85JANAF	13465-71-9
F ₃ HSi ⁺ SiHF ₃ F ₃ H ₂ OSi ⁺	(14.0)	(36) (37) notoelectron b	(150) (157) vand.	−287±5 −285±5	1201±21 1194±21	85JANAF	13465-71-9
F ₃ HSi ⁺ SiHF ₃ F ₃ H ₂ OSi ⁺ SiF ₃ OH ₂	(14.0) IP is onset of ph	(36) (37) notoelectron b	(150) (157) vand.	−287±5 −285±5	1201±21 1194±21	85JANAF	13465-71-9
F ₃ HSi ⁺ SiHF ₃ F ₃ H ₂ OSi ⁺ SiF ₃ OH ₂	(14.0) IP is onset of ph	(36) (37) notoelectron b	(150) (157) vand.	−287±5 −285±5	1201±21 1194±21	85JANAF	13465-71-9 7783-53-1
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃	(14.0) IP is onset of ph From proton af	(36) (37) notoelectron b (-264) finity of SiF ₃ C	(150) (157) vand. (-1103) OH (84REE/N	-287±5 -285±5 MUJ). PA = (1	1201±21 1194±21 62) kcal/mol, (85JANAF 85JANAF 8676) kJ/mol.	
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo +	(14.0) IP is onset of ph From proton aff (12.57±0.2)	(36) (37) notoelectron b (-264) finity of SiF ₃ C	(150) (157) pand. (-1103) OH (84REE/N	-287±5 -285±5 MUJ). PA = (1	-1201±21 -1194±21 62) kcal/mol, (85JANAF (676) kJ/mol. 81WOO	7783-53-1
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃	(14.0) IP is onset of ph From proton af	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104)	(150) (157) (157) (157) (157) (103) (103) (103) (104) (104) (104) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105)	-287±5 -285±5 MUJ). PA = (1 -186	1201±211194±21 62) kcal/mol, (779	85JANAF 85JANAF 8676) kJ/mol.	
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo +	(14.0) IP is onset of ph From proton aff (12.57±0.2)	(36) (37) notoelectron b (-264) finity of SiF ₃ C	(150) (157) pand. (-1103) OH (84REE/N	-287±5 -285±5 MUJ). PA = (1	-1201±21 -1194±21 62) kcal/mol, (85JANAF (676) kJ/mol. 81WOO	7783-53-1
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃	(14.0) IP is onset of ph From proton aff (12.57±0.2)	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104)	(150) (157) (157) (157) (157) (103) (103) (103) (104) (104) (104) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105)	-287±5 -285±5 MUJ). PA = (1 -186	1201±211194±21 62) kcal/mol, (779	85JANAF (676) kJ/mol. 81WOO	7783-53-1
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃ F ₃ MoS +	(14.0) IP is onset of ph From proton aff (12.57±0.2)	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104)	(150) (157) (157) (157) (157) (103) (103) (103) (104) (104) (104) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105)	-287±5 -285±5 MUJ). PA = (1 -186	1201±211194±21 62) kcal/mol, (779	85JANAF (676) kJ/mol. 81WOO	7783-53-1
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃	(14.0) IP is onset of ph From proton aff (12.57±0.2)	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104) (87) (87)	(150) (157) pand. (-1103) OH (84REE/N (434) (361) (364)	-287±5 -285±5 IUJ). PA = (1 -186 -141 -141	1201±211194±21 62) kcal/mol, (779 592589	85JANAF (676) kJ/mol. 81WOO	7783-53-1 20193-58-2
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃ F ₃ MoS + MoSF ₃	(14.0) IP is onset of ph From proton aff (12.57±0.2) (9.88±0.10)	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104) (87) (87)	(150) (157) pand. (-1103) OH (84REE/N (434) (361) (364)	-287±5 -285±5 IUJ). PA = (1 -186 -141 -141	1201±211194±21 62) kcal/mol, (779 592589	85JANAF (676) kJ/mol. 81WOO	7783-53-1 20193-58-2
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃ F ₃ MoS + MoSF ₃ F ₃ N +	(14.0) IP is onset of ph From proton aff (12.57±0.2) (9.88±0.10) (13.0±0.3) IP from 80MAL	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104) (87) (87) (134) _/ALI, 80MAI	(150) (157) (157) (157) (157) (103) (103) (103) (104) (103) (104) (104) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105) (105)	-287±5 -285±5 MUJ). PA = (1 -186 -141 -141 -166±6	-1201±21 -1194±21 62) kcal/mol, (-779 -592 -589 -695±27	85JANAF (676) kJ/mol. 81WOO 81WOO	7783-53-1 20193-58-2 67374-76-9
F ₃ HSi + SiHF ₃ F ₃ H ₂ OSi + SiF ₃ OH ₂ F ₃ Mn + MnF ₃ F ₃ Mo + MoF ₃ F ₃ MoS + MoSF ₃	(14.0) IP is onset of ph From proton aff (12.57±0.2) (9.88±0.10)	(36) (37) notoelectron b (-264) finity of SiF ₃ C (104) (87) (87)	(150) (157) pand. (-1103) OH (84REE/N (434) (361) (364)	-287±5 -285±5 IUJ). PA = (1 -186 -141 -141	1201±211194±21 62) kcal/mol, (779 592589	85JANAF (676) kJ/mol. 81WOO	7783-53-1 20193-58-2

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	Δ _f H(Io		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry number
E NO +				 			
F ₃ NO ⁺ NOF ₃	13.26±0.01	(267)	(1116)	-39±5	-163±21	85JANAF	13847-65-9
NOF3	13.20±0.01	(269)	(1110)	−37±5	-155±21 -155±21	MAINAI.	13647-03-9
F ₃ NS ⁺			- 				· · · · · · · · · · · · · · · · · · ·
NSF ₃	(12.0) IP is onset of ph	(192) otoelectron b	(802) and.	-85±0.5	-356±2	70O'H/HUB	15930-75-3
F ₃ OP ⁺							···································
POF ₃	12.76±0.01	(-5)	(-23)	-300±2	-1254±8	85JANAF	13478-20-1
	See also: 83NES	(-3) 5/MIL.	(-14)	-298±2	−1245±8		
F ₃ OV ⁺							
VOF ₃	(13.88±0.05)	(25)	(105)	-295.0±7.0) −1234±29	75FLE/SVE	13709-31-4
F ₃ P +							
PF ₃	11.44	(35)	(146)	-229±1	-958±4	85JANAF	7783-55-3
		(36)	(151)	-228±1	−953±4		
	IP from 84BER	GRE. See als	o: 83NES/MI	L, 75TOR/WES	S, 82LEV/LIA	•	
F ₃ PS +							
F ₃ PS	≤11.05±0.035	(≤14)	(≤57)	-241±15	-1009±63	85JANAF	2404-52-6
		(≤16)	(≤65)	-239±15	-1001±63		
F ₃ Sb ⁺							
SbF ₃	(12.1)	(80)	(334)	-199	-833	81WOO	7783-56-4
	IP is onset of ph	otoelectron b	and(83NOV/	POT).			
F ₃ Si ⁺							
SiF ₃	(9.3)	(-24)	(-99)	-239±5	-1000±21	83WAL	
-	·	(-23)	(-96)	−238±5	-996±21		
	From appearance	e potential (1	.3.33 eV) in C	H_3SiF_3 . IP is Δ	$_{\rm f}H({ m Ion})$ - $\Delta_{\rm f}H$	(Neutral).	
F ₃ Ti ⁺							
TiF ₃	(10.5±0.5)	(-36)	(-151)	-278	-1164	81WOO	7783-57-5
		(-35)	(-147)	-277	-1160		
F ₃ W ⁺						·	
WF ₃	(9.0±0.2)	(81)	(337)	-127	-531	81WOO	51621-17-1
			*				· · · · · · · · · · · · · · · · · · ·
F ₃ Xe ⁺		224	001				
XeF ₃	From appearance	234 e potential (1	981 .3.10 eV) in X	eF ₄ .			
E Co. +			-	•		· · · · · · · · · · · · · · · · · · ·	
F ₄ Ge ⁺	(15.5)	(72)	(206)	204	1100	0133400	7700 50 5
GeF ₄	(15.5)	(73) otoelectron b	(306)	-284	-1190	81WOO	7783-58-6

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic		∆ _f H(Ne kcal/mol		Neutral	CAS registry
	ev	KCal/mol	KJ/MOI	kcai/moi	KJ/moi	reference	number
F ₄ HSi ⁺							
SiF ₃ FH		-140	-588				
	From proton affin	nity of SiF ₄ (RN 7783-61-1	.)(84REE/MUJ). $PA = 120$.	2 kcal/mol,	
	503. kJ/mol.						
F ₄ Mo ⁺	-			····-	·		
MoF ₄	(9.9)	(0)	(1)	-228	-954	81WOO	23412-45-5
		(1)	(4)	-227	-951		
F ₄ M ₀ O ⁺				···			
MoOF ₄	13.8	2	6	-317	-1325	86BUR/FAW	14459-59-7
4		3	13	-315	-1318	0020141111	14457-57-1
	IP is onset of pho	toelectron b	and (81VOV/	DUD).			
F ₄ MoS ⁺							
MoSF ₄	(12.6±0.3)	(58)	(245)	-232±7	-971±29	80MAL/ALI	70487-60-4
7	IP from 80MAL/A			- -			
						······································	
F ₄ N ₂ +	44.04.0.00	0.67	1110			0.000.000	10004 := 1
N_2F_4	11.94±0.03	267	1119	-8	-33	84BER/GRE	10036-47-2
	IP from 84BER/C	270	1131	-5	-21		
 	II HOM GABLIQ						
F ₄ ORe ⁺							
ReOF ₄	10.5	-22	-91	-264	-1104	86BUR/FAW	17026-29-8
	IP is onset of pho	toelectron b	and (81VOV/	DUD).			
F ₄ OS ⁺							
SOF ₄	(12.3)	(61)	(254)	-223±11	-933±44	87HER	13709-54-1
·	IP is onset of pho	toelectron b	and (81COS/I	LLO).			
F ₄ OW ⁺				· · · · · · · · · · · · · · · · · · ·			
WOF ₄	13.6	-28	-119	-342	-1431	86BUR/FAW	13520-79-1
* *		-27	-111	-340	-1423	. = = = 4 · ·	
	IP is onset of pho			DUD).			
F ₄ P ₂ +							
P ₂ F ₄	≤9.28	≤-56	≤-235	-270	-1130	84BER/GRE	13824-74-3
- 4	IP from 84BER/C				-		
							····
F ₄ Pb +	40 A . 0 6\	(40)	(175)	100	000	013700	7702 50 7
PbF ₄	(10.4±0.3)	(42)	(175)	-198 107	-828	81WOO	7783-59-7
		(41)	(170)	-197 	-823		
F ₄ Pt ⁺							
PtF ₄	(12.83±0.28)	(171)	(714)	-125±6	-524±25	83KOR/BON	13455-15-7
	IP from 83KOR/E	BON.					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathrm{f}}H($	Ion)	$\Delta_{\rm f}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	_	i kJ/mol	-	kJ/mol	reference	number
F ₄ S +							
SF ₄	12.03±0.05	95	397	-182±5	-763±21	85JANAF	7783-60-0
·		98	408	−181±5	-757±21		
	See also: 81COS/I	LLO.					
F ₄ SW ⁺							
WSF ₄	(≤12.0±0.2)	(≤5)	(≤21)	≤-272±9	≤-1137±38	81MAL/ALI	41831-80-5
	IP from 81MAL/A	ALI.					
F ₄ S ₂ +							
F ₃ SSF	(10.15±0.10)	(76)	(319)	-158±6	-660±24	87HER	27245-05-2
	IP from 80GOM/.	HAA.					
F ₄ Si ⁺				·			
SiF ₄	(15.7)	(-24)	(-100)	-386.0±0.3	3 -1615±1	85JANAF	7783-61-1
		(-23)	(-94)	-384.6±0.3			
	IP is onset of pho	toelectron	band. (75LLO	/ROB, 82BIE/ <i>A</i>	ASB, 82LEV/LI	(A)	
F ₄ U ⁺							
UF ₄	(9.51)	(-163)	(-681)	-382	-1599	82TN270	10049-14-6
		(-162)	(-676)	-381	-1594		
F ₄ W ⁺							
WF ₄	(9.89±0.10)	(-18)	(-75)	-246	-1029	81WOO	13766-47-7
		<u>`</u>	. <u> </u>				
F ₄ Xe ⁺	10.65.01	040	1015	40.00	404 4		
XeF ₄	12.65±0.1	242	1015	-49±0.2	-206±1	72JOH/MAL	13709-61-0
F ₅ I +							
IF ₅	12.943±0.005	106	445	-201±0.5	-840±2	85JANAF	7783-66-6
		108	453	-199±0.5	-832±2		
F ₅ Mo ⁺		7					
MoF ₅	10.5±0.3	54	-228	-297±1	-1241±4	85JANAF	13819-84-6
		-53	-223	-295±1	-1236±4		
	IP from 80MAL/A	ALI2.					
F ₅ ORe ⁺				, , , , , , , , , , , , , , , , , , ,			
ReOF ₅	(13.2±0.1)	(21)	(88)	-283	-1186	81WOO	23377-53-9
F_D+							
F ₅ P ⁺ PF ₅	(15.1)	(-33)	(-139)	-381	-1596	82TN270	7647 10 0
**3	(10.1)	(-30) (-30)	(-139) (-127)	-381 -379	-1596 -1584	021172/0	7647-19-0
	IP is onset of pho				== 3 *		
F-S+							
F ₅ S ⁺ SF ₅	10.5±0.1	23	97	-219	-915.9	ያ1 <u>ኪ ላ</u> ኪ/ሮፒኮ	10546 01 7
o- 2	10.010.1	25 25	106	-21 <i>5</i> -21 <i>6</i>	-915.9 -906	81BAB/STR	10546-01-7
	IP from charge ex						
	$\Delta_{\mathbf{f}}H(\mathbf{Ion})$ from eq					R)	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	Δ _f H(Iα		Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
75U+			···				
UF ₅	(11.4)	(-200) <i>(-199)</i>	(-837) <i>(-832)</i>	-463 -462	-1937 -1932	82TN270	13775-07-0
F ₅ W ⁺							
WF ₅	(10.03±0.10)	(-103)	(-429)	-334	-1397	81WOO	19357-83-6
F ₆ Mo ⁺						· · · · · · · · · · · · · · · · · · ·	
MoF ₆	(14.5±0.1)	(-38) <i>(-36)</i>	(-159) (-152)	−372.4±0.2 −370.7±0.2		85JANAF	7783-77-9
F ₆ N ₃ P ₃ +							
F2PN PF2 N P-N F2	11.58 IP form 82LEV/I	(-245) JA and 81C	(-1024) LA/SOW.	-512	-2141	*EST	15599-91-4
F ₆ Re +							
ReF ₆	(11.0) IP from 80VOV/I	(-69) DUD.	(-288)	-322	-1349	84BAR/YEH	10049-17-9
F ₆ S +							
SF ₆	15.33±0.03	62 65	259 <i>273</i>		-1220.5±.8 2 -1206.5±.8	85JANAF	2551-62-4
	See also: 82BIE/A	ASB. 		···		· · · · · · · · · · · · · · · · · · ·	
F6U+							
UF ₆	14.00±0.10	-190 - <i>189</i>	-796 -791	-513 -512	-2147 -2141	82TN270	7783-81-5
F ₆ Xe ⁺							
XeF ₆	12.19±0.02	214	897	-67±0.5	-279±2	72JOH/MAL	13693-09-9
7Re +							
ReF ₇	(14.1±0.1)	(-16)	(-69)	-342±3	-1429±13	84BAR/YEH	17029-21-9
re+							
Fe	7.870	281 <i>280</i>	1175	99 <i>99</i>	416 <i>414</i>	82TN270	7439-89-6
	See also: 82DYK/		1173	77	717		
FeH ⁺	· · · · · · · · · · · · · · · · · · ·			 	······································		
FeH	$\Delta_{ m f} H ({ m Ion})$ from or See also: 81ARM/			on (86ELK/AR	M3).		15600-68-7
FeHO +	· · · · · · · · · · · · · · · · · · ·			······································			
FeOH	7.9±0.2	211 (214)	884 (895)	32	133	80MUR	12315-09-2
	IP from 80MUR.	∆ _f H(Ion) at	298 K from p	roton affinity o	f FeO (84CAS,	FRE).	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H(Ne)$	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
FeI +							
FeI	(7.8±0.5)	(247)	(1033)	(67)	(280)	84GRA/ROS2	
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from 8	4GRA/ROS	2. Cited IP is	$\Delta_{\mathbf{f}}H(\mathbf{Ion}) - \Delta_{\mathbf{f}}I$	H(Neutral).		
	See also: 85GRA	/ROS. 0 K va	alues.				
FeI ₂ +							
FeI ₂	9.3	(233)	(976)	(19)	(79)	84GRA/ROS2	7783-86-0
	IP from 84GRA/	ROS. See als	o: 84GRA/R	OS2, 85GRA/R	OS. 0 K values	.	
FeO +							
FeO	8.9±0.1	265.2	1109.7	60.0±5	251.0±21	85JANAF	1345-25-1
	5,725,7	265.3	1109.8	60.0±5	251.1±21		30 1.2 22 2
	IP from 82ARM	HAL. See al	so: 84JAC/JA	.C, 81ARM/HA	L, 81KAP/ST	A, 80MUR.	
FeV ⁺							
VFe	(5.4)	(302)	(1264)	1 77	743	85HET/FRE	
-	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ and IP		` '				
Fe ₂ +			······································				
Fe ₂	6.30±0.01	325	1361	180	753	82SHI/GIN	12596-01-9
2	IP from 84ROH/			100			22000 04:0
Fm ⁺							
Fm	6.64±0.11						7440-72-4
							
Ga+							
Ga	5.999	203	851	65.0	272.0	85JANAF	7440-55-3
	See also: 85HIR/	203 STR	850	64.8	271.0		
						· · · · · · · · · · · · · · · · · · ·	
GaI +							
GaI	(9.0±0.3)	(219)	(915)	11.1	46.4	79HUB/HER	15605-68-2
		(219)	(917)	11.6	48.5		
GaI ₃ +							
GaI ₃	9.40	183	765	-34	-142	82TN270	13450-91-4
GaO+							
GaO	(9.4±0.5)	(257)	(1074)	40±10	167±42	83PED/MAR	12024-08-7
	((257)	(1074)	40	167		
Gd ⁺							
Gd	6.1502±0.0006	237	991	95	398	82TN270	7440-54-2
	2.25 4.25,000	237.2	992.3	<i>95.3</i>	398.9	0211.270	,110 514
GdO+				······			
GdO ·	(5.75±0.1)	(116)	(486)	-16±3	-69±13	83PED/MAR	12024-77-0
	(5.75-0.1)	(116)	(484)	-10±3 -17	-09±13 -71	OSI ELI/MAIC	12027-11 * U
	See also: 80MUF		, · - · · ,	=-			

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{f}H(Io$	n)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
GdS+			·				
GdS	(6.9±0.6) 0 K values.	(197)	(825)	<i>38</i>	159	82TN270	12134-74-6
Ge+							· · · · · · · · · · · · · · · · · · ·
Ge	7.899	272.2 271.5	1138.7 1135.9	90.0 <i>89.3</i>	376.6 <i>373.8</i>	82TN270	7440-56-4
GeH ₄ +			······				
GeH ₄	11.33	283	1184	22	91	64GUN/GRE	7782-65-2
		285	1195	24	102		
GeH ₅ ⁺							
GeH ₅		221	926				
-	From proton affir 695. kJ/mol.		, (RN 7782-65	-2) (80SEN/AE	BE). $PA = 16$	66.2 kcal/mol,	
GeI ₂ +							
GeI ₂	(8.9)	(216)	(906)	11.2	46.9	82TN270	13573-08-5
-	IP is onset of pho			VAN).			
GeI ₄ +							
GeI ₄	(9.42)	(204)	(852)	-14	-57	82TN270	13450-95-8
·		(205)	(857)	-12.3	-51.5		
GeO +							
GeO	11.25±0.01	250	1044	-9.9±0.7	-41±3	84RAU/SCH	20619-16-3
		250	1044	-9.9	-4 1		
GeS +				·			
GeS	9.98±0.02	252	1055	22	92	82TN270	12025-32-0
GeSe +			······································				
GeSe	(9.3)	(230)	(964)	23	96	77PED/RYL	12065-10-0
	` '	(237)	(993)	23	96		
	IP is onset of pho	toelectron b	and.				
GeSi +							
GeSi	8.2±0.3	315	1319	126	528	79HUB/HER	12025-36-4
	0 K values.						
Ge ₂ +							
Ge ₂	(7.8)	(293)	(1226)	113	473	86KIN/NAG	12596-05-3
0-2	()	(293)	(1224)	113	473		
Co. W. +							
GeoHe	(12.5±0.3)	(327)	(1368)	38.8	162	64GUN/GRE	13818-89-8
Ge ₂ H ₆ + Ge ₂ H ₆ Ge ₃ H ₈ + Ge ₃ H ₈	(120-100)		·		<u> </u>		
Ge ₃ H ₈ +		40-0	(44.50)		207	(ACT BUCKE	14601 44 2
Ge ₃ H ₈	(9.6 ± 0.3)	(276)	(1153)	54.2	227	64GUN/GRE	14691-44-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
н+							
Н	13.598	365.7 365.2	1530.0 1528.0	52.10 <i>51.63</i>	217.999 <i>216.035</i>	85JANAF	12385-13-6
HHe ⁺							
ННе	Δ _f H(Ion) from 7 178. kJ/mol.	323 79HUB/HER	1352 Correspond	ling proton affir	nity of He = 42	2.5 kcal/mol,	13766-24-0
ні+		***	· · · · · · · · · · · · · · · · · · ·				
НІ	10.386±0.001	245.8 246.3	1028.5 1030.6	6.3±0.05 6.8±0.05	26.4±0.2 28.5±0.2	85JANAF	10034-85-2
	See also: 81KIM/	/KAT.					
HK+							
КН	(8.0±1.0)	(214) (215)	(895) <i>(896)</i>	29±3 30±3	123±15 126±15	85JANAF	7693-26-7
	IP from 82FAR/S	SRI.					
нко+		····					
КОН	(7.50±0.15)	(117) <i>(119)</i>	(491) <i>(497)</i>	-56 - <i>54</i>	-233 -227	81LIN/BES	1310-58-3
	See also: 82FAR	/SRI.					
HKr ⁺							
KrH	From proton affi	264 nity of Kr (R	1105 N 7439-90-9).	PA = 101.6 kg	al/moi, 425. kJ	/mol.	
HLi ⁺						- · · · · · · · · · · · · · · · · · · ·	
LiH	7.7	(211) <i>(211)</i>	(882) (882)		139.2±0.04 139.4±0.04	79HUB/HER	7580-67-8
	IP from 79HUB/	HER.					
HLi ₂ O ⁺		· · · · · · · · · · · · · · · · · · ·					
Li ₂ OH	17	37	155	(0.40) IDC			
	From reaction en affinity of Li ₂ O (ng proton	
HMgO ⁺		* ** **		· · · · · · · · · · · · · · · · · · ·			
МдОН	7.5 \pm 0.3 $\Delta_f H(\text{Ion})$ from 8	<i>(143)</i> 1MUR. 0 K v	<i>(599)</i> alues.	-30	-125	81MUR	12141-11-6
HMn ⁺							
MnH	(7.8) A _f H(Ion) from o See also: 81ARM					79HUB/HER	14452-76-7
	See also; of ARM	TIGE. IF IS	Δf11(1011) - Δ	11(14cuital). U I	z vatucs.		
HMn ₂ + ^{Mn} 2H		(284)	(1186)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or	nset of endot	hermic reacti	on (86ARM). 0	K value.		

Table 1. Positive Ion Table - Continued

	Ionization potential $\Delta_f H(Ion)$		on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
HMo ⁺					· • · · · · · · ·		
МоН		(331)	(1385)				
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from or	nset of endo	thermic reacti	on. 0 K value.			
HN+							
NH	13.49±0.01	401.1	1678.2	90.0±4.0	376.6±16.7	85JANAF	13774-92-0
		401.1	1678.1	90.0±4.0	376.5±16.7		
	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from a	pearance po	otential deter	nination (85GI	B/GRE).		
HNO ⁺				··· · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	
NOH		274.3	1147.7				
		274.8	1149.8				
	$\Delta_{ m f}$ H (Ion) from ap	pearance po	otential deterr	nination (82KU	/T/GOO).		
HNO	(10.1)	(256.3)	(1072.3)	24	100	82BAU/COX	14332-28-6
	` '	(256.8)	(1074.4)			-, -	
	$\Delta_{\mathrm{f}}H$ (Ion) from ap			nination (82KU	/T/GOO).		
	IP is $\Delta_{\mathbf{f}}H(\text{Ion})-\Delta_{\mathbf{f}}$:H(Neutral)	•				
HNOS +					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	
HN = S = O	(11.3)	(302)	(1265)	41.7	175	82OLE/TUR	13817-04-4
	IP is onset of photo	toelectron b	and.				
HNO ₂ +				* 4,			
			977	10	00	OOD AT LICON	5500 55 C
HNO ₂	≤11.3	234	911	−19	-80	82BAU/COX	7782-77-6
HNO ₂	≤11.3	234 <i>≤243</i>	<i>≤1018</i>	-19 17	-80 -72	82BAU/COX	7/82-77-6
HNO ₂	Δ _f H(Ion) at 298 k	≤243 Cfrom proto	<i>≤1018</i> on affinity of N	-17	-72		7/82-77-6
HNO ₂		≤243 Cfrom proto	<i>≤1018</i> on affinity of N	-17	-72		7/82-77-6
•	Δ _f H(Ion) at 298 k	≤243 Cfrom proto	<i>≤1018</i> on affinity of N	-17	-72		7/82-7/-6
•	Δ _f H(Ion) at 298 k	≤243 Cfrom proto	<i>≤1018</i> on affinity of N	-17	-72		7697-37-2
HNO ₃ +	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/mo	≤243 K from proto ol, 586 kJ/mo	≤1018 on affinity of N ol.	–17 IO ₂ (RN 10102	−72 -44-0) (84POL/	MUN).	***************************************
HNO ₃ + HNO ₃	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/mo	≤243 £ from protected, 586 kJ/monected 244	≤1018 on affinity of N ol.	-17 IO ₂ (RN 10102	-72 -44-0) (84POL/	MUN).	***************************************
HNO ₃ + HNO ₃	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/mo	≤243 K from protection, 586 kJ/monocol, 586 kJ/monocol	≤1018 on affinity of Not. 1018 1028	-17 IO ₂ (RN 10102	-72 -44-0) (84POL/	MUN).	***************************************
HNO ₃ + HNO ₃	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/mo 11.95±0.01	≤243 € from protection, 586 kJ/mo 244 246	≤1018 on affinity of Not. 1018 1028 1035.5	-17 IO ₂ (RN 10102 -32 -30	-72 -44-0) (84POL/ -135 -125	MUN). 82BAU/COX	***************************************
HNO ₃ + HNO ₃	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/mo	≤243 K from proto- ol, 586 kJ/mo- 244 246 247.5 ity of N ₂ ; th	≥1018 on affinity of Nol. 1018 1028 1035.5 reshold deter	-17 IO ₂ (RN 10102 -32 -30	-72 -44-0) (84POL/ -135 -125	MUN). 82BAU/COX	***************************************
HNO ₃ + HNO ₃ HN ₂ + HN ₂	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/model 11.95±0.01	≤243 K from proto- ol, 586 kJ/mo- 244 246 247.5 ity of N ₂ ; th	≥1018 on affinity of Nol. 1018 1028 1035.5 reshold deter	-17 IO ₂ (RN 10102 -32 -30	-72 -44-0) (84POL/ -135 -125	MUN). 82BAU/COX	***************************************
HNO ₃ + HNO ₃ + HNO ₃ + HNO ₂ + HNO	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/model 11.95±0.01	243 K from protection, 586 kJ/mo 244 246 247.5 ity of N ₂ ; the mol, 494.5 kJ	sin affinity of Not. 1018 1028 1035.5 reshold determined.	-17 IO ₂ (RN 10102 -32 -30	-72 -44-0) (84POL/ -135 -125	MUN). 82BAU/COX	***************************************
HNO ₃ + HNO ₃ HN ₂ + HN ₂	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/mo 11.95±0.01 From proton affin PA = 118.2 kcal/m	243 3. from protection, 586 kJ/mo 244 246 247.5 ity of N ₂ ; the mol, 494.5 kJ	1018 on affinity of Not. 1018 1028 1035.5 creshold determined.	-17 IO ₂ (RN 10102 -32 -30 mination (82LE	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives t	82BAU/COX the same value.	***************************************
HNO ₃ + HNO ₃ HN ₂ + HN ₂ HN ₂ O +	$\Delta_f H(\text{Ion})$ at 298 KPA = 140 kcal/model 11.95±0.01	243 (from protection), 586 kJ/mo 244 246 247.5 ity of N ₂ ; the mol, 494.5 kJ 246 ity of N ₂ O (1018 1018 1018 1028 1035.5 reshold determinents (/mol. 1031 (RN 10024-97-	-17 IO ₂ (RN 10102 -32 -30 mination (82LE	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives t	82BAU/COX the same value.	
HNO ₃ + HNO ₃ HN ₂ + HN ₂ + HN ₂ O + HN ₂ O +	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/model 11.95±0.01 From proton affin PA = 118.2 kcal/model From proton affin	243 (from protection), 586 kJ/mo 244 246 247.5 ity of N ₂ ; the mol, 494.5 kJ 246 ity of N ₂ O (1018 1018 1018 1028 1035.5 reshold determinents (/mol. 1031 (RN 10024-97-	-17 IO ₂ (RN 10102 -32 -30 mination (82LE	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives t	82BAU/COX the same value.	***************************************
HNO ₃ + HNO ₃ HN ₂ + HN ₂ HN ₂ O + HNNO	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/model 11.95±0.01 From proton affin PA = 118.2 kcal/model From proton affin PA = 138.8 kcal/model	244 246 247.5 ity of N ₂ ; the nol, 494.5 kJ	≥1018 on affinity of Not. 1018 1028 1035.5 reshold determined. 1031 (RN 10024-97-mol.	-17 IO ₂ (RN 10102 -32 -30 mination (82LE	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives t	82BAU/COX the same value.	7697-37-2
HNO ₃ + HNO ₃ HN ₂ + HN ₂ + HN ₂ O + HNNO	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/model 11.95±0.01 From proton affin PA = 118.2 kcal/model From proton affin	243 (from protection), 586 kJ/mo 244 246 247.5 ity of N ₂ ; the mol, 494.5 kJ 246 ity of N ₂ O (1018 1018 1018 1028 1035.5 reshold determinents (/mol. 1031 (RN 10024-97-	-17 IO ₂ (RN 10102 -32 -30 mination (82LE	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives t	82BAU/COX the same value.	
HNO ₃ + HNO ₃ HN ₂ + HN ₂ + HN ₂ O + HNNO	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/model 11.95±0.01 From proton affin PA = 118.2 kcal/model From proton affin PA = 138.8 kcal/model	244 246 247.5 ity of N ₂ ; the nol, 494.5 kJ	1018 on affinity of Not. 1018 1028 1035.5 creshold determined. 1031 (RN 10024-97-chol.	-17 IO ₂ (RN 10102 -32 -30 mination (82LF) 2). See also: 83	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives to SMCM/KEB, 8:	82BAU/COX the same value.	7697-37-2
HNO ₃ + HNO ₃ HN ₂ + HN ₂ HN ₂ O + HNNO	$\Delta_f H(\text{Ion})$ at 298 k PA = 140 kcal/model 11.95±0.01 From proton affin PA = 118.2 kcal/model From proton affin PA = 138.8 kcal/model	244 246 247.5 ity of N ₂ ; the nol, 494.5 kJ	1018 on affinity of Not. 1018 1028 1035.5 reshold determined. 1031 (RN 10024-97-1001.	-17 IO ₂ (RN 10102 -32 -30 mination (82LF) 2). See also: 83	-72 -44-0) (84POL/ -135 -125 EV/LIA) gives to SMCM/KEB, 8:	82BAU/COX the same value.	7697-37-2

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
HNe +							
NeH		318	1329				
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from 6	8CHU/RUS.	Correspond	ing proton affir	nity of Ne = 4	8.1 kcal/mol,	
	201. kJ/mol.		_		·		
HNi ⁺	· · · · · · · · · · · · · · · · · · ·	······································					
NiH	(≤9.0)	(291)	(1216)	> (83)	> (347)	79HUB/HER	14332-32-2
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from c	onset of endo	thermic reacti	ion (86ELK/AI	RM4).		
	See also: 80ARM	1/BEA, 81AR	RM/HAL. IP i	s $\Delta_{\mathbf{f}}H(\text{Ion}) - \Delta$	fH(Neutral).	0 K values.	
но+							
ОН	13.00	309.1	1293.3	9.3±0.3	39.0±1.2	85JANAF	3352-57-6
		309.0	1292.7	9.2±0.3	38.4±1.2		
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from a						
	$\Delta_{\mathbf{f}}H(\text{Neutral})$ is			e experimental	y determined	value	
	of 13.01 eV. See	also: 84VAN	//DEL.				
HOSr+							
SrOH	5.1±0.2	74	309	-44	-183	83MUR	
	$\Delta_{\mathbf{f}}H(\text{Ion})$ from \mathbf{c}			on (83MUR);			
	IP is $\Delta_f H(Ion)$ -	$\Delta_f H(Neutral)$). 0 K values.				
HO ₂ +							
_но ₂	11.35±0.01	264.2	1105.5	2.5	10.5	82TN270	3170-83-0
		264.9	1108.5	3.2	13.4		
	IP from 81DYK/				e potential me	easurements	
	corrected to 298	K: 264.8 kcal/	mol, 1107.9 k.	J/mol.			
HO ₂ S +							
OSOH		143	597				
	From proton affi	_				•	
	re-evaluated rela	tive to CO st	andard (84LI	A/LIE). PA =	152.1 kcal/m	ol,	
	636. kJ/mol.						
но ₃ s+							
O ₂ SOH		(133)	(557)				
	From proton affi	nity of SO ₃ (1	RN 7446-11 - 9). $PA = (138)$	kcal/mol, (57	7) kJ/mol.	
HP+							
PH	10.18±0.1	291	1218	56±2	236±8	86BER/CUR	13967-14-1
		291	1219	57±2	237±8		
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from 7	9HUB/HER,	86BER/CUR	R. IP from 86B	ER/CUR.		
HPd+		· · · · · · · · · · · · · · · · · · ·				······································	
PdH		(281)	(1176)				
	$\Delta_{\mathbf{f}}H(Ion)$ from o	nset of endot	hermic reacti	on (86ELK/AF	M). 0 K value).	

Table 1. Positive Ion Table - Continued

Ionization potential $\Delta_{\mathbf{f}}H(\mathrm{Ion})$ $\Delta_{\mathbf{f}}H(\mathrm{Neutral})$ Neutral						
eV					reference	CAS registry number
					1	
10.37±0.01	272.4	1139.8	33.3±1.2	139.3±5.0	85JANAF	13940-21-1
	271.8	1137.0	32.6±1.2	136.5±5.0		
IP from 79DUN, earlier results. Se	/DYK, ∆ _f H(l ee also: 81SM	Ion) from 83P II/ADA.	RE/TZE, in go	od agreement	with	
	·					
	239	999				33486-02-1
$\Delta_f H$ (Ion) from c 0 K values.	onset of endo	thermic react	ion (84TOL/BE	EA). See also: 8	37SUN/ARI.	
***************************************				***		
(9.79) 0 K values.	(258)	(1080)	(32)	(135)	79HUB/HER	13940-22-2
		·				·
7.89±0.07	272.0	1138.0	90.0±2.0	376.7±8.4	85JANAF	13774-94-2
	271.5	1136.2	89.6±2.0	374.9±8.4		····
$\Delta_{\mathbf{f}}H(Ion)$ from 8	4ELK/ARM	. IP from 87B	OO/ARM.			
(9.09)	(244)	(1020)	34	143	79HUB/HER	13940-36-8

(6.0)	(265)	(1109)	(127)	(532)	79HUB/HER	
			on (86ELK/AR	LM).		
						
	256	1070				
$\Delta_{\mathbf{f}}H$ (Ion) from o	nset of endot	hermic reacti	on (77ARM/H	OD).		
	(282)	(1179)				
$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from o 0 K value.			c reaction (84A	RI/ARM, 85E	LK/ARM).	
		···········				
	247	1034				
From proton affi	nity of Xe (R	N 7440-63-3).	PA = 118.6 kg	cal/mol, 496. k.)	J/mol.	
	(238)	(995)				
$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from o			on. 0 K value.			
(9.4) From proton affi	(241)	(1008)	(25)	(106)	79HUB/HER	
	eV 10.37 ± 0.01 IP from 79DUN earlier results. So $\Delta_f H(\text{Ion})$ from 0 0 K values. (9.79) 0 K values. 7.89 ± 0.07 $\Delta_f H(\text{Ion})$ from 0 1P is $\Delta_f H(\text{Ion})$ from 0 1P is $\Delta_f H(\text{Ion})$ from 0 0 K value. From proton affi	eV kcal/mol 10.37 \pm 0.01 272.4 271.8 IP from 79DUN/DYK, $\Delta_fH(l)$ earlier results. See also: 81SM 239 $\Delta_fH(lon)$ from onset of endo 0 K values. (9.79) (258) 0 K values. (9.79) 272.0 271.5 $\Delta_fH(lon)$ from 84ELK/ARM (9.09) (244) (6.0) (265) $\Delta_fH(lon)$ from onset of endo IP is $\Delta_fH(lon)$ - $\Delta_fH(lon)$ from onset of endo IP is $\Delta_fH(lon)$ from onset of endo 0 K value. (282) $\Delta_fH(lon)$ from onset energy 0 K value. (274) From proton affinity of Xe (R (238)) $\Delta_fH(lon)$ from onset of endoton (238)	eV kcal/mol kJ/mol 10.37 ± 0.01 272.4 1139.8 271.8 1137.0 IP from 79DUN/DYK, $\Delta_{\rm f}H({\rm Ion})$ from 83P earlier results. See also: 81SMI/ADA. 239 999 $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reaction 0 K values. (9.79) (258) (1080) 0 K values. 7.89 ±0.07 272.0 1138.0 271.5 1136.2 $\Delta_{\rm f}H({\rm Ion})$ from 84ELK/ARM. IP from 87E (9.09) (244) (1020) (6.0) (265) (1109) $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from onset of endothermic reacting in $\Delta_{\rm f}H({\rm Ion})$ from $\Delta_$	eV kcal/mol kJ/mol kcal/mol 10.37 \pm 0.01 272.4 1139.8 33.3 \pm 1.2 271.8 1137.0 32.6 \pm 1.2 IP from 79DUN/DYK, Δ_f H(Ion) from 83PRE/TZE, in go earlier results. See also: 81SMI/ADA. 239 999 Δ_f H(Ion) from onset of endothermic reaction (84TOL/BE of K values. (9.79) (258) (1080) (32) 0 K values. (9.79) (258) (1080) (32) 0 K values. 7.89 \pm 0.07 272.0 1138.0 90.0 \pm 2.0 271.5 1136.2 89.6 \pm 2.0 Δ_f H(Ion) from 84ELK/ARM. IP from 87BOO/ARM. (9.09) (244) (1020) 34 (6.0) (265) (1109) (127) Δ_f H(Ion) from onset of endothermic reaction (86ELK/AR IP is Δ_f H(Ion) - Δ_f H(Neutral). 0 K values. 256 1070 Δ_f H(Ion) from onset of endothermic reaction (77ARM/H) (282) (1179) Δ_f H(Ion) from onset energy of endothermic reaction (84A 0 K value.	eV kcal/mol kJ/mol kcal/mol kJ/mol kcal/mol kJ/mol 10.37±0.01 272.4 1139.8 33.3±1.2 139.3±5.0 271.8 1137.0 32.6±1.2 136.5±5.0 IP from 79DUN/DYK, Δ _T H/(Ion) from 83PRE/TZE, in good agreement earlier results. See also: 81SMI/ADA. 239 999 Δ _T H(Ion) from onset of endothermic reaction (84TOL/BEA). See also: 80 K values. (9.79) (258) (1080) (32) (135) 0 K values. 7.89±0.07 272.0 1138.0 90.0±2.0 376.7±8.4 271.5 1136.2 89.6±2.0 374.9±8.4 Δ _T H/(Ion) from 84ELK/ARM. IP from 87BOO/ARM. (9.09) (244) (1020) 34 143 (6.0) (265) (1109) (127) (332) Δ _T H/(Ion) from onset of endothermic reaction (86ELK/ARM). IP is Δ _T H/(Ion) - Δ _T H/(Neutral). 0 K values. 256 1070 Δ _T H(Ion) from onset of endothermic reaction (77ARM/HOD). (282) (1179) Δ _T H(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85E 0 K value.	eV kcal/mol kJ/mol kcal/mol kJ/mol reference 10.37±0.01 272.4 1139.8 33.3±1.2 139.3±5.0 8SJANAF 271.8 1137.0 32.6±1.2 136.5±5.0 IP from 79DUN/DYK, ΔρH(Ion) from 83PRE/ITZE, in good agreement with earlier results. See also: 81SMI/ADA. 239 999 ΔρH(Ion) from onset of endothermic reaction (84TOL/BEA). See also: 87SUN/ARI. 0 K values. (9.79) (258) (1080) (32) (135) 79HUB/HER 0 K values. 7.89±0.07 272.0 1138.0 90.0±2.0 376.7±8.4 8SJANAF 271.5 1136.2 89.6±2.0 374.9±8.4 ΔρH(Ion) from 84ELK/ARM. IP from 87BOO/ARM. (9.09) (244) (1020) 34 143 79HUB/HER (6.0) (265) (1109) (127) (332) 79HUB/HER ΔρH(Ion) - ΔρH(Ion) - ΔρH(Neutral). 0 K values. 256 1070 ΔρH(Ion) from onset of endothermic reaction (86ELK/ARM). IP is ΔρH(Ion) from onset of endothermic reaction (77ARM/HOD). (282) (1179) ΔρH(Ion) from onset energy of endothermic reaction (84ARI/ARM, 85ELK/ARM). 0 K value.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H($	Ion)	$\triangle_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mo	l kJ/mol	kcal/mol	kJ/mol	reference	number
HZr ⁺							
ZrH				123.4	516.3	85JANAF	
		(301)	(1260)	123.6	517.3		
	$\Delta_{\mathrm{f}}H(\mathrm{Ion})$ from on	set of end	lothermic reacti	on. 0 K value.			
H ₂ +							
Н ₂	15.42589±0.00005	355.7	1488.3	0	0	*DEF	1333-74-0
-		<u>355.7</u>	<u>1488.3</u>	0	0		
	See also: 81KIM/K	AT.					
н ₂ I ⁺			. , , , ,				
H ₂ I		225	941				
	From proton affin	-	•				
	relative to CO star	ndard (84)	LIA/LIE). PA	= 147.1 kcal/m	ol, 615. kJ/mol		
H ₂ I ₂ Si ⁺			·				
SiH ₂ I ₂	(9.4)	(208)	(896)	-9±5	-38±20	85JANAF	13760-02-6
		(206)	(861)	-7±5	28±20		
	IP is onset of phot	oelectron	band.				
H ₂ KO ⁺	 			·			
KOH ₂		(47)	(198)				
2	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from eq			nination (69SE	A/DZI).		
H ₂ N ⁺						-	
NH ₂	11.14±0.01	302.0	1263.8	45.1±0.3	188.7±1.3	85GIB/GRE	15194-15-7
1412	11.14±0.01	302.7	1266.4	45.8±0.3	191.6±1.3	65GIB/GRE	13134-13-7
	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from ap					rom 85GIB/GRE.	
H ₂ NO ⁺							- <u></u>
H ₂ NO		224.6	939.7				
112110	$\Delta_{\mathrm{f}}H$ (Ion) from ap			nination (82KI	TT/GOO)		
		Pouruneo	Potontial detell				
H ₂ N ₂ +							
(Z)-HN=NH	(9.52±0.05)	(275)	(1150)	55	232	82CAS/GOD	28647-38-3
(E)-HN=NH	(9.59±0.01)	(272)	(1137)	51	212	82CAS/GOD	3618-05-1
H ₂ N ₃ +							
H ₂ NNN		(257)	(1075)				
112141414	From proton affin		(1075) - (RN 7782-79-8	8) (84BE 4 /EV	E) DA - 170	Iraal/mol	
	749 kJ/mol.	ity Of THY	3 (1011 1102-19-6	о (онвенуе І	L). FA = 1/9	kcai/moi,	
и No О +		· · · · · · · · · · · · · · · · · · ·					"
H ₂ NaO ⁺ NaOH ₂		71	204				
маоп2	From proton affin	71	296 OH (DN 1210 73	2) (60512 4 70	71) DA - 240	P tract/mr.cl	
	i ioni dioion allin	ity OLIVAL	711 (1711 1310-13	フームノ (ロス℧ದがん)	∠.i	kcai/iiioi,	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$ (Ic	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
H ₂ O ⁺							
- н ₂ о	12.612±0.010	233.0	975.0	-57.80	-241.83	85JANAF	7732-18-5
		<u>233.7</u>	<u>977.9</u>	<i>-57.10</i>	-238.92		
	See also: 81KIM/l	KAT.					
H ₂ O ₂ +							
H_2O_2	10.54	210	881	-32.6	-136.3	82BAU/COX	7722-84-1
		212	887	<i>-31.1</i>	-130.0		
	See also: 77ASH/	BUR, 81KIN	M/KAT.				
H ₂ P+							
PH ₂	9.824±0.002	261	1093	33.3	139.5	86BER/CUR	
_		261	1090	34.0±0.6	142.2±2.5		
	IP from 86BER/C	UR. See als	o: 82DYK/JO	N2. 0 K values.			
H ₂ S+					 		
H ₂ S	10.453±0.008	236	988	-4.9	-20.5±0.8	85JANAF	7783-06-4
2		237	991	-4.2	-17.6±0.8		
	IP is average of se	veral spectro	oscopic and pl	notoionization-	onset determi	nations	
	(77ROS/DRA, 82	LEV/LIA, 8	4BLA/WAL,	83PRE/TZE).	See also: 81SN	MI/ADA, 81WAL/E	BLA,
	81KIM/KAT.						
H ₂ S ₂ +							
H ₂ S ₂	(9.3)	(218)	(913)	4	16	82TN270	13465-07-1
4 2	IP is onset of phot	oelectron ba	-				
H ₂ Sc ⁺							
HScH		(238)	(996)				13598-30-6
	$\Delta_{\mathbf{f}}H(\mathbf{Ion})$ from on	` ,	` '	on (84TOL/BE	A). See also: 8	7SUN/ARI.	10070 00 0
	0 K value.			•	•		
H ₂ Se ⁺	· · · · · · · · · · · · · · · · · · ·						
-	9 882+0 001	235	983	7	30	82TN270	7783-07-5
H ₂ Se	9.882±0.001	235 <i>236</i>	983 <i>987</i>	7 8	30 <i>34</i>	82TN270	7783-07-5
H ₂ Se	9.882±0.001	235 236	983 <i>987</i>	7 8	30 <i>34</i>	82TN270	7783-07-5
H ₂ Se H ₂ Si ⁺		236	987	8	34		
H ₂ Se	8.92±0.07	<i>236</i> 276.1	987 1155.2	8 69±2	34 289±8	87BOO/ARM	7783-07-5 13825-90-6
H ₂ Se	8.92±0.07 IP and ∆ _f H(Ion) f	236 276.1 From 87BOC	987 1155.2 D/ARM, in agu	8 69±2 reement with ur	34 289±8 apublished dat	87BOO/ARM a of	
H ₂ Se	8.92±0.07	236 276.1 From 87BOC	987 1155.2 D/ARM, in agu	8 69±2 reement with ur	34 289±8 apublished dat	87BOO/ARM a of	
H ₂ Se H ₂ Si ⁺ SiH ₂	8.92±0.07 IP and ∆ _f H(Ion) f	236 276.1 From 87BOC	987 1155.2 D/ARM, in agu	8 69±2 reement with ur	34 289±8 apublished dat	87BOO/ARM a of	
H ₂ Se H ₂ Si ⁺ SiH ₂	8.92±0.07 IP and ∆ _f H(Ion) f	236 276.1 From 87BOC	987 1155.2 D/ARM, in agu	8 69±2 reement with ur	34 289±8 apublished dat	87BOO/ARM a of	
H ₂ Se H ₂ Si + SiH ₂ H ₂ Te + H ₂ Te	8.92±0.07 IP and ∆ _f H(Ion) f R.R. Corderman a	276.1 from 87BOC and J.L. Beau	987 1155.2 D/ARM, in agu	69±2 reement with urulso: 83DYK/JC	289±8 npublished dat DN2, 84CHA/F	87BOO/ARM a of HIL.	13825-90-6
H ₂ Se H ₂ Si + SiH ₂ H ₂ Te + H ₂ Te H ₃ +	8.92±0.07 IP and ∆ _f H(Ion) f R.R. Corderman a	276.1 from 87BOC nd J.L. Bear 235	987 1155.2 9/ARM, in agr uchamp. See a	69±2 reement with urulso: 83DYK/JC	289±8 npublished dat DN2, 84CHA/F	87BOO/ARM a of HIL.	13825-90-6 7783-09-7
H ₂ Se H ₂ Si + SiH ₂ H ₂ Te +	8.92±0.07 IP and ∆ _f H(Ion) f R.R. Corderman a	276.1 from 87BOC and J.L. Beau 235	987 1155.2 D/ARM, in agu uchamp. See a 982	69±2 reement with urulso: 83DYK/JC	289±8 npublished dat DN2, 84CHA/F	87BOO/ARM a of HIL.	13825-90-6
H ₂ Se H ₂ Si + SiH ₂ H ₂ Te + H ₂ Te H ₃ +	8.92±0.07 IP and ∆ _f H(Ion) f R.R. Corderman a	276.1 from 87BOC and J.L. Beau 235 264.5 265	987 1155.2 D/ARM, in agr uchamp. See a 982 1106.6 1107	69±2 reement with ur ulso: 83DYK/JC	289±8 npublished dat DN2, 84CHA/F	87BOO/ARM a of HIL. 82TN270	13825-90-6 7783-09-7

Table 1. Positive Ion Table - Continued

ION	Ionization potential	on)	$\Delta_{f}H(Ne^{-\frac{1}{2}})$	utral)	Neutral	CAS registry	
Neutral	eV	kcal/mol		kcal/mol		reference	number
H ₃ ISi ⁺							
SiH ₃ I	(9.5)	(219)	(915)	-0.5±4	-2±17	85JANAF	13598-42-0
		(221)	(925)	2±4	8±17		
	IP is onset of pho	otoelectron b	and.				
H ₃ N ⁺							
NH ₃	10.16±0.01	223.2	934.0	-11.0	-45.9±0.4	85JANAF	7664-41-7
	G 4 04777	224.9	941.0	-9.3	−38.9±0.4		
	See also: 81KIM,	/KA1, /3RA	B/KAR.				
H ₃ NO ⁺							
NH ₂ OH	10.00	(221)	(923)	-10	-42	69BEN/CRU	7803-49-8
	IP from 83KOP/	MOL. See al	so: 81KIM/KA	AT, 82KUT/GC	0.		
H ₃ O ⁺							
н ₃ 0		141	591				
J		143	597				
	$\Delta_{ m f}$ H (Ion) at 298						
	potential from (I	H ₂ O) ₂ (77N0	G/TRE). PA	= 166.5 kcal/m	ol, 697. kJ/mol.		
H ₃ O ₂ +							
н ₂ оон		171	716				
	From proton affi	inity of H ₂ O	₂ (RN 7722-84	-1). PA = 162.	kcal/mol, 678.	kJ/mol.	
H ₃ O ₄ S ⁺							
(HO) ₃ SO		(21)	(88)				
.	From proton affi			93-9). PA = (10	59) kcal/mol, (7	707) kJ/mol.	
пзг РН ₃	9.869±0.002	229	957	1.3±0.4	5.4±1.7	61GUN/GRE	7803-51-2
1113	7.00710.002	231	966	3.1	13.3	OTOCIVORE	7003-31-2
	IP from 83MAR,	/REI, 86BEF	VCUR. See a	lso: 82COW/KE	EM.		
rr e+							
H₃S ⁺ н ₃ S		190	797				
**30	From proton affi). See also: 83P	RE/TZE2, 841	BLA/WAL,	
	83ERM/AKO. I	_			,	. ,	
rr al +			····		 	<u></u>	
H ₃ Sb ⁺	0 54 . 0 02	255	1066	25	145	OGTINIO TO	7000 50 0
SbH ₃	9.54±0.03	255 <i>257</i>	1066 <i>1074</i>	35 <i>37</i>	145 <i>153</i>	82TN270	7803-52-3
	-						
H ₃ Se ⁺							
H ₃ Se	7	202	843	m n			
	From proton affi	inity of H ₂ Se	(KN 7783-07	·s). PA = 171.:	s kcal/mol, 717	. kJ/mol.	
H ₃ Si ⁺							
	8.14±0.01	237.1	992	10 # 4 #	202.0.6.2	87BOO/ARM	12765 44 1
SiH ₃	0.14±0.01	251.1	77L	48.5±1.5	202.9±6.3	6/BOO/AKW	13765-44-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}c$		$\Delta_{\mathbf{f}}H(Ne)$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
H ₃ Te ⁺							
TeH ₃		214	894				
- .	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$ from pr	roton affinit	y of H ₂ Te (R	N7783-09 - 7)(86	KAR/JAS). P	A = 176 kcal/mol,	
	736 kJ/mol.						
H ₄ N ⁺						· · · · · · · · · · · · · · · · · · ·	
NH ₄	(4.73±0.06)	(151)	(630)				
•	$\Delta_f H(Ion)$ from pr		of NH ₃ (RN	7664-41-7). IP	from neutraliz	zed ion-beam	
	spectroscopy data	(82GEL/CI	LE). $PA = (2$	04.0) kcal/mol,	(854.) kJ/mol	•	
H ₄ N ₂ +		<u></u>					
N ₂ H ₄	8.1±0.15	(210)	(876)	22.8±0.2	95.3±0,8	85JANAF	302-01-2
2 4	·	(213)	(891)	26.1±0.2	109.4±0.8		
	From charge trans			determinations	(84MAU/NEI	L).	
	See also: 81KIM/I	KAT.					
H ₄ N ₄ +		·····			······		
$(E)-H_2NN = NNH_2$	(≤8.99)	(≤260)	(≤1089)	53	222	82TN270	54410-57-0
——————————— Н ₄ Р ⁺							
PH ₄		178	746				
4	From proton affin). PA = 188.6	kcal/mol. 789.	kJ/mol.	
					,		
H ₄ P ₂ +	0.0.04	(010)	(010)	4.5	40	+ Flore	
P_2H_4	8.8±0.1	(219)	(918)	16	69	*EST	13445-50-6
	IP is onset of phot		and.		·····		
H ₄ Si ⁺							
SiH ₄	11.65	277	1159	8	35	81BEL/PER	7803-62-5
		280	1170	11	46		
H ₄ Sn ⁺				·· ···			
SnH ₄	(10.75)	(287)	(1200)	39	163	82TN270	2406-52-2
7	• /	(290)	(1212)	42	175		
	The SnH_4^+ ion h						
H ₅ N ₂ +							
NH ₃ NH ₂		184	770				
32	From proton affin			01-2). PA = 20	04.7 kcal/mol, 8	356. kJ/mol.	
T 0.+		-			,		
H ₅ Si ⁺		(210)	(017)				
SiH ₅	Brom aroton offin	(219)	(917) DN 7902 62 5) DA - (157)	lana 1 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	D 1 T/	
	From proton affin	ny of SiH ₄ (KIN /803-62-5). PA = (155)	kcal/mol, (648	s) kJ/mol.	
H ₆ Si ₂ +							
Si ₂ H ₆	(9.7)	(243)	(1016)	19	80	81BEL/PER	1590-87-0
		(0.45)	(1000)		0.4		
	IP is onset of phot	(247)	(1032)	23	96		

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	Ion) ol kJ/mol	-	leutral) l kJ/mol	Neutral reference	CAS registry
· · · · · · · · · · · · · · · · · · ·		****					
H ₈ Si ₃ +							
Si ₃ H ₈	(9.2)	(241)	(1009)	29	121	81BEL/PER	7783-26-8
	IP is onset of pho	toelectron	dand.				
H ₁₀ Si ₄ +							
Si ₄ H ₁₀	(8.9)	(244)	(1021)	39	162	81WAL	7783-29-1
	IP is onset of pho	toelectron	band.				
He +							
He	24.587	567.0	<u>2372</u>	0	0	*DEF	7440-59-7
***	21.501	<u>567.0</u>	<u>2372</u> 2372	o	0		7-1-10-52-7
							
HeNe +							
HeNe	20.87	481.3	2013.9	-0.028	-0.12	79HUB/HER	12162-16-2
	$\Delta_{f}H(\text{Ion})$ from 78	BDAB/HE	R. 0 K values.				
He ₂ +				· · · · · · · · · · · · · · · · · · ·			
He ₂	22.223	512.4	2144.1	-0.02	-0.09	79HUB/HER	12184-98-4
<i>u</i>	IP from 79HUB/I						
rre+							
Hf ⁺	/ au	204	1070	140	/10	OATEN TOTO	7440.50.6
Hf	6.78	304 <i>304</i>	1273 1273	148 <i>148</i>	619 <i>619</i>	82TN270	7440-58-6
	IP from 76MEG/I		1413	170	017		

HfO ⁺							
HfO	(7.55 ± 0.1)	(190)	(795)	16±3	67±13	83PED/MAR	12029-22-0
		(192)	(804)	18	76		
Hg ⁺							
Hg	10.437	<u>255.3</u>	1068.3	14.7	61.3	82TN270	7439-97-6
-		256.1	1071.5	15.4	64.5		
	See also: 84LIN/L	JA.					
HgI ₂ +					·		
HgI ₂	9.5088±0.0022	215.2	900.3	-4.1	-17.2	82TN270	7774-29-0
0-4	2.50000000000	216.7	906.6	-2.6	-17.2 -10.9	02114210	/// 17- 47-0
	Cited ionization p					713/2). Ionization	
	potential for form	ation of H	$(gI_2^+(^2\Pi_{1/2}^-))$ is	10.1953±0.002	25 eV. See also	: 81LEE/POT.	
u _{a-} +				м			
Hg ₂ +	0.1020.010	227	002	27	114	007777	10504.65.5
Hg ₂	9.103±0.010	237 <i>239</i>	992 1000	27 <i>29</i>	114 <i>122</i>	82HIL	12596-25-7
	IP from 84LIN/LI		1000	207	124		
							
Ho+							
Но	6.0216±0.0006	211	882	72	301	82TN270	7440-60-0
		211.2	<i>883.6</i>	72.3	302.6		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	$\Delta_{\rm f}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol		reference	number
H ₀ O +							
НоО	(6.17±0.1)	(128)	(534)	-15±6	-61±25	83PED/MAR	12281-10-6
		(126)	(528)	-16	-67		
	See also: 80MUI	VHIL.					
[+							
I	10.451	266.5	1115.2	25.5	106.8	82BAU/COX	14362-44-8
		266.6	1115.6	25.6	107.2		
	See also: 81HOA	VCAB, 85GI	RA/ROS.				
K+							
KI	(7.21±0.3)	(136)	(570)	-30.0±0.5	-125.5±2.1	85JANAF	7681-11-0
	, ,	(137)	(573)		-122.1±2.1		
	See also: 82EMC)/HOR.					
Li+							
LiI	(7.5)	(151)	(633)	-21.7±2.0	-91.0+8 4	85JANAF	10377-51-2
	(,,,,	(152)	(635)	-21.3±2.0		0001114111	10077012
	IP is onset of pho		• •				
iNa ⁺				····			
INa' NaI	7.64±0.02	157	659	-18.6	-77.8	82TN270	7681-82-5
INAI	7.04±0.02	157 158	662	-17.9	-71.8 -74.9	02111270	7081-02-5
	See also: 82EMC		IL/GIN, 84HI				
IRb +							
RbI	(7.12±0.1)	(132)	(554)	-32	-133	79HUB/HER	7790-29-6
ROI	(7.1210.1)	(133)	(558)	-30.9	-129.3	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,
	See also: 82EMC		. ,				
							
ITI +	9.47.0.00	107	924	2	7	82TN270	7790-30-9
Til	8.47±0.02	197 <i>197</i>	824 <i>823</i>	2 1	7 6	02111270	1790-30-9
	See: 83BAN/BR			-	-		
I ₂ +	0.0005 0.0005	221 7	0/0.2	14.0	(2.4	gan A LUCOY	7552 56 2
I_2	9.3995±0.0012	231.7 232.4	969.3 <i>972.4</i>	14.9 <i>15.7</i>	62.4 <i>65.5</i>	82BAU/COX	7553-56-2
	See also: 81HOA				w.J		
		,	,				
I ₂ Li ₂ +							
	(≤9.23±0.06)	(≤126)	(≤529)	-87±4	-362±17	85JANAF	37279-36-0
	(=2020.00)	(±120) (≤127)	(≤532)	-85±4	-356±17		
/1,		. ,	•				
I ₂ Mg ⁺						0.000	40000 50 5
MgI ₂	(9.57±0.03)	(180)	(751)	-41	-172	82TN270	10377-58-9

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H($	Ion)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	•	l kJ/mol	kcal/mol		reference	number
I ₂ O ₂ W ⁺						· · · · · · · · · · · · · · · · · · ·	
WO ₂ I ₂	(10.4±0.4)	(137.5)	(575.4)	-102.3	-428.0	76DEL/HAL	14447-89-3
~ · · · · · · · · · · · · · · · · · · ·	·			·	·····		····
I ₂ Pb + PbI ₂	8.86±0.03	(205)	(856)	0.2±1	1±4	85JANAF	10101-63-0
1012	Onset of photoele					OJANAF	10101-03-0
v a +						·	
I ₂ Sn +	8.83±0.1	204	854	0.5	2	82TPIS	10294-70-9
SnI ₂	IP from 83HIL/G			0.5	L	021713	10294-70-9
t.		······································					
I ₂ Sr ⁺	(0.2)	(126)	(524)	_ 25 7 . 1 5	_275.4	85JANAF	10476 96 5
SrI ₂	(8.3)	(126) <i>(126)</i>	(526) <i>(529)</i>	-65.7±1.5 -65.0±1.5		SJANAF	10476-86-5
	IP is onset of phot	. ,				E.	
I ₃ La ⁺				_			· · · · · · · · · · · · · · · · · · ·
Lal ₃	8.8	119	498	-84	-351	82TN270	
_··-3	IP is onset of phot					0211.270	
r. xra +					<u> </u>		
I ₃ Nd ⁺ NdI ₃	8.7	124	519	-76	-320	82TN270	13813-24-6
1,023	IP is onset of phot				320	02111270	13013-24-0
r m +				_			
I ₄ Ti ⁺ TiI ₄	(9.1)	(143)	(600)	-66±2	-278±8	85JANAF	7720-83-4
4	(-1-)	(145)	(606)	-65±2	-272±8	000111111	7720-05-1
	IP is onset of phot	oelectron	band.				
I ₄ Zr ⁺			· · · · · · · · · · · · · · · · · · ·				
ZrI ₄	(9.3)	(128)	(534)	-95±2	-363±8	85JANAF	13986-26-0
•		(130)	(544)	-85±2	-357±8		
- 	IP is onset of phot	oelectron	band.				
In ⁺				_			
In	5.786	191.7	801.9	58.2	243.7	82TN270	7440-74-6
		191.6	802.6	58.2	243.3		
	See also: 82GOM/	CHA, 851	KAP/LEL.				
InS+							
InS	(7.0±0.5)	(218)	(911)	57	236	79HUB/HER	12030-14-7
	0 K values.						
InSe +							
InSe	(7.1±0.5)	(218)	(913)	55	228	79HUB/HER	1312-42-1
	0 K values.	-					
InTe +						······································	-,
InTe	(7.6±0.5)	(230)	(962)	<i>55</i>	229	79HUB/HER	12030-19-2
	0 K values.	` /	· -/	· -			

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Ic kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
In ₂ +					-		
In ₂	(5.8±0.3) 0 K values.	(227)	(949)	93	389	79HUB/HER	61178-97-0
In ₂ O ⁺			****				
In ₂ O	8.0±0.2	(174) <i>(175)</i>	(728) <i>(734)</i>	−10 −9±5	−43 <i>−38±20</i>	82TPIS	12030-22-7
	IP from 85KAP/L	EL, 77ROS	/DRA. See als	o: 82GOM/CH	IA.		
Ir+							
. Ir	9.02	367 <i>366</i> .8	1535 <i>1534.6</i>	159 <i>158.8</i>	665 664.3	82TN270	7439-88-5
	IP from 79RAU/A			250.0	33 113		
IrO+							
IrO	(10.1) 0 K values.	(367)	(1535)	(134)	(561)	79HUB/HER	12030-48-7
IrO ₃ +							
IrO ₃	(11.9)	(276)	(1156)	2	8	82TN270	12030-50-1
K ⁺							
K	4.341	121.4 <i>121.6</i>	507.8 508.7	21.3±0.1 21.5±0.1	89.0±0.4 89.9±0.4	85JANAF	7440-09-7
KLi ⁺							
LiK	4.57±0.04 IP from 85KAP/S	123 CH.	514	17	73	86IGE/WED	12030-83-0
KNa +				······································	· · · · · · · · · · · · · · · · · · ·		
NaK	4.41636±0.00017 IP from 81LEU/H	<i>134.2</i> IOF, 85KAI	<i>561.5</i> P/RAD. 0 K va	<i>32.4</i> lues.	135.4	86ZGE/WED	12056-29-0
ко+							
КО	7.09±0.1	178	745	15±5	61±21	83PED/MAR	12401-70-6
	IP from 82LEV/L	<i>179</i> IA, 84BUT/	<i>747</i> 'KUD.	15±5	63±21		
		· · · · · · · · · · · · · · · · · · ·					
KRb + KRb	(3.9±0.1) IP from 85KAP/S	<i>(120)</i> CH. 0 K valı	<i>(500)</i> ues.	(30)	(124)	79HUB/HER	12333-39-0
K ₂ +				<u> </u>			
к ₂ . К ₂	4.0637±0.0002	124.0	518.9	30.3	126.9	79HUB/HER	25681-80-5
	ID 6 0617 A D.M	124.8	522.3	31.1	130.3		
	IP from 85KAP/R 81LEU/HOF, 78F		_	-	iin vaiues from		
K ₂ O +						,,	
К ₂ О .	4.96±0.2	(80)	(336)	-34±4	-142±15	79BYK/ELI	12136-45-7
. . .	IP from 84BUT/K	•					

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential	∆ _f H(Ic		Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
			- RO/IIIOI	Rediffici	- KW/IIIOI		
K ₂ O ₂ +							
K_2O_2	(5)	(44)	(184)	-71±4	-298±15	79BYK/ELI	17014-71-0
Kr ⁺							
Kr	13.9997±0.00001	322.8	1350.8	0	0	*DEF	7439-90-9
		322.8	1350.8	0	0		
	See also: 81KIM	I/KAT.					
KrXe +							
KrXe	11.760±0.014	270.8	1132.9	-0.42	-1.77	79HUB/HER	12521-42-5
	See: 82DEH/PR	A, 85PRA/D	EH2. 0 K valı	ies.			
Kr ₂ +		***					
Kr ₂	12.866±0.003	296.3	1240.9	-0.36	-1.51	79HUB/HER	12596-40-6
2	IP from 82PRA/		lues.				
La ⁺			· ·				
La La	5.577	232	969	103	431	82TN270	7439-91-0
		231.7	969.4	103.1	431.3		
LaO ⁺							
LaO · LaO	4.90±0.1	84	352	-29±2	-121±10	83PED/MAR	12031-20-8
Lao	4.5010.1	85	<i>354</i>	-28	-119	031 LD/MAR	12031-20-0
							
LaPt +	(7.4.0.0)	(0.10)	(1010)	440 -		0	
LaPt	(5.4±0.8) IP from 81NAP	(243) (GIN	(1018)	119±5	497±21	81NAP/GIN	12142-67-5
					· · · · · · ·		
Li ⁺							
Li	5.392	<u>162.4</u>	<u>679.6</u>	38.1	159.4	82TN270	7439-93-2
	C1 01NIAY	<u>162.0</u>	<u>678.0</u>	37.7	157.8		
	See also: 81NAI	VA9A.		···			
LiNa ⁺							
LiNa	5.05±0.04	137	572	20	85	86IGE/WED	12333-49-2
	IP from 85KAP/	SCH.					
LiO ⁺		. v					
LiO LiO	(8.45±0.20)	(214)	(894)	19±0.5	79±2	83PED/MAR	12142-77-7
	,,	(214)	(894)	19±0.5	79±2	/ 1111 111	
	See also: 81NAF						
LiOH ₂ +					·· · · · · · · · · · · · · · · · · · ·		
LiOH ₂		69	289				
2	From proton aff			-3). PA = 241	kcal/mol, 1007	7 kJ/mol.	
r . p. +							
LiRb +	40.01	11/	405	15	7 0	044655	10001 70 5
LiRb	4.3±0.1	116	485	17	7 0	86IGE/WED	12031-70-8

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	$\Delta_{\mathrm{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	1 ,	kJ/mol	kcal/mol		reference	number
Li ₂ +	5.1127±0.0003 IP from 83MCG	169.5 <i>169.4</i> /SCH. See al	709.2 <i>708.8</i> so: 82EIS/DE	51.6±0.7 51.5±0.7 M.	215.9±3.0 215.5±3.0	85JANAF	14452-59-6
Li ₂ M ₀ O ₄ ⁺		·····					
Li Mo Li	(9.7±0.5)	(-22)	(-94)	-246	-1030	81LIN/BES	
Li ₂ O +	6.19±0.20 See also: 82IKE/	(103) <i>(103)</i> TAM, 81NA	(430) <i>(431)</i> K/ASA, 79W	–40 <i>–40</i> U/KUD.	-167 -166	81LIN/BES	12057-24-8
Li ₂ O ₂ +							
Li 0 Li	(7.88±0.2) IP from 79WU/K	<i>(84)</i> IUD. 0 K val [.]	<i>(350)</i> ues.	-98±12	~410±50	79WU/KUD	12031-80-0
Li ₂ O ₃ Si ⁺ Li ₂ SiO ₃	8.3±0.2 IP from 81NAK/	-99 ASA.	-415	291	-1216	81NAK/ASA	
Li ₂ O ₄ W ⁺ Li ₂ WO ₄	(9.2±0.5)	(-29)	(-122)	-241	-1010	81LIN/BES	
Li ₃ O ⁺ Li ₃ O	(4.54±0.2) IP from 79WU/K	(50) (UD. 0 K val	(210) ues.	−54±10	-228±42	79WU/KUD	69235-02-5
Lu+							
Lu	5.4259±0.00001	227 227.4	951 <i>951.3</i>	102 102.2	428 427.8	82TN270	7439-94-3
LuO ⁺ LuO	(6.79±0.1) A value of 2±17 k 298 K heat of for					82TN270	12032-02-9
Md ⁺							
Md	6.74±0.12						7440-11-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(1)$	lon)	$\Delta_{\mathbf{f}}H(\text{Neutral})$		Neutral	CAS registry
Neutral	eV	kcal/mo	l kJ/mol	kcal/mol	kJ/mol	reference	number
Mg ⁺							
Mg	7.646	211.6	<u>885.4</u>	35.3	147.7	82TN270	7439-95-4
	See also: 81SAS/I	<u>211.3</u> IAR.	<u>884.2</u>	35.0	146.5		
MgO ⁺							
MgO	9.7	(236±8)	(997±33)	13.4	56.1	79HUB/HER	1309-48-4
J		(238±8)	(997±33)	13.5	56.5		
	$\Delta_{\mathbf{f}} H(\operatorname{Ion})$ from 87 IP is $\Delta_{\mathbf{f}} H(\operatorname{Ion})$ - $\Delta_{\mathbf{f}}$			UR.			
Mg ₂ H ⁺				· · · · · · · · · · · · · · · · · · ·			
MgHMg		78	327				
	From proton affir	nity of Mg ₂	(RN 29904-79-	8). PA = (219	9) kcal/mol, (91	6) kJ/mol.	·
Mn ⁺							
Mn	7.435	239	998	67 67	281	82TN270	7439-96-5
		238	996	67	279		
MnO ⁺							
MnO	8.65±0.2 IP from 82ARM/	<i>(240)</i> HAL. See a	<i>(1005)</i> also: 81ARM/H	<i>41</i> AL, 81KAP/S	<i>170</i> TA. 0 K values	67CHE/BAR	1344-43-0
Mn ₂ +							
Mn ₂	6.9±0.4	(280)	(1172)	(121±7)	(506±29)	83ERV/LOH	12596-53-1
	6.9±0.4 IP from 83ERV/L			(121±7)	(506±29)	83ERV/LOH	12596-53-1
Mn ₂				(121±7)	(506±29)	83ERV/LOH	12596-53-1
Mn ₂				157.3	658.1	83ERV/LOH 82TN270	12596-53-1 7439-98-7
Мп ₂ Мо ⁺	IP from 83ERV/L	OH. 0 K v	alues.				- 1, - 1 day -
Мп ₂ Мо [†] Мо	IP from 83ERV/L	321.0	1343.1	157.3	658.1		- 1, - 1 day -
Мп ₂ Мо [†] Мо	IP from 83ERV/L	321.0	1343.1	157.3	658.1		- 1, - 1 day -
Mn ₂ Mo + Mo MoNa ₂ O ₄ +	IP from 83ERV/L 7.099	321.0 320.6	1343.1 1341.5	157.3 156.9	658.1 656.6	82TN270	
Mn ₂ Mo + Mo MoNa ₂ O ₄ + Na ₂ MoO ₄	IP from 83ERV/L 7.099	321.0 320.6	1343.1 1341.5	157.3 156.9	658.1 656.6	82TN270	
Mn ₂ Mo +	IP from 83ERV/L 7.099 (7.2)	321.0 320.6 (-87)	1343.1 1341.5 (-364)	157.3 156.9 -253	658.1 656.6 -1059	82TN270 82TN270	7439-98-7
Mn ₂ Mo +	IP from 83ERV/L 7.099 (7.2)	321.0 320.6 (-87)	1343.1 1341.5 (-364)	157.3 156.9 -253	658.1 656.6 -1059	82TN270 82TN270	7439-98-7
Mn ₂ Mo + Mo MoNa ₂ O ₄ + Na ₂ MoO ₄ MoO + MoO	IP from 83ERV/L 7.099 (7.2)	321.0 320.6 (-87)	1343.1 1341.5 (-364)	157.3 156.9 -253	658.1 656.6 -1059	82TN270 82TN270	7439-98-7
Mn ₂ Mo + Mo Na ₂ O ₄ + Na ₂ MoO ₄ MoO + MoO +	IP from 83ERV/L 7.099 (7.2) (8.0±0.6)	321.0 320.6 (-87) (267) (267)	1343.1 1341.5 (-364) (1119) (1119)	157.3 156.9 -253 83±5 83±5	658.1 656.6 -1059 347±21 347±21	82TN270 82TN270 83PED/MAR	7439-98-7
Mn ₂ Mo +	IP from 83ERV/L 7.099 (7.2) (8.0±0.6)	321.0 320.6 (-87) (267) (213)	1343.1 1341.5 (-364) (1119) (1119)	157.3 156.9 -253 83±5 83±5	658.1 656.6 -1059 347±21 347±21	82TN270 82TN270 83PED/MAR	7439-98-7
Mn ₂ Mo + Mo Na ₂ O ₄ + Na ₂ MoO ₄ MoO + MoO +	IP from 83ERV/L 7.099 (7.2) (8.0±0.6)	321.0 320.6 (-87) (267) (213)	1343.1 1341.5 (-364) (1119) (1119)	157.3 156.9 -253 83±5 83±5	658.1 656.6 -1059 347±21 347±21	82TN270 82TN270 83PED/MAR	7439-98-7

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	Δ _f H(I kcal/mol	on) kJ/mol	Δ _f H(Ne kcal/mol		Neutral reference	CAS registry
Mo ₂ O ₆ +	· · · · · · · · · · · · · · · · · · ·						
00		4					
Mo Mo	12.1±0.6 IP from 77ROS/I	(201) DRA, 85KA	(841) P/LEL.	-78	-326	82TN270	12412-19-0
0, 0,	· · · · · · · · · · · · · · · · · · ·	,					
M03O9+							
0 0 _ Mo: _ 0	(12.0±1.0)	(174)	(720)	454	1005	OOTTO YOUR	
O Me	See also: 85KAP/	(–174) LEL.	(-729)	- 451	-1887	82TN270	12163-83-6
<u>0 0</u>					,		
N	14.534	448.2	1875.0	113.0	472.7	82TN270	17778-88-0
		447.7	1873.1	112.5	470.8		
1O +							
NO	9.26436±0.00006	235.33	984.61	21.82	91.28	82BAU/COX	10102-43-9
	See: 83SEA/CHU	<u>235.33</u> J. 84MUI <i>J</i> S	<i>984.65</i> SAN, 83EBA/A	21.69 NE for confirm	<i>90.78</i> ning high pred	rision	
	measurements. S						
NO ₂ +							
NO ₂	9.75±0.01	233	974	7.9	33.2	82BAU/COX	10102-44-0
	Ionization involve	233 es a bent-lin	977 ear transition v	8.6 with a broad Fr	36.0 anck-Condon	envelope and	
	weak onset. Selec	eted IP cons	istent with occ	urrence of reac	tion: (NO ₂ +	+ $C_6H_5CF_3 \rightarrow$	
	$C_6H_5CF_3^+ + N$	O ₂)(78AU	S/LIA). See al	so: 81KIM/KA	T, 82KAT/SH	II.	
NP+							
NP	11.85	298	1248	25±1	105±5	85JANAF	17739-47-8
		299	1249	25±1	106±5		
NS +							
NS	8.87±0.01	268	1119	63±25	264±105	85JANAF	51801-08-2
	IP from 79HUB/I	<i>268</i> HER.	1119	63±25	263±105		
	11 110111 //1101/1						
VTi ⁺		44.00	40.45			20111 ··· 411-	05500.00
TiN	(6) 0 K values.	(250)	(1045)	112	466	79HUB/HER	25583-20-4
NZr+							
ZrN	(7.9±0.4)	(352.7)	(1475.6)	170.5	713.4	85JANAF	25658-42-8
		(352.9)	(1476.5)	170.7	714.3		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(1)$		∆ _f H(Neu		Neutral	CAS registry	
Neutral	eV	kcal/mo	l kJ/mol	kcal/mol	kJ/mol	reference	number	
N ₂ +								
N ₂	15.5808	359.3	1503.3	0	0	*DEF	7727-37-9	
2		359.3	1503.3	0	0			
	IP from 79HUB/F	IER. See a	also: 84STE/MA	AR, 81ARM/TA	.R, 81KIM/KA	AT.		
N ₂ O ⁺	18. <u></u>			· · · · · · · · · · · · · · · · · · ·	······································			
N ₂ O	12.886	316.8	1325.4	19.6	82.1	82BAU/COX	10024-97-2	
-		317.6	1328.8	20.4	85.5			
	See also: 81KIM/F	CAT.						
N ₂ O ₄ +								
N ₂ O ₄	10.8±0.2	(251)	(1051)	2	9	82BAU/COX	10544-72-6	
2 7		(254)	(1061)	5	19			
	See also: 82CHO/	FRO.						
N ₂ O ₅ +								
N ₂ O ₅	(11.9)	(277)	(1159)	3	11	82BAU/COX	10102-03-1	
		(280)	(1173)	6	25			
	IP is onset of phot	IP is onset of photoelectron band.						
Na +								
Na	5.139	<u>144.1</u>	603.1	25.6±0.2	107.3±0.7	85JANAF	7440-23-5	
		<u>144.2</u>	<u>603.4</u>	25.7±0.2	107.6±0.7			
	See also: 84PET/I	AO.						
NaO ⁺								
NaO	(7.41)	(190.9)	(798.7)	20.0±10.0	83.7±41.8	85JANAF	12401-86-4	
		(191.2)	(800.0)	20.3±10.0	85.0±41.8			
	IP from 84BUT/KUD.							
NaRb +								
NaRb	4.32±0.04	115	481	15	64	86IGE/WED	12333-61-8	
	IP from 85KAP/S0	CH.						
Na ₂ +								
Na ₂	4.88898±0.00016	146.7	613.8	34.0±0.3	142.1±1.2	85JANAF	25681-79-2	
-		147.3	616.3	34.6±0.3	144.6±1.2			
	IP from 81LEU/H			lues from 82MA		AP/RAD, 84PET/I	DAO,	
	78HER/SCH. Δ _f I	H(Ion) in a	agreement with	that derived fro	om data of 83V	VAG/ISE.		
Na ₂ Cl ⁺		···						
Na ₂ Cl	4.15±0.22	(59)	(245)	-37	-155	83PET/DAO		
-	IP from 83PET/D							
Na ₂ O ⁺								
Na ₂ O	(5.06±0.4)	(110)	(461)	-6	-27	83PET/DAO	1313-59-3	
۷	ζ/	(111)	(465)		-23			
	IP from 83PET/D.							

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\rm f}H$ (Ic	nn)	Δ _f H(Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Nb ⁺					·····		
Nb	6.88	334 <i>333</i>	1397 <i>1394</i>	175±2 174.5±2	733±8 <i>730±8</i>	85JANAF	7440-03-1
NbO+							
NbO	(6.1) $\Delta_f H(ext{Ion}) ext{ from 81}$		(780±222)	48±5 <i>48±5</i> - ∆ <i>cH</i> (Neutra	200±21 <i>199±21</i> al).	85JANAF	12034-57-0
Nd ⁺	_[, (,, ,,,,,,,, -						
Nd ·	5.5250±0.0006	205.80 206.04	861.08 <i>862.08</i>	78 78.5	328 328.6	82TN270	7440-00-8
NdO +							
NdO	(4.97±0.1)	(84) <i>(84)</i>	(354) (354)	-30±3 -30±3	-126±12 -126±12	83PED/MAR	12035-20-0
Ne ⁺							
Ne	21.56471±0.00001	<u>497.29</u> <u>497.29</u>	2080.66 2080.66	0 0	0 0	*DEF	7440-01-9
NeKr ⁺							
NeKr	(13.950±0.003) IP from 82PRA/D	<i>(321.5)</i> EH2. 0 K v	<i>(1345.3)</i> alues.	-0.15	-0.62	79HUB/HER	
NeXe ⁺							
NeXe	(12.094±0.004) IP from 82PRA/D	<i>(278.7)</i> EH2. See a	(1166.3) ilso: 85PRA/DE	<i>-0.15</i> EH2. 0 K value	-0.63 es.	79HUB/HER	58984-40-0
Ne ₂ +							
Ne ₂	20.33±0.08 IP from 84TRE/PC	469 OL. See also	<i>1961</i> o: 79HUB/HER	-0.047 0 K values.	-0.195	79HUB/HER	12185-05-6
Ni ⁺							
Ni	7.635	278.9 278.4	1166.8 <i>1164.8</i>	102.8 102.3	430.1 <i>428.1</i>	82TN270	7440-02-0
	See also: 82DYK/0	JRA.					
NiO ⁺ NiO	9.5±0.2 IP from 81ARM/F	(290) IAL, 82AR	(1214) M/HAL, 77ROS	71±4 S/DRA. See a	297±17 ilso: 81KAP/5	83PED/MAR STA.	1313-99-1
No +	604.010						10000 14 7
No	6.84±0.12						10028-14-5
Np ⁺ Np	6.2657±0.0005	256	1070	111	465	85KLE/WAR	7439-99-8
NpO +	(5.7±0.1)	(130)	(546)	-1±10	-4±42	83PED/MAR	12202-03-8

Table 1. Positive Ion Table - Continued

ION Neutral	Ionization potential eV	∆ _f H(Io kcal/moi		Δ _f H(Net		Neutral reference	CAS registry
		kcal/illoi	KJ/IIIOI	KCAUIIIOI	KJ/IIIOI		
0+							
0	13.618	373.6	1563.1	59.6	249.2±0.1	85JANAF	17778-80-2
		<i>373.0</i>	1560.7	59.0	246.8±0.1		
OP+							
PO	8.39±0.01	186	777	-8±3	-33±13	83PED/MAR	14452-66-5
		186	<i>778</i>	-8	-32		
	IP from 82DYK/N	MOR. See al	so: 81BAL/G	IG.			
OPb +	· · · · · · · · · · · · · · · · · · ·						
PbO	9.08±0.10	224	939	15±3	63±13	79HUB/HER	1317-36-8
		227	949	17	73	,	
	See also: 83SEM/	RYK, 84NII	VOVC.				
OPd +							
PdO	(9.1)	(293)	(1224)	83	346	79HUB/HER	1314-08-5
	0 K values.						
OPr+							
PrO	(4.90±0.1)	(79)	(331)	-34±4	142±17	82TN270	12035-81-3
	·,	(75)	(314)	-38	-159		2- 2
OPt ⁺							
PtO	(10.1±0.3)	(334)	(1397)	101	423	79HUB/HER	12035-82-4
	(<u></u>)	(339)	(1417)	106	443		
ORb +							
RbO	6.69	168.6	705.3	14.3	59.8	82TPIS	12509-27-2
0	0.07	168.9	706.6	14.5 14.6±5	61.1±20	041110	14507-41-4
	IP from 84BUT/K						
ORb ₂ +							
Rb ₂ O	4.63	25.8	107.8	-81.0±2.0	-338.9±8.4	82TPIS	18088-11-4
4		26.7	111.6	-80.1	-335.1		2000 44 7
	IP from 84BUT/K	UD.					
ORh ⁺			-				
RhO	(9.3)	(309)	(1294)	95±10	397±42	83PED/MAR	12137-18-7
ORu ⁺							
RuO	(8.7)	(290)	(1211)	89±10	372±42	83PED/MAR	12143-05-4
					· · · · · · · · · · · · · · · · · · ·		
os+ so	10.33±0.03	230.2	1000 7	12.02	50.12	OFTABLATI	10005.00.5
50	10.32±0.02	239.2 239.2	1000.7 1000.7	1.2±0.3 1.2±0.3	5.0±1.3 5.0±1.3	85JANAF	13827-32-2
				4.220.3			
os ₂ +							
s ₂ o	10.54±0.04	231	965	-12±0.2	-52±1	86NIM/ELL	20901-21-7
		230	962	−13±0.2	-55±1		

Table 1. Positive Ion Table - Continued

eV 11.43 IP from 82LEV/I 5.55±0.1 9.60±0.02 IP from 82DYK/I	239.6 239.3 .IA, 79HUB 100 97	1002.4 1001.2 /HER. See al 418 405	-24.0±2 -24.3±2 so: 81NAK/AS -28±3 -31	-100.4±8.4 -101.6±8.4	reference 85JANAF 83PED/MAR	number 10097-28-6 12035-88-0
IP from 82LEV/I 5.55±0.1 9.60±0.02	239.3 LIA, 79HUB 100 97	1001.2 /HER. See al 418 405	-24.3±2 so: 81NAK/AS -28±3	-101.6±8.4 A. -117±12		
IP from 82LEV/I 5.55±0.1 9.60±0.02	239.3 LIA, 79HUB 100 97	1001.2 /HER. See al 418 405	-24.3±2 so: 81NAK/AS -28±3	-101.6±8.4 A. -117±12		
5.55±0.1 9.60±0.02	100 97 226	/HER. See al 418 405	so: 81NAK/AS 28±3	A. -117±12	83PED/MAR	12025 00 0
5.55±0.1 9.60±0.02	100 <i>97</i> 226	418 <i>405</i>	-28±3	-117±12	83PED/MAR	12025 00 0
9.60±0.02	226	405			83PED/MAR	12025 00 0
9.60±0.02	226	405			83PED/MAR	12025 00 0
	226		-31	-130		14033-88-0
		044				
		044				
IP from 82DYK/I	226	944	4.2	17.5	81LAU/BRI	21651-19-4
IP from 82DYK/I		945	4.6	19.2		
	MOR2.					
7.0±0.15	(158.2)	(662.8)	-3.2±4	-13.4±16.7	85JANAF	1314-11-0
	(158.7)	(663.9)	-2.7±4	-11.5±16.7	-	
$\Delta_f H(Ion)$ from onset of endothermic reaction (83MUR); IP is $\Delta_f H(Ion)$ - $\Delta_f H(Neutral)$.						
· · · · · · · · · · · · · · · · · · ·			,			· · · · · · · · · · · · · · · · · · ·
(7.92±0.1)	(228.6)	(956.7)	46.0±15	192.5±62.8	85JANAF	12035-90-4
` ,	(228.9)	(957.9)	46.3±15	193.7±62.8		
(5.62+0.1)	(113)	(471)	_17_3	_ 7 1_12	83DED/MAD	12035-91-5
(5.0210.1)					OSI ED/WAR	12033-71-3
		`				
		0.10				
8.72					83PED/MAR	13451-17-7
<u>,,,</u>		712		/1		
6.1±0.1	(133)	(557)	-7±2	-31±10	83PED/MAR	12035-93-7
	(134)	(559)	- 7	-29		
6.56±0.03	164.3	687.3	13.0±2.0	54.4±8.4	85JANAF	12137-20-1
	164.2	686.8				
IP from 84DYK/0	GRA. See als	so: 80MUR/H	IL, 82BAN/CH	A, 85BAL/GIO	G, 81KAP/STA.	
						
(6.44±0.1)	(130)	(542)	-19	-79	82TN270	12281-29-7
· · · · · · · · · · · · · · · · · · ·		•				
	·	 				
(5 (5 · 0 3)	(126)	(570)	6.3	25.10	CODED A 4 A D	12025 02 1
(3.03±0.2)					83FED/MAK	12035-97-1
	Δ _f H(Ion) from on (7.92±0.1) (5.62±0.1) 8.72 6.1±0.1 6.56±0.03 IP from 84DYK/C	(158.7) $\Delta_{\rm f}H({ m Ion})$ from onset of endo (7.92±0.1) (228.6) (228.9) (5.62±0.1) (113) (111) 8.72 218 218 6.1±0.1 (133) (134) 6.56±0.03 164.3 164.2 IP from 84DYK/GRA. See als (6.44±0.1) (130) See also: 80MUR/HIL. 0 K va	(158.7) (663.9) $\Delta_f H(\text{Ion})$ from onset of endothermic reaction (7.92±0.1) (228.6) (956.7) (228.9) (957.9) (5.62±0.1) (113) (471) (111) (463) 8.72 218 910 218 912 6.1±0.1 (133) (557) (134) (359) 6.56±0.03 164.3 687.3 164.2 686.8 IP from 84DYK/GRA. See also: 80MUR/H (6.44±0.1) (130) (542) See also: 80MUR/HIL. 0 K values.	(158.7) (663.9) -2.7±4 Δ _f H(Ion) from onset of endothermic reaction (83MUR);II (7.92±0.1) (228.6) (956.7) 46.0±15 (228.9) (957.9) 46.3±15 (5.62±0.1) (113) (471) -17±3 (111) (463) -19 8.72 218 910 16±5 218 912 17 6.1±0.1 (133) (557) -7±2 (134) (559) -7 6.56±0.03 164.3 687.3 13.0±2.0 164.2 686.8 12.9±2.0 IP from 84DYK/GRA. See also: 80MUR/HIL, 82BAN/CH (6.44±0.1) (130) (542) -19 See also: 80MUR/HIL. 0 K values.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	(158.7) (663.9) -2.7±4 -11.5±16.7 Δ _f H(Ion) from onset of endothermic reaction (83MUR);IP is Δ _f H(Ion) - Δ _f H(Neutral). (7.92±0.1) (228.6) (956.7) 46.0±15 192.5±62.8 85JANAF (228.9) (957.9) 46.3±15 193.7±62.8 (5.62±0.1) (113) (471) -17±3 -71±12 83PED/MAR (111) (463) -19 -79 8.72 218 910 16±5 69±21 83PED/MAR 218 912 17 71 6.1±0.1 (133) (557) -7±2 -31±10 83PED/MAR (134) (559) -7 -29 6.56±0.03 164.3 687.3 13.0±2.0 54.4±8.4 85JANAF 164.2 686.8 12.9±2.0 53.9±8.4 IP from 84DYK/GRA. See also: 80MUR/HIL, 82BAN/CHA, 85BAL/GIG, 81KAP/STA. (6.44±0.1) (130) (542) -19 -79 82TN270 See also: 80MUR/HIL. 0 K values.

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I})$	on)	∆ _f H(Neı	ıtral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
ov+							
VO	(7.5)	(203.4)	(851.2)	30.5±5.0	127.6±20.9	85JANAF	12035-98-2
		(203.5)	(851.4)	30.5±5.0	127.8±20.9		
	$\Delta_{\mathbf{f}}H(Ion)$ from or				RI/ARM, 85E	LK/ARM).	
	IP is $\Delta_f H(Ion) - L$	_H(Neutra	al). See also: 811 	KAP/STA. 			
ow+							
wo	(9.1±1)	(311.5)	(1303.1)	101.6±10.0	425.1±41.8	85JANAF	12035-99-3
		(311.6)	(1303.7)	101.7±10.0) 425.7±41.8		
OY+							
YO	5.85±0.15	124	518	-11±2	-46±10	83PED/MAR	12036-00-9
		124	519	-11	-45		
	See also: 80MUR	/HIL.					
OYb +							······································
YbO	(6.55±0.1)	(147)	(615)	-4±2	-17±8	83PED/MAR	25578-79-4
			· · · · · · · · · · · · · · · · · · ·	-			
OZn+							
ZnO	A 1777am) 6 01	(275±8)	(1151±33)				
	$\Delta_{f}H(\text{Ion})$ from 81	MAP/STA	. o K values.			· · · · · · · · · · · · · · · · · · ·	
OZr ⁺						-	· · · · ·
ZrO	(6.1±0.3)	(154.7)	(647.1)	14.0±12.0	58.6±50.2	85JANAF	12036-01-0
		(154.9)	(648.2)	14.2±12.0	59.6±50.2		
	See also: 81KAP/	STA.					
O ₂ +							
O ₂	12.071±0.001	278.5	1165.3	0	0	*DEF	7782-44-7
-		278.4	1164.7	0	0		
	See also: 81KIM/I	KAT.					
O ₂ P +			- -				
PO ₂	(10.5±0.1)	(175)	(733)	-67	-280	85JANAF	12164-97-5
_	•	(176)	(736)	-66	-277		
O ₂ Pt ⁺							
PtO ₂	(11.2±0.3)	(299)	(1253)	41	172	82TN1270	121/115/
	(11,010,0)	(2//)	(1200)	41	116	82TN270	1314-15-4
O ₂ Rh ⁺							
RhO ₂	(10.0)	(275)	(1149)	44	184	82TN270	12137-27-8
O ₂ S+					· · · · · · · · · · · · · · · · · · ·		
so ₂	12.32±0.02	213	892	-7 0 9±0 1	-296.8±0.2	85JANAF	7446-09-5
4		214	894		-294.3±0.2	ONE LAUTE	/ ************************************
	See also: 81SMI/S						
O ₂ Sn ₂ +				· · · · · · · · · · · · · · · · · · ·			
Sn ₂ O ₂	(9.8±0.5)	(166)	(695)	-60	-251	82TN270	12534-17-7
	(>,0=00)	(200)	(0,0)	30	~~ 1	04114610	14334-11-1

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}_{\mathbf{G}})$	on)	$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
O ₂ Th +					· · · · · · · · · · · · · · · · · · ·		
ThO ₂	(8.7±0.15)	(82)	(341)	-119	-498	82TN270	1314-20-1
		(82)	(344)	-118	-495		
O ₂ Ti ⁺							
TiO ₂	(9.54±0.1)	(149)	(625)	(-71)	(-299)	85BAL/GIG	13463-67-7
		(149)	(623)	(-71)	(-297)		
	See also: 82BAN/	CHA, 85BA	L/GIG.				
O ₂ U+			· · · ·	····		· · · · · · · · · · · · · · · · · · ·	
UO ₂	(5.4±0.1)	(13)	(55)	-111±1	-466±5	80GRE	1344-57-6
		(14)	(57)	-111	-464		
O ₂ W ⁺		 		 		· · · · · · · · · · · · · · · · · · ·	
wo ₂	(9.6±0.3)	(240)	(1003)	18±6	77±29	85JANAF	12036-22-5
2	` -/	(240)	(1005)	19±6	79±29		
	See also: 81BAL/						
O ₂ Zr ⁺					······································		
O ₂ Zr ⁺ ZrO ₂	(9.5±0.3)	(151)	(631)	-68±11	-286±46	85JANAF	1314-23-4
ž	, ,	(150)	(629)	-68±11	-284±46		
O- +							
03+	12.43	321	1342	34	143	82TN270	10028-15-6
-3	10110	321 321	1344	<i>35</i>	145	02111270	10020-15-0
	IP from 84KAT/S	ні.					
O ₃ Ru ⁺				· · · · · · · · · · · · · · · · · · ·			
RuO ₃	(11.2)	(240)	(1003)	-19	-78	82TN270	12036-36-1
038+							= 1
so ₃	12.80±0.04	200 <i>202</i>	839 <i>845</i>		-395.8±0.7 -390.0±0.7	85JANAF	7446-11-9
	See also: 81SMI/S		043	-93.2±0.2	~390.0±0.7		
1			<u></u>				·
0_3 Sn ₃ +	/0.0.0.T	(4.00)	(440)		505	000001000	10504.00.0
Sn ₃ O ₃	(9.8±0.5)	(100)	(419)	-126	-527	82TN270	12534-28-0
O ₃ Ti ₂ +							
Ti ₂ O ₃	(8.3±0.5)	(39)	(164)	(-152)	(-636)	85BAL/GIG2	1344-54-3
-	IP from 85BAL/G	IG2. 0 K va	lues.				
O ₃ U+							
UO ₃	(10.5±0.5)	(51)	(213)	-191±5	-800±20	80GRE	1344-58-7
O ₃ W ⁺	<u>, , , , , , , , , , , , , , , , , , , </u>						
wo ₃	(11.8±0.6)	(202)	(846)	-70	-293	81WOO	1314-35-8
·· - 3	()	(203)	(851)	-69	-288		
	See also: 81BAL/0						

Table 1. Positive Ion Table - Continued

		ive ion Tabl	e - Contin			
Ionization potential eV	-				Neutral reference	CAS registry number
12.320	204	852	-81	-337	82TN270	20816-12-0
12.15±0.03	236 238	988 <i>994</i>	-44 -43	-184 -178	82TN270	20427-56-9
(10.8) 0 K values.	(41)	(172)	-208	870	82TN270	14553-36-7
(9.2±0.5)	(19)	(80)	-193	-808	82TN270	
(9.4)	(-33)	(-139)	-250	-1046	76DEL/HAL	
(10.5±0.5) 0 K values.	(-19)	(-79)	(-261)	(-1092)	85BAL/GIG3	
(8.4) 0 K values.	(-75)	(-315)	-269	-1125	82TN270	
* * * *						
(9.5) IP is onset of photon	(-293) <i>(-288)</i> toelectron	(-1227) <i>(-1203)</i> band.	-512±8 <i>507</i> ±6	−2144±33 <i>−2120±33</i>	85JANAF	10248-58-5
						
(12.2±0.2)	(3) (4)	(11) <i>(17)</i>	-278 -277	-1164 -1158	85JANAF	12165-16-1
(12.7±0.2)	(30)	(124)	-263	-1101	81WOO	1314-68-7
(12.0±0.2)	(-191)	(-800)	-468	-1958	82TN270	12165-37-6
	Ionization potential eV 12.320 12.15±0.03 (10.8) 0 K values. (9.2±0.5) (9.4) (10.5±0.5) 0 K values. (8.4) 0 K values. (9.5) IP is onset of photonomic properties of the photonomic pr	Ionization potential eV	Ionization potential eV kcal/mol kJ/mol 12.320 204 852 12.15±0.03 236 988 238 994 (10.8) (41) (172) 0 K values. (9.2±0.5) (19) (80) (9.4) (-33) (-139) (10.5±0.5) (-19) (-79) 0 K values. (8.4) (-75) (-315) 0 K values. (9.5) (-293) (-1227) (-288) (-1203) IP is onset of photoelectron band. (12.2±0.2) (3) (11) (4) (17)	Ionization potential eV kcal/mol kJ/mol kcal/mol eV kcal/mol kJ/mol kcal/mol kJ/mol kcal/mol 12.320 204 852 -81 12.15±0.03 236 988 -44 -43 (10.8) (41) (172) -208 0 K values. (9.2±0.5) (19) (80) -193 (9.4) (-33) (-139) -250 (10.5±0.5) (-19) (-79) (-261) 0 K values. (8.4) (-75) (-315) -269 0 K values. (9.5) (-293) (-1227) -512±8 (-288) (-1203) -507±6 IP is onset of photoelectron band. (12.2±0.2) (3) (11) -278 (4) (17) -277	Ionization potential eV kcal/mol kJ/mol kJ/mol kal/mol kJ/mol kal/mol kJ/mol kal/mol kJ/mol kal/mol kJ/mol kal/mol kJ/mol kJ/mol kal/mol kJ/mol	Ionization potential eV ApH(Ion) Keal/mol Kl/mol Keal/mol Kl/mol Real/mol Kl/mol Real/mol Kl/mol Reference

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			A 77/NI-		NY	CAS registry
Neutral	eV	kcal/mol		Δ _f H(Ne kcal/mol		Neutral reference	number
O ₁₀ P ₄ +							
P	(13 3+0 3)	(271)	(1551)	(77.0	2024.0		
10 1	(13.3±0.2)	(-371) <i>(-363)</i>	(-1551) <i>(-1517)</i>	-677±2 -669±2	-2834±9 - <i>2800±9</i>	85JANAF	16752-60-6
0P1 0 P0					20702		
0 0							
O ₁₂ W ₄ ⁺				················			
0W	(12.0±0.2)	(-372)	(-1557)	-649	2715	OOTTN 10-TO	101/5 15 /
	(12.0±0.2)	(~312)	(-1337)	-049	-2715	82TN270	12165-45-6
Os ⁺		· · · · · · · · · · · · · · · · · · ·					
Os	8.28	380	1590	189	7 91	82TN270	7440-04-2
	IP from 79RAU/A	ACK.					
P+							
P	10.486	317 <i>317</i>	1328 <i>1328</i>	75.6±0.2 75.4±0.2	316.4±1.0 315.6±1.0	85JANAF	7723-14-0
PS+							· · · · · · · · · · · · · · · · · · ·
PS	(9.0)	(245)	(1024)	36±1	151±4	79HUB/HER	12281-36-6
		(245)	(1024)	36±1	151±4		
PSe +							
PSe	(8.2) 0 K values.	(232)	(971)	43	180	79HUB/HER	12509-41-0
n 4							
P ₂ + P ₂	10.53	(277.2)	(1159.7)	34.3±0.5	143.7±2.1	85JANAF	12185-09-0
- 2	10.00	(277.6)	(1161.5)	34.8±0.5	145.5±2.1	0037111711	12105-07-0
	IP from 79HUB/F	IER.					
P ₃ +							
P ₃	(7.85 ± 0.2)	(241)	(1006)	59.4±4	249±16	74BEN/MAR	55030-78-9
P ₄ +							
R	9.08±0.05	223	935	14±0.5	59±2	85JANAF	12185-10-3
P—/—P		225	942	16±0.5	66±2		4
P							
Pa+							
Pa	5.89±0.12	270	1131	135	563	85KLE/WAR	7440-13-3

Table 1. Positive Ion Table - Continued

ION	Ionization potential $\Delta_f H(Ion)$			$\Delta_{\mathbf{f}}H$ (Ne	utral)	Neutral	CAS registry
Neutral	eV	kcal/mol		kcal/mol		reference	number
Pb ⁺							
Pb	7.416	217.6	910.5	46.6	195.0	82TN270	7439-92-1
	a / 04077	217.8	911.1	46.8	195.6		
	See also: 83SEN	M/RYK, 84NII	k/OVC.			· · · · · · · · · · · · · · · · · · ·	
PbS ⁺							
PbS	(8.5±0.5)	(228)	(954)	32	134	79HUB/HER	1314-87-0
		(229)	(956)	32	136		
PbSe +							
PbSe	(8.4±0.5)	(224)	(935)	30	125	79HUB/HER	12069-00-0
	0 K values.						
PbTe ⁺							
РьТе	(≤8.04)	(≤220)	(≤922)	35	146	79HUB/HER	1314-91-6
	0 K values.						
Pb ₂ +					· · · · · · · · · · · · · · · · · · ·		
Pb ₂	(6.1±0.3)	(214)	(897)	(74)	(308)	79HUB/HER	12596-92-8
2		(215)	(901)	(75)	(312)		
	IP from 82SAI/						
Pd ⁺		<u></u>					
Pd	8.34	283	1183	90	378	82TN270	7440-05-3
		282	1182	90	377		
PdSi ⁺		······································					
PdSi	(8.4±0.5)	(318)	(1329)	124	519	79HUB/HER	12137-77-8
	0 K values.	- ,	•			-	
Pd ₂ +		- · · · · · · · · · · · · · · · · · · ·					
Pd ₂	(7.7±0.3)	(341)	(1426)	163	683	79HUB/HER	12596-93-9
L	0 K values.	` ′	. /	-			
Pm ⁺							
Pm	5.582						
	<u> </u>						
Pr+	5 464 . 0 007	211	002	05	256	OOTEN TO TO	7440 10 0
Pr	5.464±0.006	211 <i>211.2</i>	883 <i>883.9</i>	85 <i>85.2</i>	356 <i>356.7</i>	82TN270	7440-10-0
		411.6		00.2			
Pt +							
Pt	8.61	334	1396	135	565	82TN270	7440-06-4
	IP from 79RAU	<i>333</i> J/ACK, See al:	<i>1395</i> so: 81GUP/N/	<i>134,9</i> AP.	564.4		
	II Hom //ICAC	,,, rein 600 al					
Pu+		_					
Pu	6.03±0.10	222	927	82.5	345	85KLE/WAR	7440-07-5

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathbf{I}\mathbf{c})$		$\Delta_{\mathbf{f}}H$ (Ne		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Ra +							
Ra	5.279	160	668	38	159	82TN270	7440-14-4
	IP from 70MOO.						
Rb ⁺							
Rb	4.177	116	484	19.3±0.1	80.9±0.4	85JANAF	7440-17-7
		116	485	19.6±0.1	82.2±0.4		
Rb ₂ +			····· . · · · · · · · · · · · · · · · ·				
Rb ₂	(3.9±0.1)	(117.0)	(489.6)	27.1±0.6	113.3±2.5	85JANAF	
	TD 6 0577 1 70 (0)	(118.0)	(493.6)	28.0±0.6	117.3±2.5		
4a.v.	IP from 85KAP/S	CH.					
Re+							
Re	7.76	363	1519	184	770	82TN270	7440-15-5
	IP from 79RAU/A	<i>363</i>	1518	184	769		
	IP from /9RAU/A		VII	12.5		···	
Rh ⁺							
Rh	7.46	305	1275	133	557	82TN270	7440-16-6
	C1 01XXA O/	<i>305</i>	1275	133	556		
	See also: 81HAQ/	GIN.					
RhTi ⁺							
TiRh	(8.2±1.0)	(342)	(1431)	153	640	79HUB/HER	12600-90-7
	0 K values.						
Rh ₂ +							
Rh ₂	(7.1±1.0)	(363)	(1518)	199	833	79HUB/HER	12596-98-4
	0 K values.						
Rn ⁺							
Rn	10.748	247.9	1037.0	0	0	*DEF	10043-92-2
		247.9	1037.0	0	0		
	IP from 70MOO.						
Ru ⁺							
Ru	(7.37)	(324)	(1354)	154	643	82TN270	7440-18-8
		(323)	(1352)	153	641		
S +			·····				
S	10.360	305	1275	66.2±0.1	277.0±0.3	85JANAF	7704-34-9
		304	1272	65.6±0.1	274.7±0.3		
	See also: 86LIA/N	G, 79DUN/	DYK.				
						· · · · · · · · · · · · · · · · · · ·	
SeS	(9.2±0.2)	(243)	(1015)	30	127	83GRA/WIE	7446-34-6
	IP from 83GRA/W					COCAA WIL	7110 54-0

Table 1. Positive Ion Table - Continued

	Table .	1. FOSIL	ive Ion Table	- Contin	ueu		
ION Neutral	Ionization potential eV	∆ _f H(kcal/mo	(Ion) ol kJ/mol	∆ _f H(Ne kcal/mol		Neutral reference	CAS registry number
SSn +							
SnS	(8.8) IP is onset of pho	(231) toelectron	(968) a band.	28	119	82TN270	1314-95-0
STi+							
TiS	(7.1±0.3)	(237)	(990)	73	305	82TN270	12039-07-5
SY ⁺							
YS	(6.0)	(180) <i>(180)</i>	(754) <i>(755)</i>	42 <i>42</i>	175 <i>176</i>	82TN270	12210-79-6
S ₂ +				· · · · · · · · · · · · · · · · · · ·			
S ₂	9.356±0.002	246.5	1031.3	30.7±0.1	128.6±0.3	85JANAF	23550-45-0
_	ID & OCLIA DI	246.4	1031.0	30.7±0.1	128.3±0.3		
	IP from 86LIA/No	G. See als	50: 83KOS/GRA	., 83GRA/WIE	5. 		
S ₃ +							
S ₃	(9.68±0.03) See also: 83ROS/9	(257) GRA.	(1076)	34±2	142±8	85JANAF	12597-03-4
o +			· · · · · · · · · · · · · · · · · · ·		<u></u>		
S ₄ +							
s—s ! !	(10.1)	(270)	(1131)	35±2	146±8	85JANAF	19269-85-3
s\$	∆ _f H(Ion) from ap	pearance	potential of 11.	94±0.05 in S ₆ . I	P from 83ROS	/GRA.	
S ₅ +		-		*			
s-s	(8.60±0.05)	(224)	(030)	26±2	1009	85JANAF	12507 10 2
s s	See also: 83ROS/0		(939)	20±2	109±8	85JANAF	12597-10-3
5							
S ₆ ⁺		-					
S							
S S	(9.00±0.03) See also: 83ROS/0	(232) GRA.	(971)	24±2	102±8	85JANAF	13798-23-7
S _S S	,						
57 ⁺					***************************************		
s/S .c	(0.45 - 5.5)						
) S() S()	(8.67±0.03) See also: 83ROS/0	(227) GRA.	(951)	27±2	114±8	85JANAF	21459-04-1
`S-S		- -					

Table 1. Positive Ion Table - Continued

ION	Ionization potential	∆ _f H(Io	on)	Δ _f H(Ne	utral)	Neutral	CAS registry	
Neutral	eV	kcal/mol		kcal/mol		reference	number	
S ₈ +				· · · · · · · · · · · · · · · · · · ·				
,s-s , ,	(9.04±0.03)	(232) <i>(233)</i>	(972) <i>(976)</i>	24.0±0.2 25.0±0.2	100.4±0.6 104.4±0.6	85JANAF	10544-50-0	
\$ \$-\$ [/] \$	See also: 83ROS/		(270)	20.0±0.2	104.410.0			
Sb ⁺								
Sb	8.641	261.9 261.9	1096.0 <i>1095.7</i>	62.7 <i>62.6</i>	262.3 262.0	82TN270	7440-36-0	
	It has been sugge		Z) that this va					
Sb ₂ +								
Sb ₂	(9.3±0.2)	(271)	(1133)	56 57	236	82TN270	32679-33-7	
	The cited ionizati	(271)	(1134)	57	237			
		The cited ionization potential is from a spectroscopic determination. Threshold determinations have led to values of 8.4±0.3, 8.64±0.06,						
		8.7 ± 0.3 , 8.9 ± 0.3 , and 9.5 ± 0.5 eV.						
Sb ₄ +								
Sb //	(7.40±0.10)	(220)	(919)	49	205	82TN270	12597-17-0	
	(7.40±0.10)	(221)	(919) (924)	<i>50</i>	203 210	621N2/U	12397-17-0	
Sb	IP from 84ELB/k		(-1-)					
Se ⁺								
Sc	6.54	241	1009	90	378	82TN270	7440-20-2	
		241	1007	90	376			
	See: 85DYK/GR	A.						
Se ⁺								
Se	9.752	279.2 <i>279.0</i>	1168.0 <i>1167.3</i>	54.27 <i>54</i> .11	227.07 226.40	82TN270	7782-49-2	
SeSn +								
SeSn	(8.6)	(229)	(959)	31	129	79HUB/HER	1315-06-6	
	***	(228)	(953)	29	123			
	IP is onset of pho	toelectron b	and.					
SeTe ⁺								
SeTe	(8.5±0.2)	(227)	(948)	31	128	83GRA/WIE	12067-42-4	
	IP from 83GRA/	WIE.						
SeY ⁺								
SeY	(6.1±1) 0 K values.	(90)	(376)	-51	-213	79HUB/HER	12067-44-6	

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H$ (Io		$\Delta_{\mathbf{f}}H$ (Net		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Se ₂ +							
Se ₂	8.70±0.05	236	985	35	146	82TN270	12185-17-0
		236	987	35	148		
	See also: 83POT/I	NOV, 83GR 	A/WIE.				
Si +							
Si	8.15172±0.00003	295	1236	108±2	450±8	82TN270	7440-21-3
		295	1233	106±2	446±8		
Si ₂ +							
Si ₂	(7.4)	(311.6)	(1303.9)	141.0±3	589.9±13	85JANAF	12597-35-2
-		(311.0)	(1301.1)	140.3±3	587.1±13		
Sm ⁺		-					
Sm	5.6437±0.0006	180	751	49.4	206.7	82TN270	7440-19-9
		1 <i>7</i> 9	751	49.3	206.1		
Sn+		,					
Sn	7.344	241.5	1010.7	72.2	302.1	82TN270	7440-31-5
		241.5	1010.6	72.2	302.0		
Sr ⁺							
Sr	5.695	170	713	39±0.5	164±2	85JANAF	7440-24-6
		170	713	39±0.5	164±2		
Ta +		······		· · · · · · · · · · · · · · · · · · ·			
Та	7.40	358	1496	187	782	85JANAF	7440-25-7
	,	357	1495	186.7	781.4	00011141	, , , ,
	IP from 79RAU/A	ACK.					
Tb+							
Тъ	5.8639±0.0006	228	955	93	389	82TN270	7440-27-9
		228.6	956.4	93.4	390.6		
Te+		 .					
Tc	(7.28)	(330)	(1380)	162	678	82TN270	7440-26-8
Te +							
Te	9.009	255	1066	47	197	82TN270	22541-49-7
		255	1066	47	197		
TeY +						**************************************	
YTe	(6.0±1.0)	(206)	(860)	67	281	79HUB/HER	12187-04-1
	0 K values.	(/	()	.		.>::Objitble	12101-04-1
Te ₂ +							
Te ₂	8.29±0.03	223	933	32	133	79HUB/HER	10028-16-7
4		224	936	32	136		
	See also: 83GRA	WIE.					

Table 1. Positive Ion Table - Continued

			e ion fable				
ION Neutral	Ionization potential eV	l ∆ _f H(Io kcal/mol		Δ _f H(Net kcal/mol		Neutral reference	CAS registry number
Th +					· · · · · · · · · · · · · · · · · · ·		
Th	6.08	283 <i>283</i>	1184 <i>1184</i>	143 <i>143</i>	597 597	85KLE/WAR	7440-29-1
Ti ⁺							
Ti	6.82	270 <i>269</i>	1128 1125	112 <i>112</i>	470 467	82TN270	7440-32-6
Tl ⁺							
Ti	6.108	184.4 <i>184.5</i>	771.6 <i>772.1</i>	43.5 <i>43.7</i>	182.2 182.8	82TN270	7440-28-0
Tl ₂ +							
TI ₂	(6.5±0.5) IP from 80BAL	<i>(223)</i> /PIA. 0 K valu	<i>(932)</i> es.	73	305	80BAL/PIA	76939-73-6
Tm ⁺							
Tm	6.18	198 <i>198</i>	828 <i>830</i>	55 55.8	232 233.4	82TN270	7440-30-4
U ⁺							
U	6.1912	270 <i>270</i>	1128 <i>1128</i>	127 <i>127</i>	531 <i>531</i>	85KLE/WAR	7440-61-1
	IP from 70EME	/KHO, 76SOI	/MAY. See	also: 81CHE/G.	AB.		
v+							
V	6.74	278 <i>278</i>	1165 <i>1162</i>	123±2 <i>122±2</i>	515±8 <i>512±8</i>	85JANAF	7440-62-2
	See also: 85DYF	K/GRA.					
w+							
w	7.60	379 <i>378</i>	1584 <i>1582</i>	203.4±1.5 203.7±1.5	851.0±6.3 849.8±6.3	85JANAF	7440-33-7
Xe +							
Xe	12.130	279.7 <i>27</i> 9.7	1170.4 <i>1170.4</i>	0 <i>0</i>	0 <i>0</i>	*DEF	7440-63-3
	See also: 81KIM	I/KAT.					
					·	· · · · · · · · · · · · · · · · · · ·	
Xe ₂ + Xe ₂	11.13±0.02	256	1072	-0.53	-2.22	79HUB/HER	12185-19-2
12-2	See also: 82POL					_,	
γ+							
Y ' Y	(6.22)	(244)	(1021)	101	421	82TN270	7440-65-5
-	()	(244)	(1021)	100.5	420.4		
	IP from 73GAR	/REE.					
Yb ⁺							
Yb	6.254	180	755	36	152	82TN270	7440-64-4
		180.7	756.2	36.5	152.8		

Table 1. Positive Ion Table - Continued

ION	Ionization potential	$\Delta_{\mathbf{f}}H(\mathrm{Ion})$		$\Delta_{\mathbf{f}}H(\text{Neutral})$		Neutral	CAS registry
Neutral	eV	kcal/mol	kJ/mol	kcal/mol	kJ/mol	reference	number
Zn +	***************************************						
Zn	9.394	247.8	1036.8	31.2	130.4±0.2	85JANAF	7440-66-6
		247.7	1036.3	31.0	129.9±0.2		
Z_r^+				·····			
Zr	6.84	303	1270	146±2	610±8	85JANAF	7440-67-7
		302	1262	144±2	602±8		

Table 2. Negative Ion Table

Ion $\Delta_f H(A^-)$ EA(A $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
e_			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$\Delta_f H(AH) = 218$	82TN270
e ⁻				BDE(A-H)= 1312	82TN270
* 0	1312 ^f	1308 ^h	Def		82TN270
Ag ⁻					
Ag				$\Delta_f H(A) = 285$	82TN270
* 159±1 ^b 1.302	±0.007		LPES	•	85HOT/LIN
Al ⁻				$\Delta_f H(AH) = 259 \pm 1$	82TN270
AI ⁻				BDE(A-H)= 285±3	81KANIMOC
* 284±5 ^a 0.441:	±0.010 1554±4 ^e		LPES		85HOT/LIN
AlBeF ₆					
$BeF_2 \cdot AlF_4^-$					
-2921±21 °	182±10		TDAs		80NIK/SOR
AlBeF ₇ K ⁻					
KBeF ₃ ··AlF ₄					
-3522±21 c	192±8		TDAs		80NIK/SOR
AlBeF ₇ Na ⁻					
NaBeF ₃ ··AlF ₄					
−3497±21 ^c	192±8		TDAs		80NIK/SOR
AIF2					
AIF ₂				$\Delta_f H(A) = -749 \pm 13$	81W00
-971±13 2.25±0	0.13		TDEq	EA: 111 kJ < EA(F), new EA(F) data used	74SRI/UY
NF ₄		· · · · · · · · · · · · · · · · · · ·			······································
AlF ₃ ··F					
* -1945±10 ^c	488±8		TDAs		86NIK/IGO
		Summary of liter	ature data	a plus new work. Recommended average value	
-1972±21 ^c	498±7			F ⁻ A: 1100K; $\Delta_f H(AiF_4^-)$: 298K	80SID/NIK
-1964±14 ^c	495±11			F A: 93±1 kJ > UF ₄	79NIK/SKO
-1954±12 ^c	500±8			F A:17 kJ > ScF ₃	81NIK/SID
-2092±13	628±42 ^k			$2AiF_2 + AiF_2^- = 2AiF + AiF_4^-$	74SRI/UY
-1949±16 ^c	496±13			$KF_2^- + KAIF_4 = AIF_4^- + 2KF$	80GUS/PYA
AIF ₅ K ⁻	· · · · · · · · · · · · · · · · · · ·				
KF··AIF ₄					
-2397±33 ^c	120±8		TDAs		79GUS/GOR
MF7Mn ⁻					
MnF ₃ ··AlF ₄					
-2950±60			TDAs		84KOR/CHI
AlO-					
AIO ⁻				$\Delta_f H(A) = 67 \pm 8$	85JANAF
-282±21 b 3.62±0).13		TDEo	EA: near EA(CI)	72SRI/UY
-202121 J.0210	/, <u>1.</u> J		IDIM	M I IIVII LA I(OI)	, 4014/01

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
AlO ₂ - AlO ₂ - -583±13 b	4.05±0.13	3		TDEq	$\Delta_f H(A) = -130$	<i>82KAS/CHE</i> 72SRI/UY
			EA: 42 kJ > EA	_	data for $\Delta_f H(AlO_2)$ and EA(Cl) used	
Al ₂ F ₇ ⁻						
AIF3··AIF4		•••	455.0	mr		OOCALD WATER
-3394±15 ^c -3393±33	•	204±4	175±8	TDAs TDAs		80SID/NIK 79GUS/GOR
M ₂ F ₈ K ⁻						
$KAIF_4 \cdot \cdot AIF_4$	-					
-4011±42 ^c	: 	147±6	123±10	TDAs		80SID/NIK
M ₂ F ₈ Na ⁻						
NaAlF ₄ ··AlF ₅ -4006±42 ^c		166±9	141±13	TDAs		80SID/NIK
		10017	171113			0001D//NK
ArBr [−] Ar··Br [−]						
-219 °		6		Mobl		84GAT
 \s^	·····					
As ⁻					$\Delta_f H(A) = 303 \pm 2$	82TN270
* 224±5 b	0.81±0.03	}		PD		85HOT/LIN
\sBr ⁻						
AsBr	1.2			TTAD	P A.P.	
7	1.3			EIAP	From AsBr ₃	76PAB/BEN
sBr ₂ -						
AsBr ₂	3.5±0.1			DIAD	From AsD.	GOD A D G CAD
-303	3.5				From AsBr ₃ From AsBr ₃	78PAB/MAR 76PAB/BEN
sCl ⁻						
AsCl ⁻ ·						
-9	1.3			EIAP	From AsCl ₃	76PAB/BEN
sClF3 ⁻						
AsF ₃ ··Cl		<u>-</u> .				
* -1121±12 ^c		108±8 g	78±8	IMRE		85LAR/MCM
sCl ₂ -						
AsCl ₂	2.2				$\Delta_f H(A) = 67 \pm 21$	82TN270
-273	2.2 2.2±0.1				From AsCl	76PAB/BEN
	∠.∠±U.1			EIAP	From AsCl ₃	78PAB/MAR
AsF-						
AsF ⁻ ·	1.3			EIAP	From AsF ₃	76D A D /DENI
				~~11 11	110111111111111111111111111111111111111	76PAB/BEN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
AsF ₂ ⁻						110 110
AsF ₂						
-543	8.0			EIAP	From AsF ₃	76PAB/BEN
	0.8±0.1			EIAP	From AsF ₃	78PAB/MAR
AsF ₄ - AsF ₃ ··F						
* -1236±13 ^c		202±8 ^g	172±8	IMRE		85LAR/MCM
AsH ⁻					· · · · · · · · · · · · · · · · · · ·	······································
AsH ⁻ ·						
	1.0 ± 0.1			PD		77RAC/FEL
< 167				IMRB	As ⁻ + AsH ₃ →	74WYA/HOL
	< 1.1				From AsH ₃	64EBI/KRA
. **	M-4	······································				
AsH ₂ ⁻					$\Delta_f H(AH) = 67 \pm 1$	82TN270
AsH ₂					BDE(A-H) = 326±33	
* 52±26 ^a		1515±26 ^g	1483±25	IMRB	Between PH ₃ , H ₂ S	74WYA/HOL
*	1.27±0.03			PD		72SMY/BRA2
<41±20 ^a	<1.1±0.5	d <1505±19		EIAP	From AsH ₃	64EBI/KRA
As ₂ -						
Ās ₂					$\Delta_f H(A) = 190 \pm 3$	73BEN/MAR
L	< 0.8			PD	-1.1.4	77FEL/RAC
180±19	0.1±0.2 i			EIAP	From As ₄	73BEN/MAR
As ₂ H ⁻	 					
As ₂ H						
< 288				IMRR	$As^- + AsH_3 \rightarrow As_2H^- + H_2$	74WYA/HOL
					715 7 715113 7 715211 7 712	74111100
As3~					A ///A) 044 40	7005\#1440
As ₃	00041			777 A TO	$\Delta_f H(A) = 241 \pm 16$	73BEN/MAR
160±18	0.8±0.4 ¹			EIAP	From As ₄	73BEN/MAR
Au [™]					$\Delta_f H(AH) = 295\pm 2$	82TN270
Au ⁻					BDE(A-H) = 289±4	82TN270
* 144±6 ^a	2.309	1379±4 ^e		LPD		85HOT/LIN
AuF ₆ -						
AuF ₆	>1.0			NBIP		80COM/REI
				TABIF		
B ⁻					$\Delta_f H(AH) = 450\pm 2$	82TN270
B ⁻					BDE(A-H)= 211±10	85JANAF
* 416±13 ^a	0.277±0.0	10 1497±11 ^e	1468±13 ^h	LPES		85HOT/LIN
BBrCl ₂ -						
BCl ₂ Br					$\Delta_f H(A) = -337 \pm 42$	85JANAF
-403±61 b	0.7+0.2			NBIP	1	80ROT/MAT
100401	0., 20.2			. 4571		OURO I/MAI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
BBr ₂ Cl ⁻		· · · · · · · · · · · · · · · · · · ·				
BBr ₂ Cl ⁻					$\Delta_f H(A) = -272 \pm 42$	85JANAF
-363±61 ^b	0.9±0.2			NBIP		80ROT/MAT
BBr ₃ -						
BBr ₃ . -285±20 b	U 6+U 3			NBIP	$\Delta_f H(A) = -206$	82TN270
	U.O±U.2	· · · · · · · · · · · · · · · · · · ·		NDIF		80ROT/MAT
BCIF3 ⁻ BF3··CI ⁻						
* -1473±12 °		109±8 g	81±8	IMRE		85LAR/MCM
BCl ₂ -					$\Delta_{f} H(AH) = -248 \pm 4$	71JANAF
BCl ₂ ⁻ -144±109 b	0.6			Est2	Bott from ID. HA of incelegation in NO. DE. AIR.	921ANAE
_144X103	U.U			E312	Est: from IP, EA of isoelectronic NO ₂ , BF ₂ , AIF ₂	82JANAF
BCl3 ⁻					A 1//A)	0071
BCl ₃ -436±20 b	0.3±0.2			NBIP	$\Delta_f H(A) = -404 \pm 1$	<i>82TN270</i> 80ROT/MAT
BCl ₃ F⁻ BCl ₃ ··F⁻						
<-890		> 238 ^k		IMRB	F ⁻ A: > SF ₅	72STO/NEL
3Cl ₄ -	<u> </u>	·····				
BCl ₃ ··Cl¯						
-920±6		289±8 ^k		Latt		77KRI/TTT
3F ₂ -	,=				$\Delta_f H(AH) = -734 \pm 3$	85JANAF
BF ₂			h		BDE(A-H)= 362±17	85JANAF
-796±26 b	2.13±0.13	1468±29 ^e	1436±31 h	IMRE	EA: 122 kJ < EA(F), new EA(F) used	74SRI/UY
BF ₂ O ⁻					$\Delta_f H(AH) = -1092 \pm 8$	82TN270
BF ₂ O ⁻		c			BDE(A-H) = 473±23	85JANAF
<-1002±25		< 1619±33 ^f		IMRB	DO ⁻ + BF ₃ →	72STO/NEL
3F3 ⁻						
BF ₃ -					$\Delta_f H(A) = -1137 \pm 2$	85JANAF
	0.0±0.2			NBIP	See also: 72STO/NEL	80ROT/MAT
	2.6		·	SI ————		69PAG/GOO
BF ₄ ⁻						
BF ₃ ··F¯ * −1687±25 ^c		301±21 ^g	266±8	IMRE		85LAR/MCM
-1716±44 ^c		330±40	20020	TDEq		84PYA/GUS
-1773±26		385±25 k		Latt		84MAL/ROS
		393±21 k		Latt		77KRI/TIT
-1779 ± 21						
-1779±21 <-1812					$BF_3 + BF_2^- = BF_4^- + BF$	74SRI/UY

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ Method $\Delta G_{aff}(X \cdot \cdot Y^-)$	Comment	Reference
BH ₄ -					
вн ₃ н−					
< 197±28		t.	IMRB	HO ⁻ + B ₂ H ₆ →	68DUN
-96±21		341 ^k	Latt		55ALT
-85±8		322±8 ^k	Latt		77KRI/TTT
BKO ₂ -					
KBO ₂ ⁻·				$\Delta_f H(A) = -672 \pm 10$	85FARISRI
-785±31 b	1.2±0.2		EIAP		76SHE/ILJ
BNaO ₂ -	-	······································			
NaBO ₂				$\Delta_f H(A) = -644 \pm 42$	82TN270
-782±63 b	1.4±0.2		EIAP	•	
					76SHE/ILJ
BO-					
BO ⁻ -196±17 ^b	2 84±0 00		TOTAL		#4 000 Y # ***
-130717	2.04±0.09		TDEq	hT manu A IMDO) and EA (CI)	71SRI/UY
	> 2.48			kJ, new $\Delta_f H(BO.)$ and EA(CI) used	dotas.
	~ £.40		TDEq		70JEN
BO ₂ -				$\Delta_f H(AH) = -562 \pm 4$	82TN270
BO ₂				BDE(A~H)= 479±6	82TN270
-736±18	4.51±0.21	i 1356±26 ^e	TDEq		83SID/RUD
-617±15 ^b	3.28±0.13		TDEq		71SRI/UY
			$EA(BO_2) < EA(Cl)$ by 3	2 kJ, new $\Delta_f H(BO_2)$ and EA(Cl) used	
	3.4±0.5		EIAP	From K ₂ BO ₂ F	76SHE/ILJ
	4.19±0.31		TDEq		70JEN
BeF ₃ -					
BeF ₂ ··F					
-1477±15 ^c		407±10	TDFa	$F^-A: 83\pm7 \text{ kJ} < A1F_3$	80NIK/SOR
					501.11.05.11
BeH-				4	-01115115
BeH ⁻			nn	$\Delta_f H(A) = 344$	79HUB/HEF
276 ^b	0.7±0.1		PD		77RAC/FEL
Be ₂ F ₅					
$\text{Be}_2F_4\cdots F^-$			·		002 7777 17 0 70
		464±8	TDEq	$F^-A: 26\pm 8 \text{ kJ} < AlF_3$	80NIK/SOR
Be ₂ F ₆ K ⁻					
KF··Be ₂ F ₅					
-617 c		290±10	TDAs		80NIK/SOR
Be ₂ F ₆ Na ⁻					
NaF·Be ₂ F ₅					AAL **** (A.C.=
-564 ^c		273±10	TDAs		80NIK/SOR
lealfa_					
Be3F7 ⁻ BeF ₂ ··Be ₂ F ₅ ⁻	•				

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Be ₃ F ₈ K ⁻ KBeF ₃ ··Be ₂ F	5					000 177/2005
-1482±21 ^c	·-···	188±8		TDAs		80NIK/SOR
Bi ⁻ Bi ⁻ * 116±5 ^b	0.946±0.0	10		LPES	$\Delta_f H(A) = 207 \pm 4$	<i>82TN270</i> 85HOT/LIN
Br ⁻		· · · · · · · · · · · · · · · · · · ·			$\Delta_f H(AH) = -36$	85JANAF
Br ⁻					BDE(A-H) = 366	82BAUI COX
* -213±1 ^a	3.365±0.0	03 1354 ^e 1349±9 ^g	1331±1 ^h 1326±8	PLA IMRE		85HOT/LIN 86TAF
BrClH ⁻						
HCl··Br¯						
* -387±9 ^c		82±8	54±11	TDAs		85CAL/KEB
BrCl ₂ -						
BrCl ₂						
<-464		> 251 ^k		PDis		79LEE/SMI
BrCl ₂ P						
PBrCl ₂				Est2	$\Delta_f H(A) = -188 \pm 42$	
-335±61 ^b	1.5±0.2			NBIP		76MAT/ROT
BrFH ⁻						
$HF \cdot \cdot Br^-$						
* -557±10 ^c		71±8		Est	Extrapolated from other bihalide data	84LAR/MCM3
BrHI ⁻						·
$HBr \cdot \cdot I^-$						
* -292±9 ^c		67±8	43±11	TDAs		85CAL/KEB
BrHNO ₃ -						
HBr··NO ₃ ¯						
-438±10 ^c		94±8	78±7	TDEq		77DAV/FEH
BrH ₂ O ⁻						
HOH··Br¯						
-517 ^c		62	37	TDAs		82BUR/HAY
		53±8	29±8	TDAs		70ARS/YAM
BrI ⁻						
IBr					$\Delta_f H(A) = 41 \pm 1$	82TN270
-205±11 ^b				NBIP		72BAE
	2.5±0.1			NBIP		73AUE/HUB
	2.7±0.2			EnCT		71CHU/BER
	1.62±0.05			NBIP	Vertical EA	76HUB/KLE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
BrK ⁻						
KBr					$\Delta_f H(A) = -180 \pm 2$	85JANAF
-239 ^b	0.6			Scat	•	79DEV/WIJ
BrKr ⁻						
$Kr \cdot \cdot Br^{-}$						
-221 ^c		8		Mobl		84GAT
BrNa ⁻						
NaBr ⁻ ·					$\Delta_f H(A) = -143 \pm 8$	82TN270
-234 ^b	0.9			Scat		79DEV/WIJ
BrO ⁻					$\Delta_f H(AH) = -79 \pm 8$	76BEN
BrO ⁻					$BDE(A-H) = 423\pm13$	82TN270
<-20±21	> 1.5±0.2	< 1590±29 f		Endo	Br ⁻ + O ₂ →	77VOG/DRE
BrO ₂ S ⁻						
SO ₂ ···Br¯						
-590±10 c		81±8	53±11	TDAs		85CAL/KEB
BrPb ⁻						
PbBr ⁻						
	0.9±0.2			EIAP	From PbBr ₂	67HAS/BLO
BrXe ⁻						
Xe · · Br¯						
-227 ^c		14		Mobi		84GAT
Br ₂ -			······································	<u> </u>		
Br ₂					$\Delta_f H(A) = 31$	82BAU/COX
*	2.5±0.1			NBIP	,	72BAE
	2.4			ECD	Vertical EA: 1.6 eV	81AYA/WEN
	2.5±0.1			EnCT		71CHU/BER
	2.6±0.2			NBIP		77DIS/LAC2
	2.6±0.2			EnCT		73HUG/LIF
	2.9±0.1			EIAP	From CBr ₄	71DEC/FRA
	1.47±0.05	5		NBIP	Vertical EA	76HUB/KLE
Br ₂ ClP ⁻		· · · · · · · · · · · · · · · · · · ·				
PBr ₂ Cl				Est2	$\Delta_f H(A) = -152 \pm 42$	
-309±61 b	1.6±0.2			NBIP		76MAT/ROT
Br ₂ Ge ⁻						
GeBr ₂					$\Delta_f H(A) = -63 \pm 8$	82TN270
<-217 b	> 1.6			EIAP		77PAB/MAR
Br ₂ H ⁻						
HBr··Br [−]			# 0 ***			OSCIAT MED
* -336±9 ^c		86±8	58±11	TDAs		85CAL/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{\text{acid}}(AH)$ $\Delta G_{\text{aff}}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
Br ₂ I						
IBr ₂						
-251		95 ^k		Latt		77FIN/GAT
Br ₂ Si ⁻					· · · · · · · · · · · · · · · · · · ·	
SiBr ₂						
-	> 1.7			EIAP	From SiBr ₄	77PAB/MAR
Br ₂ Sn ⁻		_				
SnBr ₂						
-54	1.3			EIAP	From SnBr ₄	77PAB/PER
Br ₃ Ge ⁻						
GeBr ₃						
	> 0.9			EIAP	From GeBr ₄	77PAB/MAR
Br ₃ P ⁻						
PBr ₃					$\Delta_f H(A) = -139 \pm 8$	82TN270
-293±23 ^b	1.6±0.2			NBIP		76MAT/ROT
Br ₃ Si ⁻				·	$\Delta_f H(AH) = -318 \pm 2$	82TN270
SiBr ₃						
	>1.5±0.2			EIAP	From SiBr ₄	77PAB/MAR
Br3Sn-					$\Delta_f H(AH) = -318 \pm 8$	82TN270
SnBr ₃					BDE(A-H)= 349±28	77PAB PER
	3.08 ± 0.01			EIAP	From SnBr ₄	78PAB/MAR
<-484	> 3.1			EIAP	From SnBr ₄	77PAB/PER
Br ₃ Ti ⁻						
TiBr ₃					$\Delta_f H(A) = -377 \pm 42$	74BEN PAB
	0.76 ± 0.01			EIAP	From TiBr ₄	78PAB/MAR
-452±15	0.8±0.3			EIAP	From TiBr ₄	74BEN/PAB
<u></u>					$\Delta_f H(AH) = 596$	82TN270
C ⁻					$BDE(A-H) = 339\pm1$	82TN270
* 595±1 a	1.263	1529±1 ^e	1506±2 h	LPD		85HOT/LIN
	>1.2±1.0			EIAP	From graphite	54HON
CBrF3 ⁻						
CF ₃ Br					$\Delta_f H(A) = -652$	78KUD KUD
-740 b	0.9±0.2			NBIP	•	78COM/REI2
CBr ₃	•				$\Delta_f H(AH) = 24 \pm 5$	84BIC/MIN
Br ₃ C					$BDE(A-H) = 402\pm7$	82MCM/GOL
40±29 b	1.7±0.2	1546±34 ^f	1514±38 ^h	SI	, ,	69PAG/GOO
CBr ₄						
Br ₄ C ⁻ ·					$\Delta_f H(A) = 84 \pm 3$	84BIC/MIN
-115 b	2.1			SI	•	69PAG/GOO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CCIF ₂ -					$\Delta_f H(AH) = -484 \pm 2$	77PEDIRYL
CF ₂ Cl ⁻					$BDE(A-H) = 425\pm4$	82MCMIGOL
-431±35 a	1.6±0.3	1583±33 ^e	1550±37 h	NBAP	From CF ₂ Cl ₂	78DIS/LAC
	> 1.9			EIAP	From CF ₃ Cl	79ILL/SCH
CCIE O-						
CCIF ₂ O						
$CF_2 = O \cdot CI^-$ * -920 ± 11^{c}		52±8 ^g	20.0	DADE		0.00
<-728±25		32100	28±8	IMRE	CICOT CITE L CT O	85LAR/MCM
<-/20±25				IMRB	CICO or CIF + CF ₂ O →	76KAR/KLE
CCIO-						-
CICO						
<-356		> 21 ^k		EIAP	From Cl ₂ CO	76KAR/KLE
CClO ₂ -						
CO ₂ ··Cl						
* -654±2 °		<i>33</i>	9	TDAs		80KEE/LEE
35 .25		32±8	9±8	TDEq		86HIR/SHO
CCIS ₂						
CS ₂ ··Cl⁻						
* -159±10 ^c		49±8 g	24±8	IMRE		85LAR/MCM
CCl ₂					$\Delta_f H(AH) = 109\pm4$	83WEI BEN
CCl ₂					$BDE(A-H) = 272\pm17$	85LIA/KAR
-10±42 b	1.8±0.3	1411±46 ^e		NRAP	From CCl ₄ ,CFCl ₃ ,CHCl ₃	78DIS/LAC
10242	2.5±0.6	1-1111-10		EIAP	From CCl ₄ , CHCl ₃ , CH ₂ Cl ₂	80SCH/ILL
						
CCl ₂ F ⁻					$\Delta_f H(AH) = -281$	78KUD KUD
CCl ₂ F					BDE(A-H) = 425±4	82MCM/GOL
2	> 2.4±0.2	< 1506±23 ^e		EIAP	From CF ₂ Cl ₂	79ILL/SCH
	1.1±0.3			NBAP	From CFCl ₃	78DIS/LAC
						<u></u>
CCl ₂ FO						
$CCl_2 = O \cdot F$						COLUMN TO THE PERSON OF THE PE
<-590±50				IMRB	FCO ⁻ + CCl ₂ O →	76KAR/KLE
CCl ₂ F ₂ -						
CCl ₂ F ₂ ⁻ ·					$\Delta_f H(A) = -477 \pm 5$	77PED RYL
-516±25 b	0.4+0.2			NBIP	, , ,	78DIS/LAC
			.,,			
CCl ₃ -					$\Delta_f H(AH) = -105\pm 2$	77PED/RYL
CCI ₃					$BDE(A-H) = 401 \pm 4$	82MCM/GOL
* -141±28 a	2.3±0.3 ⁶	1494±26 g	1461±25	IMRB		72BOH/LEE
	2.6±0.2			EIAP	From CCl ₄	80SCH/ILL
	> 1.9			EIAP	From CFCl ₃	79ILL/SCH
	1.3±0.3				From CHCl ₃ , CCl ₄	78DIS/LAC
	> 2.1±0.3	.		EIAP	From CFCl ₃	61CUR
	1.44±0.0			SI	-	66GAI/KAY
	1. TT IU.U	-		J.		

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CCl ₃ F ⁻ CCl ₃ F ⁻ · -374±37 ^b	1.1±0.3			NBIP	$\Delta_f H(A) = -268 \pm 8$	77PED/RYL 78DIS/LAC
CCl ₃ O ⁻						
$CCl_2 = O \cdot \cdot Cl^2$	_	_				
* -498±9 ^c		52±8 g	27±8	IMRE		85LAR/MCM
-460±8				IMRB		76KAR/KLE
CCl ₄ -						
CCI ₄ ⁻ ·					$\Delta_f H(A) = -97 \pm 3$	77PEO/RYL
-290±22 b	2.0±0.2			NBIP	,	83LAC/MAN
	2.0±0.2			NBIP		78DIS/LAC
	2.1±0.1			SI		66GAI/KAY
CCl ₅					tarder dad de selación de material de activa de servición de en	MATTANAN MASSAMBAN SAMBAN AND STREET OF THE STREET OF THE SAMBAN
CCl ₄ ··Cl [−]						
-384±7 ^c		59±3	25±4	TDAs		74DOU/DAL
CF-						
CF-					$\Delta_f H(A) = 255$	85JANAF
	> 3.3±0.3			EIAP	From C ₂ F ₄	70THY/MAC
CFN ⁻		· · · · · ·				
FCN ⁻					$\Delta_f H(A) = 36 \pm 17$	85JANAF
-318	2.9 i			EIAP	From CF ₃ NC	86HEN/ILL
	>4.0			EIAP	From PF ₂ CN	74HAR/RAN
CFO ⁻				Est	A . L/AL/) = 200	
FCO ⁻				LSI	$\Delta_f H(AH) = -380$ $BDE(A-H) = 415\pm29$	O1DVVI IONI
-444±10	2.7 ⁱ	104 ^k		EIAP	From CF ₂ O	<i>81DYKJON2</i> 70THY/MAC
-435 a	2.3±0.5 d	1475±19		EIAP	From HCOF	77KAR/KLE
133	3.3	1475117			From (CF ₃) ₂ CO	70HAR/THY
OFOO-						
CFOS ⁻ COS··F ⁻						
* -524±11 ^c		133±8 ^g	103±8	IMRE		85LAR/MCM
770 -						
CFO ₂ ⁻ CO ₂ ··F⁻						
* -775±11 ^c		133±8 ^g	103±8	IMRE		QST AD/NACNA
-780±15 ^c		138±13	10040	IMRE		85LAR/MCM 78MCM/NOR
						/01/41C1/41/11/OIX
CFS ₂ -						
CS ₂ ··F [−] * −262±11 ^c		121.09	101.0	IMDE:		A#Y . W. A
-202±11		131±8 ^g	101±8	IMRE		85LAR/MCM
CF2 ⁻						
CF ₂					$\Delta_f H(A) = -205 \pm 13$	85LIA/KAR
<-102					$O^- + CH_2F_2 \rightarrow$	76DAW/JEN
	<1.3±0.8				From c-C ₄ F ₈	72HAR/THY2
	> 0.2			EIAP	From C ₂ F ₄	70THY/MAC

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CF ₂ CF ₂	2.6			SI	$\Delta_f H(A) = -205 \pm 13$	<i>85LIA KAR</i> 69PAG/GOO
CF ₂ N ⁻						
<-222				EIAP	From CF ₃ NC	86HEN/ILL
CF ₃					$\Delta_f H(AH) = -695 \pm 1$	78KUD KUD
CF ₃		a _			BDE(A-H)= 443±7	86TSA
* -648±10 ^a			1545±8	IMRE		79BAR/SCO
*	2.82±0.01			PD	Vertical detachment energy	75RIC/STE4
	1.9±0.3			NBAP	From CF ₄	78DIS/LAC
	$> 2.0 \pm 0.2$			EIAP	From C ₃ F ₈	74HAR/FRA
	$> 2.4 \pm 0.5$			EIAP	From C ₂ F ₆	74HAR/FRA
	2.2±0.3			EIAP	From CF ₄	74HAR/FRA
-683	2.2			EIAP	From CF ₄	74FRA/WAN
-651	1.9			EIAP	From CF ₄	73WAN/MAR
	3.1±0.2			EIAP	From CF ₄	72LIF/GRA
	2.1±0.3			EIAP	From C ₂ F ₄	70THY/MAC
	1.8 ± 0.2			EIAP	From CF ₃ OF	70THY/MAC
	2.7 ± 0.2			EIAP	From CF ₄	70MAC/THY
	2.5			EIAP	From (CF ₃) ₂ CO	70HAR/THY
	< 2.6			EIAP	From C ₂ F ₆	69MAC/THY
	2.0			EIAP	From C ₃ F ₈	69LIF/GRA
	3.3			EIAP	From C ₂ F ₆	63BIB/CAR
	2.0 ± 0.2			SI		69PAG/GOO
			1539±8	IMRE ⁰		79BAR/SCO
CF ₃ I ⁻						
CF ₃ I					$\Delta_f H(A) = -590 \pm 21$	78KUD KUD
3	1.6±0.2			NBIP	1 . ,	78COM/REI2
	1.4±0.2			NBIP		76TAN/MAT
	2.2±0.2			NBIP		73MCN/LAC
CF ₃ N ⁻ .						1
< 145±39				EIAP	From CF ₃ NC	86HEN/ILL
CF ₃ NO ⁻						
CF ₃ NO ⁻				Est2	$\Delta_f H(A) = -527$	
	> 2.0±0.2			EIAP	From(CF ₃) ₂ NO	77HAR
CF ₃ O ⁻					$\Delta_f H(AH) = -876 \pm 21$	79KLO/SEP
$CF_2 = O \cdot \cdot F^{-}$					$BDE(A-H) = 452\pm13$	68CZA/CAS
* -1062±13 °	4.35±0.48	d 178±8 g	142±8	IMRE		83LAR/MCM
-1030±17 ^c		146±13		IMRE		78MCM/NOR
-937±25		110220		IMRB		76KAR/KLE
	> 1.9±0.2			EIAP	From CF ₃ OOCF ₃	72MAC/THY
	1.9 ± 0.1			EIAP	From CF ₃ OF	70THY/MAC

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
CF ₃ O ₃ S ⁻						
3 3	4.9±0.3			IMRB		86VIG
			Δ _{acid} G: CF ₃ SO		$O_3H < H_2SO_4 < HPO_3 < HI, \Delta_{acid}G(CF_3SO_3H) < 0$	
		< 1312±8		EIAP	From CF ₃ SO ₃ H,anhydride	86ADA/SMI
CF ₃ S-						
CF ₃ S ⁻						
·	1.8			SI		69PAG/GOO
CFeO ⁻				 		
Fe(CO)						
*	1.260±0.02	22		LPES		79ENG/LIN2
68±25				EIAP	From Fe(CO) ₅	76COM/STO
CI					$\Delta_f H(A) = 552$	76REF FRA2
< 363 b	> 2.0			Endo	I + CO →	77VOG/MIS
222±21	3.4±0.2 ⁱ			Endo	I ⁻ + CO →	76REF/FRA2
CIO-						
ICO ⁻ -412	3.1			Endo	I ⁻ + COS →	76REF
OYO -						<u> </u>
CIO ₂ - CO ₂ ···I-						
* -605±1 °		23	2	TDAs		80KEE/LEE
ONT-				-		
CN-					$\Delta_f H(AH) = 135$	82TN270
CN * 74±9 ^a	3.74±0.17	d _{1469±8} g	1420.0	MADE	$BDE(A-H) = 518\pm8$	82MCM/GOL
/4±9 *	3.74±0.17 3.82±0.02	1461±10 e	1438±8	IMRE PI		79BAR/SCO
74	J.62±0.02	1401±10			I ⁻ + (CN) ₂ →	69BER/CHU
-105±19	3.2±0.1 i			EIAP	From CH ₃ CN	77REF/FRA
103±17	3.2			SI	From Cri3CiV	71DEC/BAF
	2.8			SI		74CHA/PAG 72PAG
	2.80±0.02			SI	New DH(H-CN) used	63NAP/PAG
	2.0020.02		1447±8	IMRE ⁰		79BAR/SCO
						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
CNO-						
CNO ⁻ 142				EIAP	From MeNO ₂	721\11\/ED A
190±13				EIAP	From MeNO ₂	72DID/FRA 69TSU/YOK2
CNO-		· · · · · · · · · · · · · · · · · · ·				
CNO-					$\Delta_f H(AH) = -105 \pm 12$	86SPIPER
NCOT	2.50.000	d 1440.00	1416.0	T) 475 F	BDE(A-H)= 477±26	70OKA
* -192±21 ^a		a 1443±9 g	1415±8	IMRE	E. PR NGO	80WIG/BEA
	> 2.6±0.4			EIAP	From PF ₂ NCO	72THY

Table 2. Negative Ion Table - Continued

Ion $\triangle_f H(A^-)$ $\triangle_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CNO ₄ -						
$CO_2 \cdot NO_3$						
* -740±2 ^c		39	8±1	TDAs		80KEE/LEE
CNS-					$\Delta_f H(AH) = 128 \pm 2$	82TN270
SCN ⁻					BDE(A-H) = 464±6	63NAPIPAG
		1375±25 ^g	1343±21	IMRB	Acid: HNCS	84BIE/GRA
	2.0			SI		72PAG
	2.15±0.02			SI	From (SCN) ₂	63NAP/PAG
CNSe ⁻						
SeCN ⁻						
	2.6			SI		69PAG/GOO
CN ₂						
CN2 ⁻ ·						
< 649				IMRB	$O^- + CH_2N_2$ or $(CN)_2 \rightarrow$	79DAW/NOE
CN ₃ O ₆					$\Delta_f H(AH) = -2\pm 2$	77PED/RYL
$(NO_2)_3C^-$					Ziritiniy— ZIZ	771 20,1112
2/3	3.1			EIAP	From C(NO ₂) ₄	67JAE/HEN
CO-						
CO-					A - H/A) = - 110	82TN270
-243	1.4			EnCT	$\Delta_f H(A) = -110$	76REF/FRA2
	1.4			- Inci	· · · · · · · · · · · · · · · · · · ·	70KE1/11KA2
COS-						
COS-					$\Delta_f H(A) = -142 \pm 1$	77PEDIRYL
−187±20 ^b				NBIP		75COM/REI
·	> 0.4			ECD		83CHE/WEN
CO ₂ -						
CO2					$\Delta_f H(A) = -394$	82TN270
						75COM/REI
CO ₃ -			·····			
CO··O ₂ -						
>-210 °C		< 57		IMRB	$CO \cdot O_2^- + O_2 \rightarrow O_4^- + CO$	70ADA/BOH
CO3-					11.11.1	
CO ₂ ··O ⁻ ·						
-503±6 ^c	3.3±0.2 i	218±4		PDis		80HIL/VES
-502					From ethylene carbonate	83COM/REI
	> 3.079			LPES	·	79NOV/ENG
	3.3±0.1			PD		77VES/MAU
−469±12 ^c		183±10		PDis		77VES/MAU
	2.7±0.1			PD		77HON/WOO
	> 2.80	> 190 ^k			$O_3^- + CO_2 = CO_3^- + O_2$	77DOT/DAV
		174±10		PDis		76MOS/COS
	1.8±0.2			PD		72BUR
-469 ^c		183		PDis		79SMI/LEE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{\text{acid}}(AH)$ $\Delta H_{\text{aff}}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CO ₃ -						
co ₂ ··o⁻·						
-455 ^c		169		PDis		78SMI/LEE
-520±23 ^c		234±21 ^g	201±21	IMRE	$O_3^- + CO_2 = CO_3^- + O_2$	70ADA/BOH
CO ₄ -						
$co_2 \cdot \cdot o_2^-$						
−542±20 ^c		106±19		PDis		77VES/MAU
-515±10				IMRE	$O_4^- + CO_2 = CO_4^- + O_2$	70ADA/BOH
-510±9 ^c			51±5	kine		66PAC/PHE2
CO ₅ S ⁻						
$co_2 \cdot \cdot so_3$						
−981±17 ^c		27±1	1±1	TDAs		80KEE/LEE
CS ⁻						- · · · · · · · · · · · · · · · · · · ·
CS ⁻ ·					$\Delta_f H(A) = 268$	79HUB HER
* 248 b	0.205±0.0	21		LPES	,	82BUR/FEI
	> 1.6±0.3			EIAP	From COS	72THY
CS ₂ -	··· ··· · · · ·	······································				
CS ₂					$\Delta_f H(A) = 117 \pm 1$	77PED/RYL
* 68±11 b	0.51±0.10			TDEq		87KEB/CHO
	0.53±0.11			IMRE		85GRI/CAL
	0.895±0.2	00		LPES		86OAK/ELL
	0.6 ± 0.1			ECD		83CHE/WEN
	1.0 ± 0.2			NBIP		75COM/REI
	0.5 ± 0.2			EnCT		73HUG/LIF
	0.9 ± 0.3			IMRB	Between NH ₂ ⁻ , C ⁻	61KRA/MUL
CH ⁻					$\Delta_f H(AH) = 390 \pm 8$	82TN270
CH					$BDE(A-H) = 423\pm18$	79HUB HER
* 477±27 a	1.238±0.00	08 1616±18 ^e	1588±20 ^h	LPES	, ,	75KAS/HER2
	0.74±0.05			PD		70FEL
	2.6±0.3			EIAP	From CH ₄ , C ₂ H ₂ , C ₂ H ₄	70LOC/MOM
633				EIAP	From CH ₄	63TRE/NEU
CHBrN	-					,
HCN··Br¯						
* -145±9 ^c		67±8		Est	Extrapolated from other halide data	84LAR/MCM3
CHCIF ₃ -						
CHF ₃ ··Cl ⁻						
* -992±12 °		70±10 ^g	41±8	IMRE		84LAR/MCM2
CHCIN ⁻					<u> </u>	
HCN··CI						
* -180±10 ^c		88±8 g	58±8	IMRE		84LAR/MCM2

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{\text{acid}}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CHCl2 ⁻			, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		$\Delta_f H(AH) = -96 \pm 1$	77PED RYL
CHCl ₂					BDE(A-H) = 422±5	83WEI BEN
-59±17 a	1.7±0.2 ^d	1567±16 ^g	1535±13	IMRB	Comparable to DMSO	72BOH/LEE
CHCl ₂ F ₂ -						
CHF ₂ Cl··Cl [−]						
* -783±12 ^c		72±8 ^g	43±8	IMRE		84LAR/MCM2
CHCl ₃						·
CHC13					$\Delta_f H(A) = -105\pm 2$	77PED/RYL
-274±7 b	1.76±0.05			SI	,	66GAI/KAY
CHCl ₃ F						
CHFCl ₂ ··Cl⁻						
* -582 ^c		74±8 g	45±8	IMRE		84LAR/MCM2
CHCl ₃ Si ⁻						
HCSiCl3						
142±42				EIAP	From MeSiCl ₃	68JAE/HEN
CHCl ₄ -		******				
CHCl ₃ ··Cl¯						
* -396±12 ^c		64±8	45±8	TDAs		71YAM/KEB
		76±8 ^g	47±8	IMRE		84LAR/MCM2
-412±6 ^c		80±3	49±4	TDEq		74DOU/DAL
11220		0033	43	TDEq		82FRE/IKU
CHF-						
HCF-					$\Delta_f H(A) = 109 \pm 12$	85LIA/KAR
< 116				IMRB	$O^- + CH_3F \rightarrow$	76DAW/JEN
CHFN-						
HCN··F						
* -279±11 ^c		165±8 ^g	138±8	IMRE		83LAR/MCM
CHF ₂ -					$\Delta_f H(AH) = -453 \pm 1$	78KUD KUD
HCF ₂					$BDE(A-H) = 432\pm4$	83PIC/ROD
-364±28 a	1.3±0.3 ^d	1618±28 ^g	1586±25	IMRB		77SUL
CHF ₂ O ⁻						
HCF=O··F						
<-703 °		> 76		IMRB	FCO ⁻ + HCFO →	77KAR/KLE
CHF ₄ -	·				A STATE OF THE STA	, , , , , , , , , , , , , , , , , , ,
CF ₃ H··F						
* -1057±12 ^c		113±8 ^g	82±8	IMRE		83LAR/MCM
CHN-		T-1				
HCN-					$\Delta_f H(A) = 135$	82TN270
<38 ^b	> 1.0			EIAP	·	71TSU/YOK

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CHNO ₂ -						
CHNO ₂						
< 59				IMRB	$O^- + CH_3NO_2 \rightarrow$	59HEN/MUC
CHN ₂ -					$\Delta_f H(AH) = 230 \pm 17$	78VOG/WIL
CHN ₂					·	
262±38 ^a		1561±22 g	1527±17	IMRB	Near MeCN	83DEP/SCH
СНО-					$\Delta_f H(AH) = -109 \pm 1$	77PED/RYL
HCO ⁻					$BDE(A-H) = 364\pm3$	83MOO SEI
* 8±4 a	0.313±0.0	05 1646±3 ^e	1613±5 ^h	LPES		86MUR/MIL
			1648±19	IMRB		75KAR/KLE
CDO-		1				
DCO-	0.301±0.00	ns		LPES		86MUR/MIL
	0.50110,00					- GOIN CHOINTE
CHOS ⁻ HCOS ⁻					$\Delta_f H(AH) = -182 \pm 8$	85KAS/DEP
HCOS			1435±13	IMRB		85KAS/DEP
CHO ₂ -					$\Delta_f H(AH) = -379$	77PED RYL
HCO ₂ -					$BDE(A-H) = 444\pm8$	
* -464±13 a	3.23±0.21	d _{1444±12} g	1415±8	IMRE		78CUM/KEB
		1446±12 g	1416±8	IMRE		81FUJ/MCI
СНО3-						
со₂он_						
-897 ^c		367		Endo		84HIE/PAU
СНО3-				Est2	$\Delta_f H(AH) = -280 \pm 42$	
HC(=0)00						
-260±46 a		1551±4 g	< 1523	IMRB		86BOW/DEP
CH ₂ -					$\Delta_f H(AH) = 146 \pm 1$	81HEN/KNO
CH ₂					$BDE(A-H) = 462\pm2$	82TN270
* 327±1 b	0.652±0.00	06 1712±2 ^e	1679±3 ^h	LPES	Singlet-triplet splitting of CH ₂ = 37.7 kJ	85LEO/MUR
	0.670			LPES		85LEO/MUR
	0.210±0.01	15		LPES	Hot band problem	81ENG/COR
	0.208±0.03			LPES	•	76ZIT/ELL
			Hot band proble		-triplet splitting = 81.6 kJ	
	< 0.60±0.0	3	_	PD		77FEL/RAC
	>0.9±0.4			EIAP	From $CH_2 = CH_2$	71THY/MAC
<328±38				EIAP	From ketene	70COL/LOC
< 290				EIAP	From CH ₄	63TRE/NEU
CD ₂ -						
CD ₂					$\Delta_f H(A) = 390 \pm 1$	82TN270
*	0.645±0.00	06		LPES		85LEO/MUR
	1.043±0.01	.0		LPES		81ENG/COR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CH ₂ Br ⁻					$\Delta_f H(AH) = -38 \pm 1$	84BICI MIN
CH ₂ Br					BDE(A-H) = 427±8	82MCM/GOL
* 75±18 ^a	1.0±0.3 ^d	1643±16 g	1614±13	IMRB		85ING/NIB2
	1.9			SI		69PAG/GOO
CH ₂ Cl ⁻					$\Delta_f H(AH) = -82 \pm 1$	79KUDIKUD
CH ₂ Cl					$BDE(A-H) = 422 \pm 8$	82MCM/GOL
* 45±16 a	0.80±0.24	d 1657±15 g	1628±13	IMRE		85ING/NIB2
			1641±17	IMRB		85HEN/HIE
CH ₂ ClO ₂ - HCO ₂ H··Cl						
* -721±10 °		115±8	84±8	TDAs		82FRE/IKU
		107±8 ^g	77±8	IMRE		84LAR/MCM2
		156±8	106±8	TDAs		71YAM/KEB
CH ₂ Cl ₃ - CH ₂ Cl ₂ ···Cl						
* -389±10 ^c		66±8 ^g	38±8	IMRE		84LAR/MCM2
		65±1	37±3	TDEq		74DOU/DAL
CH ₂ FO ₂ - HCO ₂ H··F						
* -817±11 ^c		190±8 ^g	159±8	IMRE		83LAR/MCM
CH ₂ I ⁻					$\Delta_f H(AH) = 15 \pm 1$	77PED RYL
102±25 a		1617±24 ^g	1587±20	IMRB		85ING/NIB2
CH ₂ IO ₂ - HCO ₂ H··I						
* -646±5 ^c		79±4	53±9	TDAs		84CAL/KEB
CH ₂ N ⁻ CH ₂ =N ⁻					$\Delta_f H(AH) = 135$	78DEF HEH
230 ^a	0.51±0.07	1625±22 g	1594±21	IMRB	EA: between O ₂ and cyclooctatetraene	85KAS/DEP
CH ₂ NO- CH ₂ =NO-				Est2	$\Delta_f H(AH) = 29 \pm 13$	
<56		< 1557 ^f		EIAP	From MeNO ₂	72DID/FRA
CH ₂ NO ⁻ HN=CHO ⁻					$\Delta_f H(AH) = -186$	69BEN/CRU
* -210 a		1506±11 ^g	1476±8	IMRE		86TAF
CH ₂ NO⁻ HOH··CN⁻			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
* -225 °		58±8	33±8	TDAs		71PAY/YAM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
$CH_2NO_2^-$ $CH_2=NO_2^-$					$\Delta_f H(AH) = -75 \pm 1$	77PED/RYL
* -114±13 ^a		1491±12 g	1463±8	IMRE		79BAR/SCO
		1495±12 g	1467±8	IMRE		78CUM/KEE
	< 2.36		1467±8	IMRE	EA: < NO ₂	78MAC/BOH
84	0.5			EIAP	From CH ₃ NO ₂	69TSU/YOK
			1473±8	IMRE ⁰		79BAR/SCO
CH ₂ NS						
$CH_2 = NS^-$						
			1436±15	IMRB		85KAS/DEP
CH ₂ NS ⁻						
$H_2S \cdot \cdot CN^-$						
* -29±24 ^c		83±15 ^g	52±10	IMRE		87LAR/MCN
CH ₂ O ₄ -						
HOH··CO3-						
* -793 ^c		48±4 g	28±2	IMRE		74FEH/FER
>-906 ^c		< 161		PDis		78SMI/LEE
	1.9 ± 0.2			PD		72BUR
-792				PDis		76COS/LIN
CH ₂ S ⁻						—,
$CH_2 = S^{-1}$					$\Delta_f H(A) = 100 \pm 13$	76BEN
56±15 b	0.465±0.0	23		LPES	, , ,	87MOR/ELL
CH ₃ -		***				
CH ₃					$\Delta_f H(A) = 147 \pm 5$	82MCM/GOL
* 139±8 ^a	7.8±0.030	1744±7 ^e	1710±7 ^h	LPES		78ELL/ENG
	< 0.5			PD		77FEL/RAC
	< 0.6 ^d	> 1691 ^g	> 1657	IMRB		72BOH/LEE
	1.1		200,	SI		72PAG
	1.0			SI		69PAG/GOC
	1.1			SI		68GAI/PAG
CH ₃ BF ₃ O						
BF ₃ ··MeO ⁻ <-1477±13	c	> 92±8		IMDD	MaOHMaOT DP	GODY A GCO
<-14//±13		> 92±8		IMRB	MeOH··MeO ⁻ + BF ₃ →	73BLA/ISO
CH ₃ BrCl ⁻						
MeBr · Cl						
−311±4 ^c		46±2	30±5	TDAs		74DOU/ROE
····		51±13		IMRB	Anchored: 84LAR/MCM	73RIV/BRE
CH ₃ Br ₂ -						
MeBr··Br		**	01.0	mr.		
-290±4 ^c		<i>38±2</i>	21±3	TDAs		74DOU/ROI

Table 2. Negative Ion Table - Continued

$ \begin{array}{cc} \text{Ion } \Delta_f H(A^-) \\ \Delta_f H(X \cdot \cdot Y^-) \end{array} $	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
CH ₃ ClF						
MeF··Cl						
* -522 ^c		48±8		IMRE		84LAR/MCM2
CH ₃ ClF ₃ Si ⁻						
MeSiF ₃ ··Cl [¬]						
* -1532 °		67±8 ^g	40±8	IMRE		85LAR/MCM
CH ₃ CII ⁻	 	<u> </u>				
MeI · · Cl						
-253±3 °		41±1	29±5	TDAs		74DOLUDOD
-235±3		41±1		IDAS		74DOU/ROB
CH ₃ CINO ₂ -						
MeNO ₂ ··Cl				<u></u>		
-371±14 ^c		68±13		IMRB	Anchored: 84LAR/MCM	73RIV/BRE
CH ₃ Cl ₂ ⁻						
MeCl··Cl						
* -360±10 ^c		51±8 g	26±8	IMRE		84LAR/MCM2
		36±1	17±2	TDAs		74DOU/DAL
CH ₃ Cl ₂ Si ⁻					$\Delta_f H(AH) = -402 \pm 4$	77PED RYL
MeSiCl ₂ ⁻ -105±21		1828±25 f		EIAP	From MeSiCl ₃ , probably ca. 300 kJ more stable	68JAE/HEN
CH E 0:-						
CH ₃ F ₄ Si ⁻ MeSiF ₃ ···F ⁻						
* -1697 °		211±8 ^g	180±8	IMRE		85LAR/MCM
		257±21		IMRB		77MUR/BEA3
CH-I-	,<u>.</u>			-		
CH ₃ I ⁻					$\Delta_f H(A) = 15 \pm 1$	77PED RYL
-13±20 b	0.3±0.2			NBIP	Vertical EA	74MOU/ATE
CIX X =						
CH ₃ I ₂ - MeI··I-						
-210±10 ^c		38±8	17±1	TDAs		74DOU/ROB
CH ₃ NO ₂					$\Delta_f H(A) = -75 \pm 1$	77PED/RYL
CH ₃ NO ₂ ⁻ .	0.40.01	0		מעודי	21/11/7 - 10±1	87KEB/CHO
* -121±11 b	0.48±0.1			TDEq		85GRI/CAL
	0.49±0.1			IMRE		83CHE/WEN
	0.45±0.0 0.4±0.2	15		ECD NBIP		78COM/REI2
						770C0/0V/
CH ₃ N ₂ O ⁻					$\Delta_f H(AH) = -246 \pm 2$	77PED/RYL
TTN: 00 ITT \	0-					
$HN = C(NH_2)$ * -259 ± 15^{a}		1517±13 ^g	1487±10	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
CH ₃ O ⁻					$\Delta_f H(AH) = -202$	77PED/RYL
MeO ⁻					BDE(A-H)= 437±4	82MCM/GOL
	1.62±0.14 ^d	1592±9 g	1565±8	IMRE		79BAR/SCO
*	1.570±0.022	1597±6 ^e		LPES		78ENG/ELL
	1.59±0.04			PD		78JAN/ZIM
	< 1.59±0.04			PD		75REE/BRA
		1595±2	1569±3	TDEq		86MEO/SIE
	2.6			EIAP	From MeOMe	64TSU/HAM
	0.4			SI		69PAG/GOO
			1559±8	IMRE ⁰		79BAR/SCO
CD ₃ O-						
CD ₃ O	1.552±0.022			LPES		78ENG/ELL
	1.55220.022					
CH ₃ O ₃ [−] HOH··HCO ₂	, -					
–773 ^c	•	67±4	38±7	TDAs		86MEO/SIE2
CH ₃ S ⁻					Δ_f H(AH)= -23	77PED/RYL
MeS ⁻					$BDE(A-H) = 364\pm9$	83SHU BEN
* -60±13 ^a	1.90±0.22 ^d	1493±12 ^g	1467±8	IMRE		79BAR/SCO
*	1.882±0.022			LPES		78ENG/ELL
	1.861±0.004			LPD		80JAN/REE
	1.861±0.004			LPD		80JAN/BRA
	1.4			SI		69PAG/GOO
			1476±8	IMRE ^C)	79BAR/SCO
CD ₃ S ⁻						
	1.858±0.006			LPD		80JAN/BRA
CH ₄ ClO- MeOH··Cl-						
* -488±10 °		59±8	41±8	TDAs		71V A M////
400210		70±8 ^g	41±8	IMRE		71YAM/KEB
		73±8	43±11	TDAs		84LAR/MCM2
		,,,,,,,	43±11 41	TDEq		86YAM/FUR
		59	41	TDAs		82FRE/IKU 73YAM/PAY
CH ₄ FO		···-				7311441111
MeOH··F						
* -574±11 °		124±8 ^g	95±8	IMRE		83LAR/MCM
CH ₄ FS						
MeSH⋅⋅F						
* -415±11 ^c		143±8 g	114±8	IMRE		83LAR/MCM
CH ₄ IO ⁻		*** · · · · · · · · · · · · · · · · · ·				
MeOH··I¯						
* -437±5 °						

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
CH ₄ N ⁻					$\Delta_f H(AH) = -23$	77PED/RYL
MeNH ⁻					$BDE(A-H) = 418 \pm 10$	82MCM/GOL
* 134±5 ^a	0.45±0.16 ^d	1687±5 g	1656±3	IMRE	, ,	76MAC/HEM
	< 1.6			EIAP	From MeNH ₂	68COL/HUB
CH ₄ O ₃ -						
MeOH · · O ₂ ¯ * −324±5 ^c		80±4	52±4	TDAs		73YAM/PAY
CH ₅ O ₂						
HOH··MeO						
-481 ^c		100±1	71±1	TDAs		86MEO/SIE
C ₂ -					$\Delta_f H(AH) = 565 \pm 4$	82MCM/GOL
C ₂ -,					BDE(A-H)= 485±5	79HUB HER
* 505±2 ^b	3.391±0.017	1470±7 ^e		LPD		80JON/MEA
	3.54±0.05			PD		70FEL
>596±18 a		> 1561±13 ^g	> 1531±8	IMRB		75SCH/BOH
	$> 2.9 \pm 0.5$			EIAP	From C ₂ H ₄	71THY/MAC
	3.3±0.2			EIAP	From C ₂ H ₂ , C ₂ H ₄	70LOC/MOM
<826±19				EIAP	From ketene	70COL/LOC
	> 2.9			EIAP	From C ₂ H ₄	63TRE/NEU
	4.0			EIAP	From graphite	54HON
Ċ ₂ CIF ₄ O⁻						
$CF_3CF = O \cdot \cdot$						
* -1339±30 ^c	:	70±8 ^g	42±8	IMRE		85LAR/MCM
C ₂ Cl ₂ F ₃ O ⁻						
$CF_3CCI = O$		~				
* -1143±30 ^c		74±8 ^g	47±8	IMRE		85LAR/MCM
C ₂ Cl ₅						
C ₂ Cl ₅ ⁻	1.5			ox		
	1.5			SI	Correct value probably 1 eV larger	66GAI/KAY
C ₂ Cl ₆ -						
C2C16-					$\Delta_f H(A) = -150 \pm 5$	83KOLIPAP
-	1.48±0.10			SI		66GAI/KAY
C ₂ F ⁻					$\Delta_f H(AH) = 109$	80STA/VOG
FC≡C [™]					BDE(A-H)= 552±21	
	> 3.4±0.8	< 1536±98 e	<1504±100 h	EIAP	From CH ₂ = CF ₂	71THY/MAC
C ₂ F ₂ -						
$F_2C = C^{-1}$				II (DP	07 . 077 . 07	
	17.00				$O^- + CH_2 = CF_2 \rightarrow$	76DAW/JEN
-646±58	1.7 ± 0.2			EIAP	From CF ₃ CHO	75HAR/THY

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$C_2F_2O^-$						**************************************
$F_2C = C = O^{-1}$						
-156±58	2.4±0.6			EIAP	From CF ₃ CHO	75HAR/THY
C ₂ F ₃ -					$\Delta_f H(AH) = -490 \pm 8$	77PED/RYL
$C_2F_3^-$					BDE(A-H) = 516±17	83SPY/SAU
-391±19	2.1±0.2 i	1630±36 ^e		EIAP	From C ₃ F ₈	83SPY/SAU
	> 1.6			EIAP	From CF ₃ CF = CFCF ₃	79SAU/CHR
-637±58				EIAP	From CF ₃ CF ₂ CHO	75HAR/THY
	3.1±0.3			EIAP	From CF ₃ CHO	75HAR/THY
-420±42	2.0±0.4			EIAP	From C ₂ F ₄	72LIF/GRA
	2.0±0.4			EIAP	From C ₂ F ₄	70THY/MAC2
C ₂ F ₃ O ⁻				Est	$\Delta_f H(AH) = -800 \pm 13$	
CF ₃ CO					BDE(A-H)= 368±17	
>-707±29 ^a	< 0.6	>1623±17 ^e		EIAP	From (CF ₃) ₂ CO	70HAR/THY
$C_2F_3O_2^-$					$\Delta_f H(AH) = -1031 \pm 1$	77PED/RYL
CF ₃ CO ₂					BDE(A-H)= 444±8	
* -1210±18 a	4.20±0.27	d 1351±17 g	1323±8	IMRE		78CUM/KEB
		1351±17 g	1324±8	IMRE		86TAF
$C_2F_3O_2^-$, = ,				
FCOCOF··F						
* -1170±31 ^c		191±8 g	155±8	IMRE		85LAR/MCM
C ₂ F ₄ N ⁻						
CF ₃ CN··F						
* -871±8 ^c		122±8 ^g	92±8	IMRE		85LAR/MCM
C ₂ F ₅ ⁻					$\Delta_f H(AH) = -1105 \pm 6$	82MCM/GOL
C ₂ F ₅					$BDE(A-H) = 430\pm2$	82MCM/GOL
* -1067±23 ^a	1.8±0.2 d	1567±17 g	1535±13	IMRB	Between tBuO, F	76SUL/BEA
	2.2±0.3			EIAP	From n-C ₄ F ₁₀	73HAR/THY2
	2.1±0.2			EIAP	From C ₃ F ₈	72HAR/THY
	2.4			EIAP	From C ₂ F ₆	69MAC/THY
	2.3			EIAP	From C ₃ F ₈	69LIF/GRA
	> 3.3			EIAP	From C ₃ F ₈	63BIB/CAR
	> 2.2±0.3			SI		69PAG/GOO
			1524±11	IMRB ⁰		76SUL/BEA
C ₂ F ₅ O ⁻						
$CF_3CF = O \cdot \cdot F$	~~					
* -1481±31 ^c		191±8 ^g	156±8	IMRE		85LAR/MCM
C ₂ FeO ₂ -						
Fe(CO)2						
*	1.220±0.02	2		LPES		79ENG/LIN2
-256±25				NRAP	From Fe(CO) ₅	76COM/STO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A)) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ N ⁻						
C ₂ N						
< 290±19	> 2.3±0.2			EIAP	From CH ₃ CN	71TSU/YOK
C ₂ O ⁻						
cco						
* 8±11 b	1.848±0.02	27		LPES		83OAK/JON
< 339				IMRB	$O^- + cis-CHF = CHF \rightarrow$	79DAW/NOE
26±19				EIAP	From ketene	70COL/LOC
C ₂ O ₃ - C ₂ O ₃ -						
-554				EIAP	From maleic anhydride	73COO/COM
C ₂ O ₅ -						
$co_2 \cdot \cdot co_3$						
* -926±7 ^c		30	3±1	TDAs		80KEE/LEE
C ₂ H ⁻					$\Delta_f H(AH) = 228 \pm 1$	77PEDIRYL
HC≡C¯					BDE(A-H)= 552±8	85WODILEE
* 274±10 a	2.99±0.19	d 1576±10 g	1542±8	IMRE	, ,	79BAR/SCO
*	2.940±0.10			LPD	Adiabatic EA: 3.18±0.25 eV	79JAN/BRA
		1585±8	1546±8	TDEq		87MEO
	3.73±0.05	2000	10,010	PD		70FEL
	517520105	1589±2		TDEq		86MEO/SIE
		1611±4 g	1577±3	IMRE		74BOH/MAC
		1572±38	137713	Endo		73HUG/LIF
		13,2230		Liido		72BOH/LEE
	> 2.3±0.7			EIAP	From C ₂ H ₄	71THY/MAC
	2.1±0.3			EIAP	From C ₂ H ₂ , C ₂ H ₄	70LOC/MOM
<515±19	2.120.5			EIAP	From ketene	70COL/LOC
\J15±17	> 2.8			EIAP		63TRE/NEU
	2.6			SI	From C ₂ H ₄	
	2.0		1536±8	IMRE ⁰	•	69PAG/GOO 79BAR/SCO
C ₂ HClF ₅ ⁻ CF ₃ CF ₂ H···	·					
* -1411±16 ⁰		79±8 ^g	49±8	IMRE		84LAR/MCM2
C TICLE O-	 					
C ₂ HClF ₅ O ⁻ CF ₃ OCF ₂ H·	· Cl ⁻					
*	C.		51±8	IMRE		84LAR/MCM
C2HCl2FN	ı 					
CHCl ₂ F··CN			44			07 10000
* -281 ^c		74±15 g	44±10	IMRE		87LAR/MCM
$C_2HCl_2O_2^-$				Est2	$\Delta_f H(AH) = -427 \pm 17$	
CHCl ₂ CO ₂					BDE(A-H) = 444±8	
* -499±28 a	3.96±0.20 °	d 1374±11 g	1347±8	IMRE		78CUM/KEB
-587±28 ^a		1369±11 g	1342±8	IMRE		81FUJ/MCI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ HCl ₃ N ⁻					
CHCl ₃ ··CN					
* -106±26 ^c	76±15 g	45±10	IMRE		87LAR/MCM
C ₂ HCl ₃ NO			Est .	$\Delta_f H(AH) = -235 \pm 13$	
$HN = C(CCl_3)O^-$					
* -329±23 a	1436±11 ^g	1406±8	IMRE		86TAF
C ₂ HF ⁻					
FCH = C ⁻ ·					
-139			EIAP	$O^- + FCH = CH_2 \rightarrow$	76DAW/JEN
C ₂ HFN ⁻					
CHFCN ⁻					
*	1544±11 g	1513±8	IMRE		86TAF
$C_2HF_2O_2^-$			Est2	$\Delta_f H(AH) = -824 \pm 17$	
CHF ₂ CO ₂				$BDE(A-H) = 444 \pm 8$	
* -971±29 a 3.85±0.21 d	1 1384±12 g	1354±8	IMRE		78CUM/KEB
	1385±12 g	1355±8	IMRE		81FUJ/MCI
C ₂ HF ₃ N ⁻					
CHF ₃ ··CN [−]					
* -692±25 ^c	71±15 g	40±10	IMRE		87LAR/MCM
C ₂ HF ₃ NO			Est	$\Delta_f H(AH) = -837 \pm 13$	
$HN = C(CF_3)O^-$				·	
* -928±23 a	1438±11 g	1409±8	IMRE		86TAF
C ₂ HF ₄	***************************************				
$F_2C = CFH \cdot \cdot F^-$					
* -849±19 ^c	110±8 g	78±8	IMRE		83LAR/MCM
−841±36 ^c	102±25		IMRB		76SUL/BEA
C ₂ HF ₆					
$C_2F_5H \cdot \cdot F^-$					
* -1480±17 ^c	127±8 ^g	94±8	IMRE		83LAR/MCM
C ₂ HF ₆ O ⁻			-		
CF ₃ OCF ₂ H··F					
*		113±8	IMRE		84LAR/MCM
C- HN-					
C ₂ HN ⁻ HCCN ⁻ ·					
	1569±18 g	1539±13	IMRB	Between H ₂ O ₂ and mCl-toluene	87GRA/MEL
0.8±0.4			EIAP	From CH ₃ CN	86HEN/ILL2
<422			IMRB	O ⁻ + CH ₃ CN →	76DAW/JEN
309±19 > 1.1			EIAP	From CH ₃ CN	71TSU/YOK
			221.11	110 01130.1	/1100/10K

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ HNO						
HCCNO-						
502				EIAP	From CH ₂ =CHNO ₂	72SHI/YAM
C ₂ HN ₂ -			<u> </u>			
HCN··CN						
* 119±24 ^c		91±15 g	57±10	IMRE		87LAR/MCM
126±18 ^c		84±8		Est		84LAR/MCM3
 С ₂ но-					$\Delta_f H(AH) = -48\pm3$	77PED/RYL
HC≡CO ⁻				D-EA	BDE(A-H) = 441±9	777 LUJITE
	2.350±0.0	22		LPES	552(N 1) 44713	83OAK/JON
* -51±13 ^a		1527±11 g	1497±8	IMRE	Acid: ketene	83OAK/JON
<-54±19			- · · · - ·	EIAP	From ketene	70COL/LOC
		* *				
$C_2H_2^-$ $H_2C = C^-$						
•	0.470±0.0	20		LPES		83BUR/STE
255±146				IMRB		78DAW/NIB
255±146				IMRB	$O^- + C_2H_4 \rightarrow , C_2H_2^- + N_2O \rightarrow CH_2CN^-$	76DAW/JEN
	< 0.4			IMRB		75LIN/ALB
$C_2D_2^-$	<u></u>					
$D_2C = C_{-}$						
*	0.490±0.0	20		LPES		83BUR/STE
C- H- P=O-~					A LI(ALI) 205.6	
C ₂ H ₂ BrO ₂ ⁻ BrCH ₂ CO ₂ ⁻				Est	$\Delta_f H(AH) = -395 \pm 6$ $BDE(A-H) = 444 \pm 8$	
* -528±19 a	3.71±0.22	d 1397±13 g	1370±8	IMRE	DDL(X-1)/- 44410	78CUM/KEB
		· · · · · · · · · · · · · · · · · · ·				·
C ₂ H ₂ ClF ₄ O ⁻ (CF ₂ H) ₂ O··(
*	. 1		71±8	IMRE		84LAR/MCM
7 II 010 ~					A 1/4/19 405 2	
C ₂ H ₂ ClO ₂					$\Delta_f H(AH) = -435 \pm 8$	77PED/RYL
CICH ₂ CO ₂		d			BDE(A-H) = 444±8	50 OV 13 4 55 TV
* -558±21 ^a	3.61±0.21		1376±8	IMRE		78CUM/KEB
		1407±12 ^g	1376±8	IMRE		81FUJ/MCI
C ₂ H ₂ Cl ₂ N ⁻						
CH ₂ Cl ₂ ··CN	-					
* -90±24 ^c		68±15 ^g	38±10	IMRE		87LAR/MCM
C ₂ H ₂ FO					$\Delta_f H(AH) = -444 \pm 3$	77PED/RYL
CH ₂ =CFO					BDE(A-H) = 406±8	
• -484±20 a	2.4±0.3 d	148±8 ^k	1460±15	IMRB	Between MeCOCH ₂ F, cyclopentadiene	80FAR/MCM
•	2.22±0.09			PD	2	77ZIM/REE
		148±8 ^g	115±8	IMRE		83LAR/MCM
			1459±13	IMRB ⁰		80FAR/MCM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₂ H ₂ FO ₂ - FCH ₂ CO ₂ -				Est2	$\Delta_f H(AH) = -586\pm 8$ $BDE(A-H) = 444\pm 8$	
	3.52±0.21 d	1416±12 g	1385±8	IMRE	DDE(A 1) - 44410	78CUM/KEB
	0.0220.22	1418±12 g	1386±8	IMRE		81FUJ/MCI
$C_2H_2F_2O_2P^-$	=					
$C_2H_2F_2O_2P^-$	•					
<-1125				IMRB	$CH_2 = CHO^- + PF_3O \rightarrow$	78SUL/BEA
$C_2H_2F_3^-$						
$CF_2 = CH_2 \cdots$	F					
-697±17		112±21 ^k		IMRB		76SUL/BEA
C II E O-				······································		
C ₂ H ₂ F ₃ O ⁻					$\Delta_f H(AH) = -888 \pm 5$	77PED RYL
CF ₃ CH ₂ O	2.42±0.20 d	1514.15 9	1400.0	TA CONTR	BDE(A-H) = 436±4	50D + D /0.50
-904±20 **	2.42±0.20	1514±15 g	1482±8	IMRE		79BAR/SCO
	· · · · · · · · · · · · · · · · · · ·		1493±8	IMRE		79BAR/SCO
C ₂ H ₂ F ₃ O ₂ S ⁻ CF ₃ SO ₂ CH ₂ ⁻						
*		1452±11 g	1422±8	IMRE		86TAF
						~~~
С <mark>2Н2F3О3⁻</mark> нон…сF ₃ с	O ₂					
-1509 ^c	2	57±4	27±7	TDAs		86MEO/SIE2
$C_2H_2F_5O^-$						
$(CHF_2)_2O \cdot \cdot I$	<del>त</del>					
*		151±8 g	117±8	IMRE		83LAR/MCM
$C_2H_2N^-$					$\Delta_f H(AH) = 75\pm 1$	83AN/MAN
CH ₂ CN ⁻					$BDE(A-H) = 389 \pm 10$	82MCM/GOL
* 105±12 a	1.46±0.22 d	1560±11 ^g	1528±8	IMRE	232(11.7) 000270	79BAR/SCO
*	1.543±0.014		101010	LPES		87MOR/ELL3
		1562±11 g	1530±8	IMRE		78CUM/KEB
	1.507±0.018	1556±12 e	1523±15 h	LPD		77ZIM/BRA
	1.560±0.006			LPD		86MAR/WET
		1534±19		EIAP	From CH ₃ CN	86HEN/ILL2
20±19	>1.6±0.2			EIAP	From CH ₃ CN, EtCN	71TSU/YOK
			1525±8	IMRE ⁰	<b>3</b> · <b>,</b> · - ·	79BAR/SCO
		· · · · · · · · · · · · · · · · · · ·				
C ₂ H ₂ N ⁻ CH ₂ NC ⁻					$\Delta_f H(AH) = 173 \pm 1$	77BAG/COL
	1.059±0.024			LPES		87MOR/ELL2
C ₂ D ₂ N ⁻ CD ₂ CN ⁻						
Z <del></del> ·	1.538±0.012			LPES		87MOR/ELL3

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ D ₂ N ⁻ CD ₂ NC ⁻						
_	1.070±0.0	024		LPES		87MOR/ELL2
$C_2H_2NO_2^-$ $H_2C = C = NO_2$	<del>-</del>					
		1515±19		EIAP	From $CH_2 = CHNO_2$	72SHI/YAM
		<1563±3 g	< 1531	IMRB		80BAR
$C_2H_2O_2^-$						
O = CH - CH = C	D <del></del>				$\Delta_f H(A) = -212 \pm 1$	77PED/RYL
-272±25				NBAP	From ethylene carbonate	83COM/REI
C ₂ H ₃ -					$\Delta_f H(AH) = 52$	77PED/RYL
C ₂ H ₃ -	_				$BDE(A-H) = 460\pm8$	82MCM/GOL
	0.8±0.2 ^d	1699		Bran		84DEP/BIE
	>0.4			IMRB		75LIN/ALB
			> 1661	IMRB		86FRO/FRE
C ₂ H ₃ BrN ⁻ MeCN··Br ⁻						
* ~192±10 ^c		54±8	33±8	TDAs		72YAM/KEB
C ₂ H ₃ ClF ₃ ⁻ CF ₂ HCH ₂ F···C	:I ⁻					
* -1055±18 °		79±8 ^g	59±8	IMRE		84LAR/MCM2
C ₂ H ₃ ClF ₃ O ⁻						······································
CF ₃ CH ₂ OH···	21					
* -1216±15 ^c		100±8 g	69±8	IMRE		84LAR/MCM2
C ₂ H ₃ ClN ⁻		·				· · · · · · · · · · · · · · · · · · ·
MeCN · CI						
* -208±10 ^c		56±8	38±8	TDAs		72YAM/KEB
		57±8	37±11	TDAs		86YAM/FUR
		44±8 g	19±8	IMRE		84LAR/MCM2
$C_2H_3Cl_2O_2^ CICO_2Me \cdot \cdot CI^-$						
*		59±8 <b>E</b>	33±8	IMRE		85LAR/MCM
C ₂ H ₃ FN						
MeCN··F ⁻ * -240±11 ^c		67±8	50±8	TDAs		72YAM/KEB
C ₂ H ₃ F ₂ ⁻			<u></u>			
$CHF = CH_2 \cdot \cdot F$ $-453 \pm 27^{c}$		65±17		IMRB		76SUL/BEA
						,

Table 2. Negative Ion Table - Continued

			2. Negative Ion	- 14010		
Ion $\triangle_f H(A^-)$ $\triangle_f H(X \cdot \cdot Y^-)$		$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
С ₂ Н ₃ F ₂ О ⁻ _{F₂} СНСН ₂ О ⁻				Est	$\Delta_f H(AH) = -620\pm 4$ $BDE(A-H) = 436\pm 4$	
* -618±16 a		1533±12 g	1503±8	IMRE	352(7.17) 40014	79BAR/SCO
			1505±8	IMRE		79BAR/SCO
<del></del>	<del></del>		<del></del>			
$C_2H_3F_4^-$						
CF ₂ HCH ₂ F						
* -1108±19 ^C	•	111±8 g	79±8	IMRE		83LAR/MCM
C ₂ H ₃ F ₄ O ⁻						
CF ₃ CH ₂ OH	· FT					
* -1300±16 °C		164±8 g	130±8	IMRE		83LAR/MCM
		····				0051141110111
C ₂ H ₃ IN ⁻						
MeCN·IT						
* -163±10 ^c		50±8	27±8	TDAs		72YAM/KEB
$C_2H_3NO_2^-$						·····
$C_2H_3HO_2$ $CH_2 = CHNO$						
ong - on to	> 1.6			IMRB		80BAR
	<del></del>					
$C_2H_3NO_2^-$						
$MeCN \cdot \cdot O_2^-$						
* -36±6 ^c		69±4	47±4	TDAs		73YAM/PAY
C-H-O-			<del></del>		A 1/(ALD). 100	77050/0//
$C_2H_3O^-$ $CH_2 = CHO^-$				DEA	$\Delta_f H(AH) = -166$ $BDE(A-H) = 394 \pm 15$	77PED/RYL
* -165±13 ^a		1531±12 g	1502±8	IMRE	BDE(A-1) - 354±13	79BAR/SCO
*	1.817±0.023	1551112	150210	LPES		82ELL/ENG
	1.01710.020	1533±12 g	1505±8	IMRE		78CUM/KEB
	1.81±0.06	1000112	100000	PD		77ZIM/REE
			1505±8	IMRE		79BAR/SCO
			<del></del>	<del></del>		
C ₂ H ₃ O ⁻					$\Delta_f H(AH) = -166$	77PED RYL
CH ₃ CO	a	~			$BDE(A-H) = 360 \pm 3$	82MCM/GOL
* -60±11 ^a	0.4±0.1 ^d	1636±11 ^g	1604±8	IMRB		85DEP/BIE
C ₂ D ₃ O ⁻						
$C_2D_3O$ $CD_2 = CDO^2$						
*	1.817±0.029			LPES		82ELL/ENG
$C_2H_3O_2^-$					$\Delta_f H(AH) = -356 \pm 1$	77PEDIRYL
HCO ₂ CH ₂						
-249±20 ^a		1637±19 ^g	1607±17	IMRB		85DEP/GRA
С-И-О-					A. LI/ALI) = -422	700417140
C ₂ H ₃ O ₂ -					$\Delta_f H(AH) = -432$ $RDE(A-H) = -432+R$	78CHAIZWO
MeCO ₂ ⁻ * -504±13 ^a	2 070 21 d	1459±12 g	1/20 - 0	IMDE	BDE(A-H)= 443±8	82MCM/GOL
-304±13 **	3.07±0.21 ~	1459±12 ^g	1429±8	IMRE		78CUM/KEB
		1457±12 g	1427±8 1430±8	IMRE IMRE		86TAF 81FUJ/MCI
	3.36±0.05	1437 <b>11</b> 4 0	142020	ECD		68WEN/CHE
	3.3±0.03			EIAP	From MeCO ₂ Et	64TSU/HAM
	J.J.U.4				110	54155/11/W

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
С ₂ H ₃ O ₄ [−] HCO ₂ H · · HCO ₂ [−]					
-997±17 ^c	154±4	105±7	TDAs		86MEO/SIE2
C ₂ H ₃ Si [−] H ₃ SiC≡C [−]					
< 322			IMRB	HC≡C ⁻ + SiH ₄ →	76PAY/TAN
C ₂ H ₄ B ₃ ⁻ 1,5-C ₂ B ₃ H ₄ ⁻					
	< 1795		EIAP	From closo-1,5-C ₂ B ₃ H ₅	73ONA/HOW
C ₂ H ₄ ClF ₂ ⁻ MeCHF ₂ ··Ci ⁻ * -787±18 ^c	62±8 ^g	34±8	IMRE		84LAR/MCM2
C ₂ H ₄ ClF ₃ N ⁻					0.224
CF ₃ CH ₂ NH ₂ ··Cl [−] * −1004±14 ^c	75±8 ^g	45±8	IMRE		84LAR/MCM2
C ₂ H ₄ ClO ⁻ MeCHO··Cl ⁻			· · · · · · · · · · · · · · · · · · ·		
* -453±10 ^c	60±8 ^g	33±8	IMRE		84LAR/MCM2
C ₂ H ₄ ClO ₂ ⁻ MeCO ₂ H··Cl ⁻					
* -750±10 ^c	90±8 100±8 ^g	66±8 70±8	TDAs IMRE		71YAM/KEB 84LAR/MCM2
C ₂ H ₄ Cl ₂ Si ⁻ HCSiMeCl ₂ ⁻					
343±21			EIAP	From Me ₂ SiCl ₂	68JAE/HEN
$C_2H_4F^ CH_2 = CH_2 \cdot \cdot F^-$					
-221±15 ^c	25±13		IMRB	Structure: 85ROY/MCM	76SUL/BEA
C ₂ H ₄ FO ⁻ FCH ₂ CH ₂ O ⁻			Est	$\Delta_f H(AH) = -417\pm 8$ $BDE(A-H) = 436\pm 4$	
-399±25 ^a 2.1±0.2 ^d	1548±16 ^g	1521±15	IMRB		80CLA/MCM
		1527±14 1520±17	IMRB IMRB ^C		77DAW/JEN 80CLA/MCM
C ₂ H ₄ FO ₂ ⁻ MeCO ₂ H···F ⁻					
* -865±11 ^c	185±8 ^g	153±8	IMRE		83LAR/MCM
$C_2H_4F_4N^ CF_3CH_2NH_2\cdot\cdot F^-$		<u> </u>	***************************************		
* -1067±19 ^c	118±8 ^g	85±8	IMRE		83LAR/MCM

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
$C_2H_4IO_2^ MeCO_2H \cdot I^ * -691\pm 5$	71±4	44±9	TDAs		84CAL/KEB
C ₂ H ₄ N ⁻			<del></del>	$\Delta_f H(AH) = 71 \pm 8$	69BENICRU
$CH_2 = NCH_2^ 151\pm32^a$ 0.8±0.3	1610±23 g	1582±21	IMRB	EA: between cyclooctatetraene, SO ₂	85KAS/DEP
C ₂ H ₄ NO ⁻ HN=C(Me)O ⁻			,—-	$\Delta_f H(AH) = -238 \pm 1$	77PED/RYL
* -339±12 a	1429±11 g	1400±8	IMRE		86TAF
C ₂ H ₄ NO ⁻ MeCH = NO ⁻				$\Delta_f H(AH) = -20\pm 8$	69BENICRU
* -20±21 ^a	1530±12 ^g	1500±8 1503±8	IMRE IMRE ^C		79BAR/SCO 79BAR/SCO
C ₂ H ₄ NO ⁻ MeN = CHO ⁻			Est2	$\Delta_f H(AH) = -787 \pm 4$	
* -809±15 ^a	1508±11 g	1479±8	IMRE		86TAF
C ₂ H ₄ NO ⁻ MeOH··CN ⁻					
* -196±24 ^c	69±15 g	38±10	IMRE		87LAR/MCM
C ₂ H ₄ NO ₂ ⁻ H ₂ NCH ₂ CO ₂ ⁻				$\Delta_f H(AH) = -391 \pm 5$ $BDE(A-H) = 444 \pm 8$	77NGA SAB
* -488±15 ^a 3.35±0.	19 ^d 1433±10 ^g	1404±8	IMRE		83LOC/MCI
$C_2H_4NO_2^-$ $HN = C(OMe)O^-$			Est	$\Delta_f H(AH) = -417 \pm 4$	
* -433±15 ^a	1514±11 ^g	1485±8	IMRE		86TAF
$C_2H_4NO_2^-$ MeCH = $NO_2^-$				$\Delta_f H(AH) = -102$	77PED/RYL
* -143±13 ^ā	1490±12 g 1496±12 g	1462±8 1469±8 1472±8	IMRE IMRE IMRE ^C		79BAR/SCO 78CUM/KEB 79BAR/SCO
C ₂ H ₅ ⁻ MeCH ₂ ⁻				$\Delta_f H(AH) = -84$ $BDE(A-H) = 421 \pm 2$	74SCO 86BRO/LIG
* 147±9 ^a 1.0 0.9	1761±8	1725±10 ^h	Bran SI SI		84DEP/BIE 72PAG 69PAG/GOO
C ₂ H ₅ B ₄					57110,000
1,2-C ₂ B ₄ H ₅ ⁻	<1409±29		EIAP	From closo-1,2-C ₂ B ₄ H ₆	73ONA/HOW

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ H ₅ B ₄		······				
1,6-C ₂ B ₄ H ₅						
		< 1891		EIAP	From closo-1,6-C ₂ B ₄ H ₆	73ONA/HOW
$C_2H_5Br_2^-$						
EtBr··Br						
* -324 ^c		49	25	TDAs		74DOU
C ₂ H ₅ CIFO ⁻						
FCH ₂ CH ₂ OH	· · Cl					
* -730±18 °		86±8 ^g	54±8	IMRE		84LAR/MCM2
C ₂ H ₅ Cl ₂ ⁻ EtCl··Cl ⁻						
-400±20 c		61±19		IMRB	Anchored: 84LAR/MCM	73RIV/BRE
	·					
C ₂ H ₅ Cl ₂ O						
CICH ₂ CH ₂ OH	···Cl¯	20.00	<b>5</b> 0.0	*****		0.7 . 7 7 657 69
* -579±14 ^c		90±8 g	59±8	IMRE		84LAR/MCM2
C ₂ H ₅ F ₂ O ⁻						
FCH ₂ CH ₂ OH	· · F					
* -811±19 ^c		146±8 ^g	113±8	IMRE		83LAR/MCM
C ₂ H ₅ N ⁻	· · · · · · · · · · · · · · · · · · ·					<del></del>
EtN ⁻ ·						
*	1.9±0.2			PD		74RIC/STE2
$C_2H_5N_2O^-$				Est2	$\Delta_f H(AH) = 49 \pm 8$	
MeN(NO)CH ₂	-			Lon	24110119-1-1010	
* 113±19 ^a		1594±11 g	1564±8	IMRE		85ING/NIB3
			1567±8	IMRE ⁰		85ING/NIB3
C ₂ H ₅ O ⁻					$\Delta_f H(AH) = -235$	77PED RYL
EtO ⁻					$BDE(A-H) = 436\pm4$	82MCM/GOL
* -186±10 ^a	1.75±0.14	d 1579±10 g	1551±8	IMRE	,	79BAR/SCO
*	1.726±0.03	33 1582±8 ^e		LPES		82ELL/ENG
	1.7±0.1			EIAP	From EtONO	68WIL/HAM
	>1.7				From EtOH	63TRE/NEU
	0.6			SI		69PAG/GOO
			1546±8	IMRE ⁰		79BAR/SCO
C ₂ H ₅ O ⁻		····			$\Delta_f H(AH) = -184$	77PED/RYL
MeOCH ₂					$BDE(A-H) = 389\pm4$	82MCM/GOL
* -11±9 a		1703±8	1666±12 ^h	Bran		84DEP/BIE
C- N-O-						
C ₂ D ₅ O ⁻						
CD ₃ CD ₂ O						

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ H ₅ OS ⁻ MeSOCH ₂ ⁻					$\Delta_f H(AH) = -151 \pm 1$	77PED/RYL
* -119±10 a		1563±10 g	1533±8	<b>IMRE</b>		79BAR/SCO
		1566±10 g	1536±8	<b>IMRE</b>		78CUM/KEB
			1530±8	IMRE ⁰		79BAR/SCO
C ₂ H ₅ O ₂ S ⁻ MeSO ₂ CH ₂ ⁻					$\Delta_f H(AH) = -373\pm3$	77PED/RYL
* -373±15 a		1531±12 g	1499±8	IMRE		79BAR/SCO
-370±15 ^a		1533±12 g	1502±8	IMRE		78CUM/KEB
2,722			1502±8	IMREO		79BAR/SCO
C ₂ H ₅ O ₃ ⁻ HOH··MeCO ₂ * -813 ^c	2	67±4	39±7	TDAs		86MEO/SIE2
С ₂ Н ₅ О ₃ ⁻ МеОН · · НСО ₂						
* -740±17 ^c	3	74±4	44±7	TDAs		86MEO/SIE2
C ₂ H ₅ S ⁻ EtS ⁻					$\Delta_f H(AH) = -46$ BDE(A-H) = 364±9	77PED RYL
* -90±13 ^a	1.97±0.22	d 1486±12 g	1460±8	IMRE	, ,	79BAR/SCO
*	1.953±0.0	04 1488±9 ^e		LPD		80JAN/REE
	1.6			SI		69PAG/GOO
			1469±8	IMRE ⁰		79BAR/SCO
C ₂ H ₅ S ⁻ MeSCH ₂ ⁻					$\Delta_{f}H(AH) = -38$	77PED/RYL
* 77±11 ^a		1645±11 ^g	1615±8	IMRE		85ING/NIB
C ₂ H ₅ Si ⁻ MeSiCH ₂ ⁻					$\Delta_f H(AH) = 92\pm 8$	86WAL
155±32 ^a		1593±23 g	1565±21	IMRB		86DAM/DEP
C ₂ H ₆ BF ₂ - Me ₂ BF··F						
–773 ^c		259	F'A: Et ₃ B > M	IMRB Ie ₂ BF > N	deSiF ₃ > Me ₃ B > SF ₄	77MUR/BEA
$C_2H_6BF_2O_2^ (MeO)_2BF\cdots F^-$	-					
*		218±21 ^g	190±21	IMRE		85LAR/MCM
C ₂ H ₆ B ₅ ⁻ 2,4-C ₂ B ₅ H ₆ ⁻						
		< 1891		EIAP	From closo-2,4-C ₂ B ₄ H ₇	73ONA/HOW
C ₂ H ₆ BrOS						
Me ₂ SO · · Br ⁻ * -437±6 ^c						

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₂ H ₆ ClO ⁻ EtOH··Cl ⁻						
* -535±10 °		72±8 ^g	44±8	IMRE		84LAR/MCM2
C ₂ H ₆ ClOS ⁻ Me ₂ SO··Cl ⁻						
* -457±6 °		78±4	52±9	TDAs		84MAG/CAL
C ₂ H ₆ ClSi ⁻ Me ₂ SiCl ⁻						
67±21				EIAP	From Me ₂ SiCl ₂	68JAE/HEN
C ₂ H ₆ FO ⁻ EtOH··F						
* -615±11 ^c		132±8 g	101±8	IMRE		83LAR/MCM
C ₂ H ₆ F ₃ Si ⁻ Me ₂ SiF ₂ ··F						
		232±21		IMRB	$F^-A: SF_4 < Me_2SiF_2 < Me_3B$	77MUR/BEA3
C ₂ H ₆ IO ⁻ EtOH··I						
* -474±5 ^c		51±4	27±9	TDAs		84CAL/KEB
C ₂ H ₆ IOS ⁻ Me ₂ SO··I ⁻						
* -405±6 ^c		66±4	38±9	TDAs		84MAG/CAL
C ₂ H ₆ N ⁻ EtNH ⁻					$\Delta_f H(AH) = -48 \pm 1$ $BDE(A-H) = 423 \pm 13$	77PED RYL 83MCM GOL
* 93±8 ^a	0.66±0.20	o ^d 1671±7 ^g	1639±3	IMRE		76MAC/HEM
C ₂ H ₆ N ⁻					$\Delta_f H(AH) = -18$	77PED/RYL
Me ₂ N ⁻ * 109±7 ^a	0.39±0.15	5 ^d 1658±6 ^g	1628±3	IMRE	$BDE(A-H) = 383 \pm 8$	82MCM/GOL 76MAC/HEM
10/17	1.0	100010	102013	SI		69PAG/GOO
C ₂ H ₆ O ₄ P ⁻ (MeO) ₂ PO ₂ ⁻				Est2	$\Delta_{\rm f} H(AH) = -1017 \pm 63$	
-1084±149	a	1463±86 g	1435±84	IMRB		80HOD/SUL
$C_2H_7O_2^-$ MeOH··MeO	) <del>-</del>		······································			
-461±11 ^c		120±1	87±2	TDAs		86MEO/SIE
-432±18 ^c		91±8	64±7	TDAs		84CAL/ROZ
			The difference b	etween 84 	CAL/ROZ and 86MEO/SIE2 has not been resolved.	
C ₃ - C ₃ -						
*	1.981±0.0 2.5±1.0	020		LPES EIAP	From propene discharge From graphite	860AK/ELL 54HON

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ CIF ₆ O ⁻						
$(CF_3)_2CO\cdots$	71					
* -1720±30 °		96±8 g	68±8	IMRE		85LAR/MCM
C ₃ F ₃ -						
C ₃ F ₃						
-425				EIAP	From $CF_2 = CF - CF = CF_2$	79SAU/CHR
<del>-</del> 941				EIAP	From $CF_3CF = CF_2$	72HAR/THY
C ₃ F ₃ ⁻			· · · · · · · · · · · · · · · · · · ·	<del></del>	$\Delta_f H(AH) = -414 \pm 13$	86SMA
CF ₃ C≡C					$BDE(A-H) = 552\pm21$	
* -458±21 ^a	3.92±0.31	1 d 1486±9 g	1454±8	IMRE		86TAF
	< 5.6			EIAP	From CF ₃ C≡CCF ₃	79SAU/CHR
C ₃ F ₄ O ⁻						
CF ₃ CFCO						
-926±58				ELAP	From CF ₃ CF ₂ CHO	75HAR/THY
C ₃ F ₅				<del></del> -		
C ₃ F ₅						
5 5	2.7±0.2			EIAP	From c-C ₄ F ₈	72HAR/THY2
-1052	3.0			EIAP	From c-C ₄ F ₈ , 2-C ₄ F ₈	79SAU/CHR
	> 2.7±0.2			EIAP	From $CF_3CF = CF_2$	72THY
-950±38	2.6±0.4			EIAP	From $CF_3CF = CF_2$	72LIF/GRA
	2.7±0.1			EIAP	From $CF_3CF = CF_2$	72HAR/THY
C ₃ F ₅ O ⁻				Est	$\Delta_f H(AH) = -1201 \pm 21$	
$CF_2 = C(CF_3)$	0-				• • •	
* -1318±42 ^a		1413±21 ^g	1384±17	<b>IMRB</b>	Between FCH ₂ CO ₂ H, HCl; nearer to HCl	80FAR/MCM
	2.1±0.3			EIAP	From (CF ₃ ) ₂ CO	70HAR/THY
			1356±10	IMRB ⁰	,	80FAR/MCM
C ₃ F ₆ -				······································		
$(CF_3)_2C^{-1}$						
* -1181±17 ^a		1527±17 ^g	1498±17	IMRB		84MCD/CHO
	0.6			EIAP	From (CF ₃ ) ₂ CO	70HAR/THY
C ₃ F ₆ N ⁻						
CF ₃ CF ₂ CN···	F	100.00	07.0	W. 475 77		
		126±8 ^g	97±8	IMRE		83LAR/MCM
C ₃ F ₇ ⁻						
(CF ₃ ) ₂ CF	> 2.7±0.2			EIAP	From i-C ₅ F ₁₂	geedy/litini
	$> 2.7 \pm 0.2$ > $2.6 \pm 0.2$			EIAP		85SPY/HUN
<del></del>	- 2.010.2			DIAL	From i-C ₄ F ₁₀	83SPY/SAU
C ₃ F ₇ -					A 1774) 4007 55	
$C_3F_7^-$					$\Delta_f H(A) = -1337 \pm 23$	83EVA/WEE
	> 3.4±0.3			EIAP	5 12	85SPY/HUN
	> 2.7±0.2			EIAP	From i-C ₅ F ₁₂	85SPY/HUN
	> 2.6±0.1			EIAP	From i-C ₄ F ₁₀	85SPY/HUN
	$> 2.6 \pm 0.4$			EIAP	From C ₃ F ₈	83SPY/SAU

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{ m acid}(AH)$ $\Delta G_{ m aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
C ₃ F ₇ ⁻						
C ₃ F ₇					$\Delta_f H(A) = -1337 \pm 23$	83EVA WEE
	$> 2.8 \pm 0.1$			EIAP	From n-C ₆ F ₁₄	83SPY/SAU
	> 2.6±0.1			EIAP	From n-C ₅ F ₁₂	83SPY/SAU
	> 2.5±0.4			EIAP	From n-C ₄ F ₁₀	83SPY/SAU
	> 2.2±0.2			EIAP	From n-C ₄ F ₁₀	73HAR/THY2
-1582±7	> 2.3±0.2			EIAP	From C ₃ F ₈	72HAR/THY
	> 2.4			EIAP	From C ₃ F ₈	69LIF/GRA
C ₃ F ₇ O ⁻					1	
(CF ₃ ) ₂ CO··F	_					
* -1854±31 °		208±8 ^g	174±8	IMRE		85LAR/MCM
C ₃ F ₇ O ⁻						
CF ₃ CF ₂ CFO·	·F					
* -1919±31 c		197±8 g	162±8	IMRE		85LAR/MCM
C ₃ FeO ₃ -						
Fe(CO)3						
*	1.800±0.20	00		LPES		79ENG/LIN2
<-950				NBAP	From Fe(CO) ₅	76COM/STO
C ₃ N ⁻					$\Delta_f H(AH) = 351$	85HAR
N≡CC≡C¯					$BDE(A-H) = 552\pm21$	
289 ^a	4.11±0.32	d 1468±10	1438±10	TDEq		87MEO
-365±19				EIAP	From $CH_2 = CHCN$	86HEN/ILL2
-512±21				EIAP	From TCNE	72BRI/OLS
	2.4			EIAP	From EtCN	71TSU/YOK
318±29	2.4			EIAP	From HC=C-C≡N	61DIB/REE
C ₃ O ⁻						
°C₃O⁻-						
J	1.340±0.15	50		LPES	Large geometry change on detachment	86OAK/ELL
C ₃ O ₂ -						
$C_3O_2^-$						
	0.850±0.15	50	_	LPES		86OAK/ELL
С ₃ н-						
HC ₃						
	1.858±0.02	27		LPES	From propene discharge	86OAK/ELL
C ₃ HClF ₅ O ⁻						
CF ₃ COCF ₂ H⋅	· Cl					
* -1428 °			68±8	IMRE		84LAR/MCM
C ₃ HCrO ₃ -						
(CO) ₃ CrH						
-						

682

Table 2. Negative Ion Table - Continued

<del>-</del>	∆H _{acid} (AH) ∆H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ HF ₃ -					
CF ₃ CH = C ⁻ -614			EIAP	$O^- + CF_3CH = CH_2 \rightarrow$	76DAW/JEN
C ₃ HF ₄ O ⁻			Est	$\Delta_f H(AH) = -971 \pm 17$	
CF ₂ = C(CHF ₂ )O ⁻ • -1071±44 ^a	1430±27 g	1401±23 1400±25	IMRB IMRB ⁰	Between HCO ₂ H, FCH ₂ CO ₂ H	80FAR/MCM 80FAR/MCM
C3HF5NOT					
CF ₃ OCF ₂ H··CN [−] *	78±15 ^g	47±10	IMRE		87LAR/MCM
C3HF6				$\Delta_f H(AH) = -1406 \pm 8$	86KOUKOZ
(CF ₃ ) ₂ CH ⁻ * -1414±29 ^a 2.5±0.6 ^d	1522±21 ^g	1490±17	IMRB	$BDE(A-H) = 452\pm33$	<i>84MCD/CHO</i> 84MCD/CHO
C3HF6O		7/20/20/20	Est	$\Delta_f H(AH) = -1536 \pm 8$	
(CF ₃ ) ₂ CHO ⁻ * -1623±19 ^a 3.19±0.16 ^d	1443±11 g	1415±8	IMRE	$BDE(A-H) = 438\pm4$	86TAF
		1424	IMRB		81KOP/PIK
C ₃ HN ⁻	,				
$C = CHCN^{-}$ $< 402$			IMRB	$O^- + CH_2 = CHCN \rightarrow$	76DAW/JEN
C ₃ HN ⁻					
HC≡C-CN ⁻ ·				$\Delta_f H(A) = 351$	85HAR
134±19		**	EIAP	From CH ₂ = CHCN	86HEN/ILL2
C ₃ HN ₂ - HC(CN) ₂ -				$\Delta_f H(AH) = 266 \pm 2$	77PED RYL
_	1405±11 ^g	1373±8	IMRE		81FUJ/MCI
* 141±13 ^a	1406±11 ^g	1373±8	IMRE		78CUM/KEB
$C_3H_2^ H_2C=C=C^-$					
1.794±0.025	;		LPES	From propene discharge	86OAK/ELL
< 191				O ⁻ + allene →	76DAW/JEN
C ₃ H ₂ Cl ⁻	<del></del>		Est	$\Delta_f H(AH) = 169 \pm 13$	
CICH ₂ C≡C¯ * 179±22 ^a	1540±10 g	1507±8	IMRE	$BDE(A-H) = 552\pm21$	86TAF
C ₃ H ₂ ClF ₄ O ⁻					OUTAL
(CF ₂ H) ₂ CO··Cl [−]					
* -1198 °		76±8	IMRE		84LAR/MCM
C ₃ H ₂ F ₃ O ⁻			Est	$\Delta_f H(AH) = -811 \pm 13$	
$CH_2 = C(CF_3)O^{-1}$	44500		D-EA	$BDE(A-H) = 398\pm22$	
* -880±22 ^a * 2.6±0.1	1461±10 g	1431±8	IMRE		86TAF
2.0±0.1			PD		77ZIM/REE

Table 2. Negative Ion Table - Continued

	\H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₂ F ₃ O ⁻ CH ₂ =C(CF ₃ )O ⁻			Est D-EA	$\Delta_f H(AH) = -811 \pm 13$ BDE(A-H) = 398 \pm 22	
	1466±15 ^g	1436±8	IMRE		78CUM/KEB
C ₃ H ₂ F ₃ O ₂ ⁻ CF ₃ CH ₂ CO ₂ ⁻			Est	$\Delta_f H(AH) = -1085 \pm 8$ $BDE(A-H) = 444 \pm 8$	
* -1215±19 a 3.68±0.20 d	1401±11 ^g	1371±8	IMRE		86TAF
$C_3H_2F_4NO^-$ $(CF_2H)_2O\cdots CN^-$			_		
*	92±15 g	63±10	IMRE		87LAR/MCM
C ₃ H ₂ F ₅ O ⁻ CF ₃ CF ₂ CH ₂ O ⁻				$\Delta_f H(AH) = -1310 \pm 3$ $BDE(A-H) = 435 \pm 8$	77PED/RYL
-1354±33 ^a 2.7±0.4 ^d	1487±30 g	1459±25	IMRB	Between (CF ₃ ) ₂ CHOH, CF ₃ CH ₂ OH	77DAW/JEN
C ₃ H ₂ F ₇ O ⁻					<del>-                                     </del>
(CF ₃ ) ₂ CHOH··F¯ * −1889±19 ^c	105±8 g	185±8	IMRE		83LAR/MCM
C ₃ H ₂ N ⁻ CH ₂ =CCN ⁻				$\Delta_f H(AH) = 184 \pm 2$	82CHU NGU
* 207±14 ^a	1553±12 g	1528±8	IMRE	E CH CHCN	80BAR
	1524±19	1523±8	EIAP IMRE ⁰	From CH ₂ = CHCN	86HEN/ILL2 80BAR
C ₃ H ₂ NO			Est2	$\Delta_f H(AH) = 22$	
$CH_2 = C(CN)O^-$ * -67 a 2.87±0.20 d	1441±11 g	1413±8	IMRE	$BDE(A-H) = 406 \pm 8$	86TAF
		1432±21	IMRB		68BRA/BLA
C ₃ H ₂ NO ₂			Est2	$\Delta_f H(AH) = -297 \pm 21$	
NCCH ₂ CO ₂  * -445±32 ^a 3.87±0.20 ^d	1382±11 ^g	1354±8	IMRE	$BDE(A-H) = 444\pm8$	067147
	1302211 -		IMINE		86TAF
C ₃ H ₂ N ₂ ⁻ pyrazolide ⁻					
*	1480±11 g	1449±8	IMRE		86TAF/ANV
C ₃ H ₃ -				$\Delta_f H(AH) = 191 \pm 1$	77PED/RYL
$CH_2 = C = CH^-$ * 253±12 a 0.893±0.026	1500 . 44 É	1554 45 h	<b>,</b>	BDE(A-H) = 367±8	82MCM/GOL
253±12 0.893±0.026 2.3	1592±11 ^e	1556±13 ^h	LPES SI		830AK/ELL 69PAG/GOO
C ₃ H ₃ ¯ MeC≡C¯				$\Delta_f H(AH) = 187 \pm 2$	77PED/RYL
* 251±12 ^a 2.80±0.32 ^d	1595±10 g	1562±8	IMRE	$BDE(A-H) = 552\pm21$	70D A D /500
* > 2.602±0.043			LPES		79BAR/SCO 83OAK/ELL
		1556±8	IMRE ⁰		79BAR/SCO

Table 2. Negative Ion Table - Continued

$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method Comment	Reference
		$\Delta_f H(AH) = 187 \pm 2$ $BDE(A-H) = 374 \pm 8$	77PED RYL
1601±23 ^e		LPES	83OAK/ELL
		I PHS	92044/7714
			83OAK/ELL
		EIAP From CF ₃ COMe	<i>72</i> THY
-		Est $\Delta_f H(AH) = -561 \pm 21$	
1466±15 g	1436±13 1433±10	IMRB Between PhCH ₂ CN, CF ₃ COCH ₃ IMRB ^o	80FAR/MCM 80FAR/MCM
77±15 g	46±10	IMRE	87LAR/MCM
103±15 g	69±10	IMRE	87LAR/MCM
		IMRB O¯ + EtCN→	76DAW/JEN
		IMRB $N_2O + CH_2 = CHCH_2^- \rightarrow$	77BIE/DEP
		. ,	
69±15 g	38±10	IMRE	87LAR/MCM
1465±11 ^g	1434±8	IMRE	86TAF/ANV
		A LI/A) 205 . 4	90BV6
		$\Delta_f H(A) = 226 \pm 1$ ETS	<i>82BYS</i> 75NEN/SCH
		Est2 $\Delta_f H(AH) = -432\pm8$	
		BDE(A-H)= 444±8	
	1601±23 e  1466±15 g  77±15 g  103±15 g	$A_{aff}(X \cdot \cdot Y)$ $\Delta G_{aff}(X \cdot \cdot Y)$ $1601 \pm 23^{\circ}$ $1466 \pm 15^{\circ}$ $1436 \pm 13$ $1433 \pm 10$ $77 \pm 15^{\circ}$ $46 \pm 10$ $103 \pm 15^{\circ}$ $69 \pm 15^{\circ}$ $38 \pm 10$	$J_{aff}(X \cdot Y') = \Delta G_{aff}(X \cdot Y')$ $ \Delta f_{aff}(X \cdot Y') = \Delta G_{aff}(X \cdot Y') $ $ \Delta f_{aff}(AH) = 187\pm 2 $ $ BDE(A-H) = 374\pm 8 $ $ LPES $ $ EIAP                                   $

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₄ ClO ₂ ⁻ CICH ₂ CH ₂ CO ₂ ⁻			Est	$\Delta_f H(AH) = -481 \pm 4$ $BDE(A-H) = 444 \pm 8$	
* -585±20 a 3.41±0.25 d	1426±16 g	1397±8	IMRE	. ,	78CUM/KEB
C ₃ H ₄ ClO ₂ ⁻ MeCHClCO ₂ ⁻			Est	$\Delta_f H(AH) = -472 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -594±22 a 3.61±0.19 d	1407±10 g	1380±8	IMRE	( · · · )	78CUM/KEB
C ₃ H ₄ F ⁻ CH ₂ =CFCH ₂ ⁻					
*	1586±14 g	1559±13	IMRB		84BAR/BUR
	1579±10 g	1551±8	IMRB		78MCM/NOR
		1558±17	IMRB ^O		84BAR/BUR
	63±8 ^k	1546±13	IMRB ^O		78MCM/NOR
$C_3H_4FO^-$ $CH_2 = C(CH_2F)O^-$			Est	$\Delta_f H(AH) = -383 \pm 21$	and the second s
-381±41 ^a 1.8±0.3 ^d	1532±21 ^g	1503±17	IMRB	$BDE(A-H) = 389 \pm 8$	80CLA/MCM
C ₃ H ₄ FO ⁻ CHF=C(Me)O ⁻			Est	$\Delta_f H(AH) = -383\pm21$	
* -416±39 ^a	1497±18 g	1465±15		Between pyrrole, MeNO ₂	80FAR/MCM
		1469±10	IMRBO		80FAR/MCM
C ₃ H ₄ F ₃ O ⁻ CF ₃ CH(Me)O ⁻		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Est	$\Delta_f H(AH) = -905\pm 8$ $BDE(A-H) = 438\pm 4$	
* -928±19 ^a	1507±11 ^g	1480±8 1491±8	IMRE IMRE ⁰		85CAL/MCM 85CAL/MCM
C ₃ H ₄ N ⁻ MeCHCN ⁻				$\Delta_f H(AH) = 51$ $BDE(A-H) = 377\pm4$	82CHU/NGU 82MCM/GOL
* 90±11 ^a 1.24±0.16 ^d	1569±11 ^g	1537±8	IMRE	,	79BAR/SCO
		1532±8	IMRE ⁰		79BAR/SCO
$C_3H_4NO^-$ $CH_2 = C(NO)CH_2^-$			-, 101		
		1586±21	IMRB		86KAS/FIL
C ₃ H ₄ NO ⁻ CH ₂ =CH-CH=NO ⁻					
		1504±13	IMRB		86KAS/FIL
C ₃ H ₄ NO ⁻ MeOCHCN ⁻			Est	$\Delta_f H(AH) = -35\pm 8$	
* -10±23 ^a	1556±15 g	1524±8 1522±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₃ H ₄ O-		***************************************			
$CH_2 = C(CH_2.)O^-$ < 132			IMRB	O ⁻ + Me ₂ CO →	79DAW/NOE2

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₅ ⁻				$\Delta_f H(AH) = 20$	77PED/RYL
$CH_2 = CHCH_2^-$				BDE(A-H) = 362±6	79ROS/GOL
* 125±10 a 0.41±0.17 d	1635±10 g	1607±8	IMRE		79BAR/SCO
* 0.362±0.020			LPES		840AK/ELL
0.551±0.052			LPD		77ZIM/BRA
	1633±4 g	1605±2	IMRE		78MAC/LIE
C ₃ H ₅ -				$\Delta_f H(AH) = 20$	77PED RYL
$CH_2 = CMe^-$ > 184±3 ^a	> 1694±3 g	> 1661	IMRB		86FRO/FRE
C ₃ H ₅ ⁻ MeCH = CH ⁻				$\Delta_f H(AH) = 20$	77PED/RYL
> 184±4 ^a	> 1694±4 g	> 1661	IMRB		86FRO/FRE
C ₃ H ₅ ⁻				$\Delta_f H(AH) = 53\pm 1$	77PED/RYL
cyclopropanide -				$BDE(A-H) = 445\pm1$	82MCM/GO
* 247±9 ^a 0.3±0.1 ^d	1724±8	1687±11 ^h	Bran		84DEP/BIE
$> 213\pm3^{a}$	>1690±3 g	> 1654	IMRB		72BOH/LEE
		> 1654	IMRB		86FRO/FRE
$C_3H_4D^-$ $CH_2 = CDCH_2^-$ 0.373±0.020			LPES		830AK/ELL
C ₃ D ₅ ⁻					
$CD_2 = CDCD_2^-$ 0.380±0.026			LPES		83OAK/ELL
C ₃ H ₅ ClNO ⁻					
CICH ₂ CH ₂ OH··CN					
* -275±28 ^c	88±15 ^g	56±10	IMRE		87LAR/MCM
C ₃ H ₅ FNO					
FCH ₂ CH ₂ OH · · CN [−] * -428±32 ^c	85±15 ^g	54±10	IMRE		87LAR/MCM
C ₃ H ₅ F ₂ O ⁻ (FCH ₂ ) ₂ CHO ⁻			Est	$\Delta_f H(AH) = -620\pm 4$ $BDE(A-H) = 436\pm 4$	<del></del>
* -628±25 a	1521±21 g	1492±17	IMRR	Between MeCHO, PhCOMe	QUOT A /N4CN/
<del></del>		1498±17	IMRB ^o		80CLA/MCM 80CLA/MCM
C ₃ H ₅ F ₂ O ⁻ c-CH ₂ (O)CHCH ₂ F··F ⁻					
* -610±15 °	107±8 g	77±8	IMRE		83LAR/MCM
$C_3H_5N_2O_2^ H_2NCON = C(Me)O^-$			Est2	$\Delta_f H(AH) = -441 \pm 8$	
*	1458±12 g	1427±8	IMRE	Acid: acetylurea	78CUM/KEE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₅ O ⁻					$\Delta_f H(AH) = -217$	76CHAIZWO
$CH_2 = C(Me)C$		d			$BDE(A-H) = 411 \pm 11$	70SOL∤GOL
* -203±11 ^a			1514±8	IMRE		79BAR/SCO
•	1.757±0.03			LPES		82ELL/ENG
		1546±11 ^g	1516±8	IMRE		78CUM/KEB
	1.76±0.06			PD		77ZIM/REE
			1513±8	IMRE ⁰		79BAR/SCO
C ₃ H ₅ O ⁻ MeCH = CHO	_		<del></del>	D-EA	$\Delta_f H(AH) = -187 \pm 2$ BDE(A-H) = 372 \pm 12	77PED/RYL
* -189±12 ^a		1528±10 g	1501±8	IMRE	,	79BAR/SCO
*	1.611±0.02	23		LPES		82ELL/ENG
		1531±10 g	1504±8	IMRE		78CUM/KEB
	1.69±0.06			PD		77ZIM/REE
			1503±8	IMRE ⁰		79BAR/SCO
$C_3H_5O_2^ CH_2 = C(OMe$	)0-			D-EA	$\Delta_f H(AH) = -410 \pm 1$ BDE(A-H) = 418 \pm 15	77PED RYL
* -384±10 a	,-	1556±10 g	1528±8	IMRE	332(N 1) 410113	70D A D /CCO
*	1.80±0.06	1000110	132516	PD		79BAR/SCO
	1.0020.00		1524±8	IMRE ⁰		77ZIM/REE 79BAR/SCO
		91				
C ₃ H ₅ O ₂					$\Delta_f H(AH) = -448 \pm 2$	77PED/RYL
EtCO ₂		d			$BDE(A-H) = 445 \pm 8$	82MCM/GOL
* -525±14 a	3.15±0.21	a 1454±12 g	1424±8	IMRE		78CUM/KEB
C ₃ H ₅ O ₃ ⁻ MeOCH ₂ CO ₂	-			Est2	$\Delta_f H(AH) = -556 \pm 17$ $BDE(A-H) = 444 \pm 8$	
* ~657±28 a	3.38±0.20	d 1429±11 g	1402±8	IMRE		86TAF
C ₃ H ₆ ClF ₂ O ⁻ (FCH ₂ ) ₂ CHO) • -946±14 °	H··Cl¯	99±8 g	67±8	IMRE		84LAR/MCM2
C ₃ H ₆ ClO ⁻ Me ₂ CO··Cl ⁻						
* -504±10 °		59±8 ^g	34±8	IMRE		84LAR/MCM2
501210		57±8	33±8	TDAs		82FRE/IKU
C ₃ H ₆ F ₃ O ⁻ (FCH ₂ ) ₂ CHO * -1026±15 °		158±8 ^g	125±8	IMRE		83LAR/MCM
C ₃ H ₆ IO ₂ ⁻ EtCO ₂ H··I ⁻ * -706±7 °		69±4		TDAs		84CAL/KEB
C ₃ H ₆ NO ⁻ EtOH··CN ⁻					4.4140	· Love blood of the second of
* -233±24 °		73±15 g	42±10	IMRE		87LAR/MCM
			•			

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₆ NO ⁻ HCON(Me)CH ₂ ⁻				$\Delta_f H(AH) = -192\pm 2$	77PED/RYL
* -52±21 ^a	1670±19 g	1640±17	IMRB		85DEP/GRA
$C_3H_6NO^ Me_2C=NO^-$			Est2	$\Delta_f H(AH) = -63 \pm 13$	
* -61±25 ^a	1532±12 ^g	1502±8 1505±8	IMRE IMRE ⁰	)	79BAR/SCO 79BAR/SCO
C ₃ H ₆ NO ⁻ Me ₂ CO··CN ⁻					
* -204±24 ^c	62±15 ^g	33±10	IMRE		87LAR/MCM
C ₃ H ₆ NO ₂ - H ₂ NCH(Me)CO ₂ -				$\Delta_f H(AH) = -414\pm 4$ $BDE(A-H) = 444\pm 8$	77NGA SAB
* -519±14 ^a 3.42±0.19 ^d	1425±10 g	1396±8	IMRE		83LOC/MCI
C ₃ H ₆ NO ₂ ⁻ HN=C(OEt)O ⁻				$\Delta_f H(AH) = -446 \pm 8$	75BERIBOU
* -462±20 ^a	1514±12 g	1485±9	IMRE		86TAF
$C_3H_6NO_2^ Me_2C=NO_2^-$				$\Delta_f H(AH) = -139 \pm 1$	77PED RYL
* -179±13 a	1490±12 g	1464±8	IMRE		79BAR/SCO
	1491±12 g	1466±8	IMRE		78CUM/KEB
		1474±8	IMRE		79BAR/SCO
C ₃ H ₆ NO ₂ ⁻ MeNHCH ₂ CO ₂ ⁻				$\Delta_f H(AH) = -368 \pm 1$ $BDE(A-H) = 444 \pm 8$	77\$AB LAF
* -469±10 ^a 3.39±0.19 ^d	1429±10 g	1400±8	IMRE		83LOC/MCI
C ₃ H ₆ NS ⁻ HCSN(Me)CH ₂ ⁻					
*	1587±11 ^g	1558±8 1561±8	IMRE IMRE ^C		85ING/NIB3 85ING/NIB3
C ₃ H ₇ - Me ₂ CH-				$\Delta_f H(AH) = -105$ $BDE(A-H) = 398 \pm 4$	74SCO 82MCM/GOL
* 118±9 ^a 0.7	1753±8	1719±10 ^h	Bran SI		84DEP/BIE 69PAG/GOO
C ₃ H ₇ Br ₂ ⁻ iPrBr··Br ⁻					
•	51	26	TDAs		74DOU
C ₃ H ₇ Br ₂ -					***************************************
	49	24	TDAs		74DOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₃ H ₇ ClSi ⁻						
HCSiMe ₂ Cl ⁻						
-93±21				EIAP	From Me ₃ SiCl	68JAE/HEN
$C_3H_7N_2O^-$ $HN = C(NMe_2)$	,)O ⁻			Est2	$\Delta_f H(AH) = -243 \pm 13$	
* -259±25 a		1514±13 ^g	1484±10	IMRE		86TAF
C ₃ H ₇ O ⁻					$\Delta_f H(AH) = -273$	77PED/RYL
iPrO ⁻					BDE(A-H)= 438±4	82MCMIGOL
* -232±10 ^a	1.86±0.14	d 1571±10 g	1543±8	IMRE		79BAR/SCO
	1.839±0.0			LPES		82ELL/ENG
	1.7±0.1			EIAP	From iPrONO	68WIL/HAM
	> 1.7			EIAP	From iPrOH	63TRE/NEU
	0.7			SI		69PAG/GOC
	0.7		1538±8	IMRE ⁰		79BAR/SCO
C ₃ H ₇ O ⁻					$\Delta_f H(AH) = -255 \pm 1$	77PED RYL
nPrO ⁻					$BDE(A-H) = 433\pm4$	82MCM/GOL
* -212±10 ^a	1.78±0.14	d 1573±9 ^g	1546±8	<b>IMRE</b>		79BAR/SCO
*	1.789±0.03	33		LPES		82ELL/ENG
	1.9±0.1			EIAP	From nPrONO	68WIL/HAM
	>1.8			EIAP	From nPrOH	63TRE/NEU
			1540±8	IMRE ⁰		79BAR/SCO
C ₃ H ₇ O ₂ ⁻				Est	$\Delta_f H(AH) = -366 \pm 4$	
MeOCH ₂ CH ₂	0-				$BDE(A-H) = 436\pm4$	
* -332±16 ^a		d 1564±12 g	1535±8	IMRE	DDE(A 17) - 40014	79BAR/SCO
332110	1.7010.17	13041125	1530±8	IMRE ⁰		79BAR/SCO
		····	1550±6	IMICE		/7DAIQ3CO
C ₃ H ₇ S ⁻					$\Delta_f H(AH) = -76 \pm 1$	77PED RYL
iPrS					$BDE(A-H) = 364\pm9$	
* -128±13 ^a	2.05±0.22	d 1479±12 g	1452±8	IMRE		79BAR/SCO
*	2.020±0.02			LPD		80JAN/REE
			1461±8	IMREO		79BAR/SCO
C II 0-		- 11			A (((A)))	
C ₃ H ₇ S ⁻					$\Delta_f H(AH) = -68$	77PED/RYL
nPrS	2.02.022	d 1400 40 f	1456.0	Y) (D)	$BDE(A-H) = 364 \pm 9$	
* -116±13 ^a			1456±8	IMRE		79BAR/SCO
-	2.000±0.02	20		LPD		80JAN/REE
	·		1465±8	IMREO		79BAR/SCO
C ₃ H ₇ Si ⁻	<u> </u>				$\Delta_f H(AH) = 21\pm17$	86WAL
$CH_2 = Si(Me)$	CH ₂ -				•	
* 104±41 a	-	1613±25 g	1586±21	IMRB		86DAM/DEP
CaHap-	······································				A H/AU)	
C ₃ H ₈ B ⁻					$\Delta_f H(AH) = -123 \pm 10$	77PED/RYL
Me ₂ BCH ₂	10 - A				BDE(A-H)= 397±21	71BEUPLA
-120±39 ^a	1.8±0.5 d	1532±29 g	1502±25		Between AsH ₃ , PH ₃	76MUR/BEA
			1492±20	IMRB ⁰		76MUR/BEA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
C ₃ H ₈ ClO					<u>, , , , , , , , , , , , , , , , , , , </u>	
iPrOH · · Cl¯						
* -574±10 ^c		74±8 g	45±8	IMRE		84LAR/MCM2
C ₃ H ₈ ClO						
nPrOH · · Cl¯						
* -556±10 ^c		74±8 g	45±8	IMRE		84LAR/MCM2
C ₃ H ₈ FO						
iPrOH · · F¯						
* -657±11 ^c		135±8 g	103±8	IMRE		83LAR/MCM
C ₃ H ₈ FO ⁻						
nPrOH··F		~				
* -639±11 ^c		135±8 ^g	103±8	IMRE		83LAR/MCM
С3Н81О-						
iPrOH··I¯						
* -512±5 ^c		51±4	27±9	TDAs		84CAL/KEB
C ₃ H ₈ N ⁻				Est	$\Delta_f H(AH) = -46\pm4$	
Et(Me)N		•			$BDE(A-H) = 383\pm8$	82MCM/GOL
* 77±15 ^a	0.43±0.20	d 1653±11 ^g	1621±8	IMRE		85ING/NIB2
C ₃ H ₈ N ⁻					$\Delta_f H(AH) = -24$	77PED RYL
Me ₂ NCH ₂					BDE(A-H)= 351±8	82MCM/GOL
		>1700 g	> 1665	IMRB		78MAC/BOH2
C ₃ H ₈ N ⁻			· · · · · · · · · · · · · · · · · · ·		$\Delta_f H(AH) = -84 \pm 1$	77PED/RYL
iPrNH"					$BDE(A-H) = 423\pm13$	
49±17 ^a	0.8±0.3 ^d	1662±16 g	1631±13	IMRB		71BRA/BLA
C ₃ H ₈ N ⁻					$\Delta_f H(AH) = -70$	77PEDIRYL
nPrNH					$BDE(A-H) = 423 \pm 13$	
67±17 ^a	0.7±0.3 ^d	1667±16 ^g	1636±13	IMRB		71BRA/BLA
C ₃ H ₈ NO						
iPrOH · · CN						
* -274±24 ^c		76±15 g	45±10	IMRE		87LAR/MCM
C ₃ H ₈ P					$\Delta_f H(AH) = -101 \pm 5$	77PED/RYL
Me ₂ PCH ₂						
* 5±16 ^a		1636±11 ^g	1606±8	IMRE		85ING/NIB2
C ₃ H ₉ BF						
Me ₃ B··F		~				
* -569±21 ^c		197±8 g	166±8	IMRE	77. 16 am 16 7. 7.	85LAR/MCM
-616 ^c		245		IMKB	$F^-A$ : MeSiF ₃ > Me ₃ B > SF ₄	77MUR/BEA2

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₃ H ₉ BFO ₃ ⁻		· · · · · · · · · · · · · · · · · · ·				
(MeO) ₃ B··F		~				
* -1324±21 ^c		176±17 g	142±13	IMRB		85LAR/MCM
C ₃ H ₉ F ₂ Si ⁻						
Me ₃ SiF··F						
*		160±8 g	132±8	IMRE		85LAR/MCM
		< 226±42		IMRB		77MUR/BEA3
C ₃ H ₉ O ₂ -						
EtOH··MeO	-					
-459±20 ^c		85±10 ^g	57±8	IMRE		84CAL/ROZ
C ₃ H ₉ Si ⁻					$\Delta_f H(AH) = -163 \pm 8$	81WAL
Me ₃ Si					$BDE(A-H) = 378\pm17$	81WAL
−98±23 ^a	1.0±0.3 ^d	1595±15 ^g	1565±13	IMRB		87THO/BAR
C ₃ H ₁₀ NSi ⁻	·····		· · · · · · · · · · · · · · · · · · ·			
Me ₃ SiNH						
•		1585±15 ^g	1552±13	IMRB		87THO/BAR
C ₄ C ₀ O ₄						
C ₄ C ₀ O ₄ -						
()4			<1294±8	IMRB		87STE/BEA
0.80-						
C ₄ F ₄ O ₃ ⁻ tetrafluorosuce	cinic anhvo	lride":				
tettattuotosuet	0.5±0.2	iride		NBIP		74COO/COM
						,
C ₄ F ₅						
C ₄ F ₅ ⁻ -685	2.0			EIAP	From a.C.F.	70C A I I /CUD
-003	Z.U			EIAF	From c-C ₄ F ₆	79SAU/CHR
C ₄ F ₆ O ⁻						
CF ₃ CF ₂ CFCC	) <del>-</del> ,					
-1331±58				EIAP	From CF ₃ CF ₂ CF ₂ CHO	75HAR/THY
C ₄ F ₇ ⁻						
$C_4F_7^-$					$\Delta_f H(A) = -1167 \pm 29$	83SPY SAU
-1457±73 b				EIAP	U 1-	83SPY/SAU
	0.9±0.2			EIAP	From $CF_3CF = CFCF_3$	72LIF/GRA
	2.7			SI		69PAG/GOO
C ₄ F ₈ ⁻						
C ₄ F ₈						
	> 0.7±0.4			EIAP	From n-C ₅ F ₁₂	83SPY/SAU
C ₄ F ₀						
$C_4F_8^ CF_3CF = CFC$	F3 ^{-,}				$\Delta_f H(A) = -1602$	70BEN O'N

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₄ F ₈ ⁻ c-C ₄ F ₈ ⁻ · <-1581±39	b> 0.4±0.3			EnCT	$\Delta_f H(A) = -1543 \pm 10$	77PED/RYL 73LIF/TIE
C ₄ F ₈ N ⁻ CF ₃ CF ₂ CF ₂ CI	V··F	129±8 ^g	99±8	IMRE		85LAR/MCM
 C ₄ F ₉ ⁻				· · · · · ·		
(CF ₃ ) ₂ CFCF ₂	-					
	$3.5 \pm 0.5$			EIAP	From i-C ₄ F ₁₀	85SPY/HUN
	3.5±0.5			EIAP	From i-C ₄ F ₁₀	83SPY/SAU
C ₄ F ₉ ⁻						
$(CF_3)_3C^-$				Est	$\Delta_f H(A) = -1820$	
	3.4±0.1			EIAP	From (CF ₃ ) ₃ CF	85SPY/HUN
	3.4±0.2			EIAP	From (CF ₃ ) ₃ CF	83SPY/SAU
C ₄ F ₉ ⁻ C ₄ F ₉ ⁻						
• •	>4.0±0.2			EIAP	From n-C ₄ F ₁₀	83SPY/SAU
	$> 2.9 \pm 0.1$			EIAP	From n-C ₅ F ₁₂	83SPY/SAU
	3.2±0.3			EIAP	From n-C ₄ F ₁₀	73HAR/THY2
C ₄ F ₉ ⁻ CF ₃ CF ₂ CF(CF	······································					
	> 3.2±0.1			EIAP	From i-C ₅ F ₁₂	85SPY/HUN
C ₄ F ₉ O ⁻ (CF ₃ ) ₃ CO ⁻				Est2	$\Delta_f H(AH) = -2297 \pm 21$ $BDE(A-H) = 439 \pm 8$	
* -2439±33 ^a	3.77±0.21	d 1388±12 g	1356±8	<b>IMRE</b>		86TAF
-2442 ^a			1352±21	IMRB		81KOP/PIK
-2451 ^a			1345±21	IMRB		80CLA/MCM
C ₄ FeO ₄					A 1//A) 444 00	
Fe(CO) ₄ ~ * -646±52 b	2 200 . 0 2	00		r nec	$\Delta_f H(A) = -414 \pm 23$	81SMI/LAI
-040±32	2.1±0.3	00		LPES EIAP		79ENG/LIN2
	2.120.5		Fe(CO) ₅ + e ⁻		+ CO "near thermoneutral". BDE from 81SMI/LAI	76COM/STO
C ₄ O-	<del> </del>					
C ₄ O  ·	2.050±0.1	50		LPES		86OAK/ELL
C ₄ HF ₅ NO ⁻						
CF ₃ COCF ₂ H⋅	·CNT					
* -1234±44 ^c		108±15 g	75±10	IMRE		87LAR/MCM
C ₄ HF ₁₀ O ⁻	F				The second secon	
(CF ₃ ) ₃ COH··· * -2617±31 ^c	1.	71±8 ^g	151±8	IMRE		83LAR/MCM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ E. $\Delta_f H(X \cdot Y^-)$	A(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ HFeO ₄ ⁻ Fe(CO) ₄ H ⁻						
			1313±23	IMRB		87STE/BEA
C ₄ H ₂ F ₆ NO ⁻ (CF ₃ ) ₂ CHOH···	CN ⁻	100 va 9				
* -1566±32 ^c		105±15 ^g	70±10	IMRE		87LAR/MCM
C ₄ H ₂ F ₇ O ⁻	o <del></del>			Est2	$\Delta_f H(AH) = -1561 \pm 21$	
CF ₃ CF ₂ CF ₂ CH ₂ 6 -1626±51 ^a 2.		1465±30 ^g	1437±25	IMRB	BDE( $A-H$ ) = 435±8 Between (CF ₃ ) ₂ CHOH, CF ₃ CH ₂ OH	77DAW/JEN
C ₄ H ₂ NO ₂ -				Est2	$\Delta_f H(AH) = -287 \pm 8$	
maleimidate —		1360±19		EIAP	From maleimide	73COO/COM
$C_4H_2N_2^-$						
fumaronitrile"					$\Delta_f H(A) = 339$	82CHU NGU
	24±0.10			TDEq		87KEB/CHO
	25±0.09			TDEq		86CHO/KEB
0.:	8±0.1			SI		67FAR/PAG
C ₄ H ₂ O ₃ -						
maleic anhydride					$\Delta_f H(A) = -397 \pm 4$	77PED/RYL
* -536±14 ^b 1.				TDEq		87KEB/CHO
	41±0.11			IMRE		85GRI/CAL
	.38±0.05 .4±0.2			IMRE NBIP		85FUK/MCI 74COM/REI
C ₄ H ₃ F ₃ NO ⁻						
CH ₃ COCF ₃ ···CN	<b>J</b> -					
* -822±36 °	•	85±15 ^g	54±10	IMRE		87LAR/MCM
C ₄ H ₃ F ₆ O ⁻				Est	$\Delta_f H(AH) = -1576 \pm 4$	
(CF ₃ ) ₂ C(Me)O				202	$BDE(A-H) = 440\pm4$	85CAL/MCM
* -1648±14 ^a		1457±10 ^g	1425±8 1431±8	IMRE IMRE ^C		85CAL/MCM
C ₄ H ₃ N ₂					$\Delta_f H(AH) = 197 \pm 1$	77PED RYL
pyrimidinide ⁻ * 272±9 ^a		1606±8	1569±8	TDEq		87MEO
C ₄ H ₃ N ₂ O ₃ ⁻					$\Delta_f H(AH) = -554 \pm 8$	72DOM
barbiturate ⁻					•	70 CT IX (1777)
* -680±12 ^a		1402±12 g	1369±8	IMRE	Acid: barbituric acid	78CUM/KEB
C ₄ H ₃ O ⁻						
CH ₂ =CHC≡CO	-			TMDD	$CH_2 = CHCH_2^- + CF_2 = O \rightarrow$	79DAW/NOI
< 35				IMIKB	C112-C11C112 + C12-0	

Table 2. Negative Ion Table - Continued

-	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ HFeO ₄						
Fe(CO) ₄ H			1313±23	IMRB		87STE/BEA
C ₄ H ₂ F ₆ NO						
(CF ₃ ) ₂ CHOH * -1566±32 ^c	·CN ⁻	105±15 ^g	70±10	IMRE		87LAR/MCM
C ₄ H ₂ F ₇ O ⁻ CF ₃ CF ₂ CF ₂ CH	-0-			Est2	$\Delta_f H(AH) = -1561 \pm 21$	
-1626±51 ^a		1465±30 g	1437±25	IMRB	$BDE(A-H) = 435\pm8$ Between (CF ₃ ) ₂ CHOH, CF ₃ CH ₂ OH	77DAW/JEN
C ₄ H ₂ NO ₂ ⁻ maleimidate ⁻				Est2	$\Delta_f H(AH) = -287 \pm 8$	
maleimidate		1360±19		EIAP	From maleimide	73COO/COM
C ₄ H ₂ N ₂ ⁻ fumaronitrile ⁻					A 1//A) 000	000111111011
h	1.24±0.10			TDEq	$\Delta_f H(A) = 339$	82CHUINGU
	1.25±0.10			TDEq		87KEB/CHO 86CHO/KEB
	0.8±0.1			SI		67FAR/PAG
C ₄ H ₂ O ₃ ⁻						
maleic anhydride					$\Delta_f H(A) = -397 \pm 4$	77PED RYL
* -536±14 ^b 1				TDEq		87KEB/CHO
	1.41±0.11 1.38±0.05			IMRE IMRE		85GRI/CAL
	1.4±0.2			NBIP		85FUK/MCI 74COM/REI
C ₄ H ₃ F ₃ NO ⁻						
CH ₃ COCF ₃ ··C	'N					
* -822±36 ^c		85±15 ^g	54±10	IMRE	A district and the second seco	87LAR/MCM
C ₄ H ₃ F ₆ O ⁻ (CF ₃ ) ₂ C(Me)O ⁻	-			Est	$\Delta_f H(AH) = -1576 \pm 4$ $BDE(A-H) = 440 \pm 4$	
* -1648±14 ^a		1457±10 g	1425±8	IMRE		85CAL/MCM
			1431±8	IMRE ⁰		85CAL/MCM
C ₄ H ₃ N ₂ ⁻ pyrimidinide ⁻					$\Delta_f H(AH) = 197 \pm 1$	77PED/RYL
* 272±9 ^a		1606±8	1569±8	TDEq		87MEO
C ₄ H ₃ N ₂ O ₃	<del></del>				$\Delta_f H(AH) = -554 \pm 8$	72DOM
barbiturate ⁻ * -680±12 ^a		1402±12 ^g	1369±8	IMRE	Acid: barbituric acid	78CUM/KEB
C ₄ H ₃ O ⁻						
CH ₂ = CHC≡CO	)_			13 47 T	ou chan - on o	705 A 1712 10 5
<35				IMKB	$CH_2 = CHCH_2^- + CF_2 = O \rightarrow$	79DAW/NOE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ H ₃ O ⁻			Est2	$\Delta_f H(AH) = 67 \pm 13$	
MeCOC≡C ⁻ * 44±23 ^a	1507±10 ^g	1474±9	IMRE	BDE(A-H)= 552±21	86TAF
C ₄ H ₃ O ₂ ⁻ MeOCOC≡C ⁻			Est2	$\Delta_f H(AH) = -142 \pm 13$ $BDE(A-H) = 552 \pm 21$	
* -171±22 ^a	1501±10 g	1469±8	IMRE	, ,	86TAF
$C_4H_4F_3^ CH_2 = C(CF_3)CH_2^-$			Est	$\Delta_f H(AH) = -649 \pm 13$	
* -615±23 a	1565±10 g	1537±8	IMRE		84BAR/BUR
		1532±8	IMRE ⁰		84BAR/BUR
$C_4H_4F_3O_2S^-$ $CF_3SO_2CH = CHCH_2^-$			Est2	$\Delta_f H(AH) = -929 \pm 13$	
* -1023±23 ^a	1436±11 ^g	1407±8	IMRE		86TAF
$C_4H_4F_7O^-$ $(CF_3)_2C(Me)OH \cdot \cdot F^-$					
* -1933±15 ^c	109±8 ^g	189±8	IMRE		83LAR/MCM
$C_4H_4N^-$ $CH_2 = C(CN)CH_2^-$				$\Delta_f H(AH) = 130$	80WILI BAE
* 151 ^a	1551±10 ^g	1523±8 1523±8	IMRE IMRE ⁰		84BAR/BUR 84BAR/BUR
$C_4H_4N^-$ $CH_2 = CHCH = C = N^-$					
ch ₂ -chen-e-N		<1527±8	IMRB	Acid: CH ₂ =CHCH ₂ CN	80DAW/NIB
C ₄ H ₄ N ⁻ c-(CH ₂ ) ₂ CCN ⁻				$\Delta_f H(AH) = 184 \pm 1$	82FUC HAL
* 225±13 ^a	1571±12 ^g	1539±8		Acid:cyanocyclopropane	79BAR/SCO
		1533±8	IMRE ⁰		79BAR/SCO
C ₄ H ₄ N ⁻ pyrrolide ⁻			D-EA	$\Delta_f H(AH) = 108$ $BDE(A-H) = 419\pm25$	77PED/RYL
* 79±13 ^a	1501±12 g	1468±8	IMRE		79BAR/SCO
* 2.4±0.1 83±13 ^a	1505±12 ^g	1472±8	PD IMRE		75RIC/STE3 78CUM/KEB
		1477±8	IMRE		79BAR/SCO
C ₄ H ₄ NO ₂ ⁻ succinimidate ⁻				$\Delta_f H(AH) = -360 \pm 8$	69BENICRU
* -445±18 ^a	1445±10 g	1414±8	IMRE		78CUM/KEB
	1379±19		EIAP		73COO/COM
C ₄ H ₄ NS ⁻ 2-(thiofuryl)-NH ⁻					
*	1472±11 ^g	1441±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method Comment	Reference
	an	all ·- · ·		
C ₄ H ₄ N ₂ ⁻ pyrazine ⁻			$\Delta_f H(A) = 196 \pm 1$	77PED/RYL
157 b 0.4			ETS	75NEN/SCH
C ₄ H ₄ N ₂ ⁻				
pyridazine ⁻			$\Delta_f H(A) = 278 \pm 1$	77PED/RYL
254 ^b 0.3			ETS	75NEN/SCH
$C_4H_4N_2^-$				
pyrimidine ⁻			$\Delta_f H(A) = 197 \pm 1$	77PED/RYL
0.0			ETS	75NEN/SCH
C ₄ H ₅ CIN ⁻				
pyrrole··Cl ⁻ * -198±10 ^c	79±8 ^g	40.0	IMRE	DAT A DAMOMA
-190±10	/9±0 ¢	49±8 59	TDEq	84LAR/MCM2 82FRE/IKU
C ₄ H ₅ FN ⁻ pyrrole··F				
* -283±11 ^c	143±8 g	111±8	IMRE	83LAR/MCM
C ₄ H ₅ N ⁻ EtCCN ⁻ ·				
<381			IMRB O ⁻ + nPrCN→	76DAW/JEN
O II N -				
C ₄ H ₅ N ₂ ⁻ 3-Me-pyrazolide ⁻				
*	1485±11 ^g	1452±8	IMRE	86TAF
C ₄ H ₅ N ₂ ⁻				
4-Me-pyrazolide				
*	1484±11 ^g	1454±8	IMRE	86TAF
C ₄ H ₅ O ⁻			$\Delta_f H(AH) = -138 \pm 8$	79VAJIHAR
$CH_2 = C(CH = CH_2)C$	)-			, , , , , , , , , , , , , , , , , , , ,
* -148±19 ^a	1520±11 ^g	1492±8	IMRE	86BAR/KIP
		1500±10	IMRE ⁰	86BAR/KIP
C ₄ H ₅ O ⁻				
$CH_2 = C(CHO)CH_2^-$				
*	1578±16 ^g	1549±13	IMRB	84BAR/BUR
C ₄ H ₅ O ⁻			$\Delta_f H(AH) = -104 \pm 2$	77PED RYL
$CH_2 = CHCH = CHO^2$			·	
* -149±11 ^a	1484±10 g	1456±8 1466±10	IMRE IMRE ⁰	86BAR/KIP
		1400110		86BAR/KIP
C ₄ H ₅ O ⁻	_		Est2 $\Delta_f H(AH) = -88\pm4$	
cyclobutanone enolate * 1.84±0			PD	707 IN A /I A /
1.04±U			<i>.</i>	78ZIM/JAC

Table 2. Negative Ion Table - Continued

	Taur	e 2. Negative 101	II TANIE	Communica	
Ion $\Delta_f H(A^-)$ EA(A $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ H ₆ BrO ₂ ⁻ EtCHBrCO ₂ ⁻			Est2	$\Delta_f H(AH) = -477 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -600±23 a	1407±11 g	1378±8	IMRE		85CAL/MCM
C ₄ H ₆ ClO ₂ ⁻			Est	$\Delta_f H(AH) = -501 \pm 4$	
Cl(CH ₂ ) ₃ CO ₂ ⁻ * -586±20 ^a 3.22±0	0.25 ^d 1445±16 ^g	1416±8	IMRE	BDE(A-H)= 444±8	78CUM/KEB
C ₄ H ₆ ClO ₂ -			Est	$\Delta_f H(AH) = -492 \pm 13$	
EtCHClCO ₂ ⁻ * -610±22 ^a 3.56±0	.19 ^d 1412±10 ^g	1384±8	IMRE	BDE(A-H)= 444±8	78CUM/KEB
C ₄ H ₆ ClO ₂ -			Est	$\Delta_f H(AH) = -516\pm4$	
MeCHCICH ₂ CO ₂ ⁻ * -616±20 ^a 3.37±0	.25 ^d 1431±16 ^g	1401±8	IMRE	BDE(A-H)= 444±8	78CUM/KEB
C ₄ H ₆ F ₂ NO ⁻	_				
(CH ₂ F) ₂ CHOH··CN * −654±28 ^c	109±15 ^g	66±10	IMRE		87LAR/MCM
C ₄ H ₆ F ₃ O ⁻			Est	$\Delta_f H(AH) = -905 \pm 4$	
CF ₃ C(Me) ₂ O ⁻ * -928±14 ^a 2.54±0	.14 ^d 1507±10 ^g	1479±8	IMRE	$BDE(A-H) = 440 \pm 4$	85CAL/MCM
72021 alo 120		1490±8	IMRE		85CAL/MCM
C ₄ H ₆ N ⁻				$\Delta_f H(AH) = 25 \pm 1$	77PED/RYL
Me ₂ CCN ⁻ * 64±13 ^a 1.08±0	.21 ^d 1570±12 ^g	1539±8	IMRE	$BDE(A-H) = 362 \pm 8$	<i>82MCM GOL</i> 79BAR/SCO
110000		1534±8	IMRE		79BAR/SCO
$C_4H_6NO_2^-$ MeCON=C(Me)O ⁻				$\Delta_f H(AH) = -430 \pm 4$	69BEN/CRU
* -509±19 ^a	1451±15 g	1422±8	IMRE		78CUM/KEB
C ₄ H ₆ NO ₃ -					
$HN = C(CO_2Et)O^-$	1472±11 g	1442±8	IMRE		86TAF
C ₄ H ₆ O ₂ ⁻					
2,3-butanedione.	40		potent and	$\Delta_f H(A) = -327 \pm 1$	77PED/RYL
* -394±11 b 0.69±0			TDEq		87KEB/CHO
0.70±0 1.1	.11		IMRE ES		85GRI/CAL 66COM/CHR
C ₄ H ₇ ⁻				$\Delta_f H(AH) = -17 \pm 1$	77PED/RYL
$CH_2 = C(Me)CH_2^-$ * 86±11 a 0.36±0	.12 ^d 1633±10 ^g	1602±9	IMRE	$BDE(A-H) = 356 \pm 1$	<i>77LIA/AUS</i> 84BAR/BUR
C ₄ H ₇ O ⁻				$\Delta_f H(AH) = -241$	77PED/RYL
$CH_2 = C(Et)O^-$ * $-222\pm14^a$ 1.75 $\pm0$	.06 1549±14 ^e	1520±18 h	PD	$BDE(A-H) = 406 \pm 8$	77ZIM/REE

Table 2. Negative Ion Table - Continued

	∆H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ H ₇ O ⁻			Est	$\Delta_f H(AH) = -144 \pm 4$	
$CH_2 = C(OMe)CH_2^{-1}$ $-60\pm30^{a}$	1614±26 ^g	1586±23	IMRB		84BAR/BUR
C ₄ H ₇ O ⁻				$\Delta_f H(AH) = -208\pm 2$	77PED RYL
EtCH = CHO ⁺ * $-206\pm19^{a}$ 1.67 $\pm0.05$	1532±18 ^e	1504±22 ^h	PD	$BDE(A-H) = 381 \pm 13$	77ZIM/REE
C ₄ H ₇ O ⁻				$\Delta_f H(AH) = -241$	77PEDIRYL
$MeCH = C(Me)O^{-}$				$BDE(A-H) = 386\pm6$	82MCM/GOL
-231±13 ^a 1.64±0.19 ^d	1540±12 g	1512±8	IMRE		78CUM/KEB
* 1.67±0.05			PD		77ZIM/REE
C ₄ H ₇ O ₂ -			Est	$\Delta_f H(AH) = -482 \pm 4$	
iPrCO ₂				$BDE(A-H) = 444 \pm 13$	
* -562±15 ^a 3.17±0.24 ^d	1449±11 ^g	1420±8	IMRE		86TAF
C ₄ H ₇ O ₂ -			-	$\Delta_f H(AH) = -473\pm4$	82BUT/FRA
nPrCO ₂				BDE(A-H)= 444±8	
* -553±16 ^a 3.17±0.21 ^d	1450±12 g	1420±8	IMRE		78CUM/KEB
C ₄ H ₇ O ₄ ⁻					
MeCO ₂ H··MeCO ₂					
-1059±17 ^c	123±4	85±7	TDAs		86MEO/SIE2
C ₄ H ₈ ClO ⁻					
EtCOMe · · Cl					
* -530±10 ^c	62±8 ^g	36±8	IMRE		84LAR/MCM2
C ₄ H ₈ IO ₂ -	<del>1 -                                   </del>				
iPrCO ₂ H··I¯					
* -740±9 ^c	70±4	44±9	TDAs		84CAL/KEB
C ₄ H ₈ NO ⁻				$\Delta_f H(AH) = -234$	78BEA/LEE
$CH_2 = C(NMe_2)O^{-1}$				·	
* -196 ^a	1569±21 ^g	1540±8	IMRE		79BAR/SCO
		1535±8	IMREO		79BAR/SCO
C ₄ H ₈ NO ⁻				$\Delta_f H(AH) = -43\pm6$	74CHO MEN
Me ₂ C(NO)CH ₂	1(12, 20, 0	1507.05	n (DD		0010777
40±34 ^a	1613±28 g	1586±25	IMRB		80NOE/NIB
C ₄ H ₉ -				$\Delta_f H(AH) = -135$	74SCO
Me ₃ C		<b>t.</b>		$BDE(A-H) = 390\pm8$	82MCM/GOL
* 67±9 ^a	1732±8	1701±10 ^h	Bran		84DEP/BIE
0.7			SI		72PAG
0.6			SI		69PAG/GOO
C ₄ H ₉ Br ₂ -					
iBuBr··Br¯	<i>-</i> ,	22			<b>_</b>
-374 ^c	54	27	TDAs		74DOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₄ H ₉ Br ₂ -						
tBuBr··Br ⁻ -397 ^c		52	28	TDAs		74DOU
C ₄ H ₉ CIF						
tBuF··Cl  * -614±18 ^c		56±8 g	30±8	IMRE		84LAR/MCM2
C ₄ H ₉ Cl ₂ -						
tBuCl··Cl  * -469±11 ^c		60±8 g	33±8	IMRE		84LAR/MCM2
C ₄ H ₉ F ₂ -						
tBuF··F" * -673±15 ^c		93±8 g	64±8	IMRE		83LAR/MCM
C ₄ H ₉ O ⁻					$\Delta_f H(AH) = -284 \pm 2$ $BDE(A-H) = 436 \pm 6$	77PED RYL
* -246±11 ^a	1.87±0.16	d 1568±9 g	1540±8	IMRE	DDE(A-17) 430±0	79BAR/SCO
			1535±8	IMRE ⁰		79BAR/SCO
C ₄ H ₉ O ⁻					$\Delta_f H(AH) = -275$	77PED/RYL
nBuO¯		<i>a</i> -			$BDE(A-H) = 431 \pm 5$	82MCM/GOL
* -234±10 ^a	1.78±0.15		1543±8	IMRE		79BAR/SCO
		1569±12	1541±13 ^h	CIDC		83BOA/HOU
	1.9±0.1			EIAP	From nBuONO	68WIL/HAM
	0.9			SI		69PAG/GOO
			1537±8	IMRE ⁰		79BAR/SCO
C ₄ H ₉ O ⁻					$\Delta_f H(AH) = -295$	77PED RYL
sBuO	407.044	d «			$BDE(A-H) = 441 \pm 4$	82MCM/GOL
* -259±10 a	1.95±0.14		1538±8	IMRE		86TAF
		1565±11	1538±13 ^h	CIDC		83BOA/HOU
		····	1533±8	IMREO		79BAR/SCO
C ₄ H ₉ O ⁻					$\Delta_f H(AH) = -313\pm3$	77PED RYL
tBuO"		d - ~			$BDE(A-H) = 440 \pm 4$	82MCM/GOL
* -275±12 ^a			1540±8	IMRE		79BAR/SCO
<del>-</del>	1.912±0.03	54		LPES		82ELL/ENG
	1.87±0.01	.4		PD		78JAN/ZIM
	< 1.87±0.0	14		PD		75REE/BRA
	······································		1534±8	IMREO		79BAR/SCO
C ₄ H ₉ O ₃ - EtOH··MeCO	) ₂ _					
	4	87±4	50±7	TDAs		86MEO/SIE2
C ₄ H ₉ O ₃ -	_					
HOH··iPrCO						

Table 2. Negative Ion Table - Continued

	***************************************					
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₄ H ₉ S ⁻ iBuS ⁻		-			$\Delta_f H(AH) = -97 \pm 1$ BDE(A-H) = 364 \pm 10	77PED RYL
* ~149±13 ^a	2.06±0.23	d 1477±12 g	1451±8	IMRE	, , ,	86TAF
C ₄ H ₉ S ⁻ nBuS ⁻					$\Delta_f H(AH) = -88 \pm 1$ $BDE(A-H) = 364 \pm 10$	77PED/RYL
* -138±13 ^a	2.04±0.23 2.030±0.0		1454±8	IMRE LPD		86TAF 80JAN/REE
C ₄ H ₉ S ⁻ tBuS ⁻		_			$\Delta_f H(AH) \approx -110\pm 1$ $BDE(A-H) = 364\pm 9$	77PED RYL
* ~165±13 ^a	2.09±0.22 2.070±0.0		1449±8	IMRE		79BAR/SCO
	2.070±0.0	20	1458±8	LPD IMRE ⁰		80JAN/REE 79BAR/SCO
C ₄ H ₁₀ BF ₂ - Et ₂ BF··F		, , , , , , , , , , , , , , , , , , ,				
* ~740±44 °		243±21 ^g	215±21	IMRE		85LAR/MCM
-765 ^c		268 		IMRB	$F$ : $iPr_3B > Et_2BF > Et_3B$	77MUR/BEA2
C ₄ H ₁₀ ClO ⁻ nBuOH··Cl ⁻						
* ~576±10 ^c		74±8 ^g	45±8	IMRE		84LAR/MCM2
C ₄ H ₁₀ ClO ⁻ tBuOH··Cl ⁻						
* ~599±12 ^c		59±8 76±8 ^g	46±8 46±8	TDAs IMRE		71YAM/KEB 84LAR/MCM2
C ₄ H ₁₀ FO ⁻						
nBuOH··F" * ~658±11 ^c		135±8 ^g	103±8	IMRE		83LAR/MCM
C ₄ H ₁₀ FO ⁻						
tBuOH · · F * -701±13 ^c		139±8 g	107±8	IMRE		83LAR/MCM
C ₄ H ₁₀ IO						
tBuOH··I‴ *		51±4	27±9	TDAs		84CAL/KEB
C ₄ H ₁₀ NO ⁻ Et ₂ NO ⁻				Est	$\Delta_f H(AH) = -36\pm13$ $BDE(A-H) = 291\pm8$	78CAC/LIS
* -15±23 ^a	0.54±0.20	d 1551±11 g	1523±8	IMRE		83BAR/BAS
			1520±8	IMREO		83BAR/BAS
C ₄ H ₁₁ O ₂ ⁻ EtOH··EtO ⁻						
50m on C		115±4	82±7	TDEq		86MEO/SIE2
-507±21 ^c		86±10 ^g	59±7	IMRE	CAL/ROZ and 86MEO/SIE2 has not been resolved.	84CAL/ROZ

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₄ H ₁₁ O ₂ -					
MeOH··nPrO					
−496±21 ^c	83±10 ^g	55±8	IMRE		84CAL/ROZ
C ₄ H ₁₁ Si ⁻				$\Delta_f H(AH) = -233 \pm 3$	83STE
Me ₃ SiCH ₂				BDE(A-H)= 415±8	83STE2
-102±26 a 0.7±0.3 d	1661±23 ^g	1635±21	IMRB	, ,	84DEP/DAM
C ₄ H ₁₂ FSi ⁻					
Me ₄ Si · · F					
* -607±13 °	125±8 ^g	99±8	IMRE		85LAR/MCM
C ₅ ClFeO ₅					
Fe(CO) ₅ ··Cl					
-1053±16 ^c	58±13 g	33±13	IMRB		85LAN/SAL
C ₅ CrO ₅					
Cr(CO) ₅					
>2.3			IMRB		85SAL/LAN
C ₅ FFeO ₅				· · · · · · · · · · · · · · · · · ·	
Fe(CO) ₅ ··F					
-1188±13 °	171±8 ^g	144±8	IMRE		85LAN/SAL
C ₅ F ₆ O ₃ -					
hexafluoroglutaric anhydride	•				
1.5±0.2			NBIP		74COO/COM
			· · · · · · · · · · · · · · · · · · ·		
$C_5F_9^-$				$\Delta_f H(A) = -1573 \pm 29$	83SPY/SAU
-2017±73 b 4.6±0.5			EIAP	From n-C ₆ F ₁₄	
> 3.1±0.3			EIAP	From c-C ₄ F ₆ (CF ₃ ) ₂	83SPY/SAU
3.1			EIAP		72THY
		·	LIAF	From c-C ₄ F ₆ (CF ₃ ) ₂	70LIF/PEE
C ₅ F ₉ O ₂ - FCOCF ₂ CF ₂ CF ₂ CFO··F					
*		192±19	IMRE		84LAR/MCM
77					
C ₅ F ₁₀ - C ₅ F ₁₀ -				$\Delta_f H(A) = -2007 \pm 21$	83SPY/SAU
<-2508±64 b>5.2±0.5			FIAP	From n-C ₅ F ₁₂	
				1 10m n = 051 12	83SPY/SAU
$^{\mathrm{C}5}^{\mathrm{F}11}^{\mathrm{-}}$ (CF $_{3}$ ) $_{3}$ CCF $_{2}^{\mathrm{-}}$					
4.7±0.3			EIAP	From neo-C ₅ F ₁₂	85SPY/HUN
	<del></del>		<del></del>		
$C_2F_5(CF_3)_2C^-$					
>4.2±0.3			FIAP	From i-C ₅ F ₁₂	85SPY/HUN

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₅ F ₁₁					
C ₅ F ₁₁ -					
>4.5±0.2			EIAP	From n-C ₅ F ₁₂	83SPY/SAU
C ₅ MnO ₅					
Mn(CO)5				$\Delta_f H(A) = -740 \pm 10$	82CON/ZAF
		1309±17	IMRB		87STE/BEA
C ₅ N ⁻			Est2	$\Delta_f H(AH) = 577 \pm 21$	
N=CC=CC=C				$BDE(A-H) = 552 \pm 21$	
682 2.3	1643±21 ^e		EIAP	From HC≡C-(C≡C) ₂ -C≡N	61DIB/REE
C ₅ N ₃ ⁻					
$(NC)_2C = CCN^-$					
3.8±0.5			EIAP	From tetracyanoethylene	72BRI/OLS
C5HFeO5					
Fe(CO) ₅ ··H					
-858 ^c	235±13		IMRB		85LAN/SAL
C ₅ HFeO ₆					
Fe(CO) ₅ ··OH					
–1142 ^c	237±17 ^g	196±17	IMRB		85LAN/SAL
<-1075			IMRB		84LAN/LEE
$C_5H_3F_2^-$					
difluorocyclopentadienide -					
<9			IMRB	$CH_2 = CHCH_2^- + C_2F_4 \rightarrow$	79DAW/NOE
C ₅ H ₄ ⁻				$\Delta_f H(AH) = 217 \pm 10$	82MCM/GOL
cyclopentadienylide.			D-EA	• .	
274±27 ^a	1587±16 ^g	1556±13	IMRB		80MCD/CHO
<243±19			EIAP		72DID/HAR
		1546±13	IMRB ^C		80MCD/CHO
C ₅ H ₄ F ₃ O ₂ ⁻				$\Delta_f H(AH) = -1003 \pm 4$	84ERA KOL
$CF_3COCH = C(Me)O^-$					
0	1374±17 g	1347±8	IMRE		81FUJ/MCI
-1130±21 ^a	1374±17 g	1348±8	IMRE		78CUM/KEB
C ₅ H ₄ F ₆ NO					
$(CF_3)_2C(Me)OH \cdot \cdot CN^-$					
* -1609±28 ^c	108±15 g	74±10	IMRE		87LAR/MCM
C ₅ H ₄ N ⁻				$\Delta_f H(AH) = 140 \pm 1$	79KUD KUD
pyridinide [—]				•	
* 250±3 ^a	1640±2	1602±2	TDEq		87MEO
		<1574±8		O deprotonates	78BRU/FER
2.41±0.03			SI		76FAI/JOY

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₅ H ₄ O ⁻					1	
C ₅ H ₄ O ⁻ ·				Est2	$\Delta_f H(A) = -35 \pm 35$	
84±21			From benzoquir	NBAP	ibly cyclopentadienone":?	75COO/NAF
		<del> </del>				
C ₅ H ₅ ⁻					$\Delta_f H(AH) = 131 \pm 4$	77PED RYL
cyclopentadien		_			$BDE(A-H) = 329 \pm 8$	82MCM GOL
* 82±16 ^a	1.67±0.21 d		1455±8	IMRE		79BAR/SCO
•	1.786±0.020	_	4450.0	LPES		77ENG/LIN2
	1 020 . 0 020	1485±12 ^g	1459±8	IMRE		78CUM/KEB
70.9	1.839±0.030	,		LPD	Programme and a state of the st	73RIC/STE
79±8	< 2.2±0.3		1464±8	EIAP IMRE ^C	From cyclopentadiene	72DID/HAR
	·		1404±6	IMINE		79BAR/SCO
$C_5H_5N_2^-$						
pyrrole · · CN						
* 101±24 ^c		82±15 ^g	51±10	IMRE		87LAR/MCM
C-W-N-O-						<del></del>
C ₅ H ₅ N ₂ O ₂ - EtOCOCN · · C	'N'					
*	.14	73±15 ^g	42±10	IMRE		87LAR/MCM
C ₅ H ₆ Cl ⁻						
cyclopentadiene	e··Cl¯					
			< 10	TDEq		82FRE/IKU
C ₅ H ₆ NO				Est2	$\Delta_f H(AH) = 21 \pm 13$	
Me ₂ NCOC≡C				LSIZ	$BDE(A-H) = 552\pm21$	
* 8±22 a		1517±10 ^g	1484±8	IMRE	25277 19 002227	86TAF
C ₅ H ₇ -					$\Delta_f H(AH) = 75 \pm 1$	77PED/RYL
$CH_2 = C(CH =$	CH ₂ )CH ₂	_				
159±24 ^a		1614±23 ^g	1586±21	IMRB	Acid: isoprene	79BAR/MCI
C ₅ H ₇		· · · · · · · · · · · · · · · · · · ·			A LI/ALI)— 144.4	79ROG/DAG
nPrC≡C					$\Delta_f H(AH) = 144 \pm 4$ $BDE(A-H) = 552 \pm 21$	79HUGI DAG
	2.85±0.37 ^d	1589±15 g	1556±8	IMRE	DDL(A-1) = 352±21	79BAR/SCO
200217	2.0020.07	1507415	1551±8	IMRE		79BAR/SCO
C5H7 ⁻					$\Delta_f H(AH) = 106$	77PED RYL
pentadienide					BDE(A-H) = 318±13	82MCM/GOL
* 118±16 ^a	0.91±0.03	1542±15 ^e	1522±22 h	PD	Acid: 1,4-pentadiene	78ZIM/GYG
'-H-N-	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· <u>-</u>		
C5 <b>H7N2</b> ⁻ 3,5-diMe-pyraz	oliđe					
*	<del>-</del>	1481±11 ^g	1450±8	IMRE		86TAF
		<u></u>				
C5H7O ⁻					$\Delta_f H(AH) = -194 \pm 2$	77PED RYL
cyclopentanone				ממ		GODTS AT A C
	1.62±0.06			PD		78ZIM/JAC

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₅ H ₇ O ₂ ⁻ MeCOCH = C(Me)O ⁻				$\Delta_f H(AH) = -384 \pm 2$	79HAC PIL
• -472±11 a	1438±10 g	1408±8	IMRE		78CUM/KEB
	1438±10 ^g	1409±8	IMRE		86TAF
$C_5H_7O_3^ MeCO_2CH = C(Me)O^-$			Est2	$\Delta_f H(AH) = -573 \pm 13$ $BDE(A-H) = 377 \pm 8$	
* -638±25 ^a	1466±12 g	1436±8	IMRE		78CUM/KEB
C ₅ H ₈ Cl ⁻					
$CH_2 = CHCH_2CH = CH_2 \cdots CH_$	CI.	15	TDEq		82FRE/IKU
C5H8ClO2 ⁻ MeCOCH2COMe··Cl ⁻					
<u>-</u>		56	TDEq		82FRE/IKU
C ₅ H ₉ O ⁻ Me ₂ C(CHO)CH ₂ ⁻			Est	$\Delta_f H(AH) = -244 \pm 4$	
-153±25 ^a	1621±21 ^g	1594±17	IMRB		80NOE/NIB
C ₅ H ₉ O ⁻				$\Delta_f H(AH) = -262 \pm 1$	77PED/RYL
$Me_2C = C(Me)O^+$ * $-257\pm13^a$ 1.46 $\pm0.26^d$	1535±12 ^g	1508±8	IMRE	BDE(A−H)≈ 364±13	78CUM/KEB
C ₅ H ₉ O ⁻				$\Delta_f H(AH) = -259 \pm 1$	77PED RYL
MeCH = $C(Et)O^{-}$ * $-246\pm13^{a}$ 1.65 $\pm0.30^{d}$	1542±12 g	1512±8	IMRE	$BDE(A-H) = 390\pm17$	78CUM/KEB
* 1.68±0.05	1042218	131220	PD		77ZIM/REE
C ₅ H ₉ O ₂ -				$\Delta_f H(AH) = -515\pm6$	77PED/RYL
iBuCO ₂  * -596±17 ^a 3.17±0.20 ^d	1449±11 g	1420±8	IMRE	$BDE(A-H) = 444 \pm 8$	86TAF
C5H9O2 ⁻ nBuCO2 ⁻				$\Delta_f H(AH) = -490 \pm 2$ $BDE(A-H) = 444 \pm 8$	77PED/RYL
* -572±11 ^a 3.2±0.2 ^d	1449±10	1419±12 ^h	CIDC	DDC(A-1) = 44420	81MCL/CAM
C ₅ H ₉ O ₂ ⁻		**************************************	Est	$\Delta_f H(AH) = -512\pm 4$	
tBuCO ₂				BDE(A-H)= 444±8	
* -600±15 ^a 3.25±0.20 ^d	1442±11 ^g	1412±8	IMRE		86TAF
C ₅ H ₁₀ ClO					
Et ₂ CO··Cl ⁻ * -545±10 ^c	59±8 g	34±8	IMRE		84LAR/MCM2
C ₅ H ₁₀ ClO					
tBuCHO · · CI					

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₅ H ₁₀ FO ⁻				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
tBuCHO··F					
* -596±15 ^c	103±8 g	70±8	IMRE		83LAR/MCM
C ₅ H ₁₀ IO ₂ -			_		, , , , , ,
tBuCO ₂ H··I					
* -765±9 ^c	64±4	37±9	TDAs		84CAL/KEB
C ₅ H ₁₀ NO ⁻			Est2	$\Delta_f H(AH) = -322 \pm 13$	
$HN = C(tBu)O^{-}$	_				
* -354±23 ^a	1499±11 ^g	1469±8	IMRE		86TAF
C ₅ H ₁₀ NO ⁻			Est	$\Delta_f H(AH) = -135 \pm 8$	
tBuCH = NO	1510.140	1400.10	የአፈጥም		70D A D 1000
* -147±23 ^a	1518±14 ^g	1489±10 1497±8	IMRE IMRE ^C		79BAR/SCO
		149720	IWINE		79BAR/SCO
C ₅ H ₁₀ NO ⁻					
tBuOH · · CN  * −314±26 ^c	76±15 ^g	45±10	IMRE		87LAR/MCM
-514±20	70±15 °	45±10	IMINE		67LAIQIVICIVI
$C_5H_{10}NO_2^-$			Est	$\Delta_f H(AH) = -189 \pm 4$	
$tBuCH = NO_2^{-1}$	1404 10 8	1450.0	n m r		700 + D /000
* -233±16 ^a	1486±12 ^g	1458±8 1467±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
		140720			
$C_5H_{11}Br_2^-$					
tBuCH ₂ Br··Br¯					
-418 ^c	60	29	TDAs		74DOU
C ₅ H ₁₁ O ⁻				$\Delta_f H(AH) = -316\pm1$	77PED RYL
Et ₂ CHO		t.		BDE(A-H)= 438±4	
* -286±12 ^a 2.0±0.2 ^d	1559±11	1532±13 ^h	CIDC		83BOA/HOU
	1556±10		CIDCo		83BOA/HOU
C ₅ H ₁₁ O ⁻				$\Delta_f H(AH) = -316\pm 1$	77PED RYL
iPrCH(Me)O		1.		$BDE(A-H) = 438\pm4$	
* -285±13 ^a 2.0±0.2 ^d	1561±11	1533±13 ^h	CIDC		83BOA/HOU
-	1556±10		CIDCo		83BOA/HOU
C ₅ H ₁₁ O ⁻			Est	$\Delta_f H(AH) = -306 \pm 4$	
iPrCH ₂ CH ₂ O		1.		$BDE(A-H) = 436\pm4$	
* -274±15 ^a 1.9±0.2 ^d	1563±11	1535±13 h	CIDC		83BOA/HOU
	1559±10	1531±12 h	CIDCo		83BOA/HOU
C ₅ H ₁₁ O ⁻				$\Delta_f H(AH) = -297 \pm 2$	77PED/RYL
nC ₅ H ₁₁ O		_		BDE(A-H) = 436±4	
* -262±13 ^a 1.9±0.2 ^d	1564±11	1537±13 ^h	CIDC		83BOA/HOU
	1560±10		CIDCo		83BOA/HOU

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₅ H ₁₁ O ⁻				Est	$\Delta_f H(AH) = -318\pm 2$	
tBuCH ₂ O		. ·			$BDE(A-H) = 428 \pm 6$	82MCM/GOL
* -290±14 ^a	1.88±0.19	d 1559±12 g	1531±8	IMRE		79BAR/SCO
*	1.93±0.05			PD		78JAN/ZIM
	< 1.93±0.0	06		PD		75REE/BRA
			1528±8	IMRE ^C		79BAR/SCO
C ₅ H ₁₁ O ⁻ tPnO ⁻					$\Delta_f H(AH) = -331 \pm 1$ BDE(A-H) = 440 \pm 4	77PED RYL
* -300±13 ^a	2.0±0.2 d	1561±11	1533±13 ^h	CIDC	•	83BOA/HOU
		1556±10		CIDCO		83BOA/HOU
C ₅ H ₁₁ S ⁻		<del></del>			$\Delta_f H(AH) = -110 \pm 1$	77PED RYL
nC ₅ H ₁₁ S					$BDE(A-H) = 364 \pm 10$	
* -165±13 a	2.090±0.0	20 1475 ^e		LPD	,	80JAN/REE
C5H ₁₁ S ⁻ tBuCH ₂ S ⁻					$\Delta_f H(AH) = -129 \pm 1$ BDE(A-H) = 364 \pm 10	77PED RYL
* -188±13 ^a	2.13±0.23	d 1472±12 g	1445±8	IMRE	352(X 1 y = 35 12 15	86TAF
C5H ₁₂ FSi ⁻ c-(CH ₂ ) ₃ Si(M -544±23 ^c	e) ₂ ··F	158±9 <i>§</i>	130±9	IMRE		81SUL/DEP
C ₅ H ₁₃ O ₂ ⁻ EtOH··nPrO ⁻ -531±21 ^c		85±10 g	57±8	IMDE		94CAI BOZ
-J31±21		ω±10 <i>°</i>	J/±6	IMRE		84CAL/ROZ
C5H ₁₃ O2 [−] MeOH··tBuO	_					
		107±4	72±7	TDEq		86MEO/SIE2
-556±23 ^c		79±10 g	51±7	IMRE		84CAL/ROZ
SH ₁₅ Si ⁻ nPnSiH ₃ ··H ⁻		· · · · · · · · · · · · · · · · · · ·				
		45±23		IMRB		86HAJ/SQU
C ₆ Br ₄ O ₂ -						
bromanil  218±40 ^b	2.4±0.2			<i>Est</i> NBIP	$\Delta_f H(A) = 18 \pm 21$	78COO/FRE
C ₆ Cl ₄ O ₂ -						
chloranil.					$\Delta_f H(A) = -186 \pm 12$	77PED/RYL
	2.78±0.10			יים עדים. יים עדים	Aprilay - 100112	
				TDEq		87KEB/CHO
	2.68±0.11			IMRE		85GRI/CAL
	2.67±0.05			IMRE		85FUK/MCI
	2.8±0.2			NBIP		78COO/FRE
	2.5±0.3			SI		66FAR/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$	EA(A)	$\Delta H_{acid}(AH)$	ΔG _{acid} (AH)	Method	Comment	Reference
$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$	eV	$\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{aff}(X \cdot \cdot Y^{-})$			
C ₆ Cl ₅ ⁻					$\Delta_f H(AH) = -40\pm9$	85PLA/SIM2
C ₆ Cl ₅		_			$BDE(A-H) = 464 \pm 13$	
	2.8	1510±13 ^e		SI		69PAG/GOO
$C_6F_4O_2^-$						
fluoranil ⁻				Est	$\Delta_f H(A) = -816 \pm 41$	
* -1076±51 b				TDEq		87KEB/CHO
-1043±46 ^b				IMRE		85FUK/MCI
	2.9±0.2			NBIP		78COO/FRE
	2.3		···	SI		69PAG/GOO
C ₆ F ₅ ⁻					$\Delta_f H(AH) = -806\pm7$	77PED RYL
C ₆ F ₅					BDE(A-H)= 487±8	82MCM/GOL
−797±34 ^b	$2.7\pm0.2$	1539±28 ^e	1506±29 h	NBAP	From perfluorobenzene	82COM/REI
<del>-</del> 464				Endo	I ⁻ + C ₆ F ₆ →	73LIF/TIE
	2.7			SI		69PAG/GOO
C ₆ F ₅ O ⁻					$\Delta_f H(AH) = -957 \pm 2$	77PED RYL
pentafluorophe	noxide 3.06±0.09			ECD		OALIED ALIEN
<-857±8	3.0020.09	<1630±10 f			$HO^- + C_6F_6 \rightarrow$ , acidity probably ca. 1340 kJ	84HER/WEN 75BRI/RIV
					110 1 C616 1, actually probably ca. 1540 ks	/5BIQ/IQ V
$C_6F_6^-$					4 4/4)	T0 55 10 4 5
C ₆ F ₆  . * -996±18 b	0.63.0.10			OT 17-	$\Delta_f H(A) = -946 \pm 8$	79PR#SAP
-990±18	0.52±0.10			TDEq		87KEB/CHO
	0.52±0.10 1.8±0.3			TDEq EnCT		86CHO/GRI
	1.20±0.07			SI		73LIF/TIE 69PAG/GOO
0 B -	·	<u></u>				
C ₆ F ₁₀ ⁻ perfluorocycloh		•			A. U(A) = -2250.8	79PRII SAP
<-2504±37				EnCT	$\Delta_f H(A) = -2369 \pm 8$	73LIF/TIE
~-2304±37	<b>∠1.4±0.</b> 3			LilC1		/3EII/TIE
C ₆ F ₁₁ -						
C ₆ F ₁₁	>4.2±0.2			EIAP	From c-C ₄ F ₆ (CF ₃ ) ₂	<b>72</b> THY
	3.5			EIAP	From c-C ₆ F ₁₂	70LIF/PEE
C ₆ F ₁₃ -						
C ₆ F ₁₃						
	>4.6±0.2			EIAP	From n-C ₆ F ₁₄	83SPY/SAU
$C_6N_4^-$						h ' '
tetracyanoethyl	ene  .				$\Delta_f H(A) = 705 \pm 6$	77PED RYL
* 400±25 ^b	3.17±0.20			TDEq		87KEB/CHO
	3.17±0.20			TDEq		86CHO/KEB
	2.300±0.30	00		LPD		76LYO/PAL
	$2.03\pm0.05$			PD		73LYO/PAL
	1.700±0.30	00		LPD		75LYO/PAL
	$2.88 \pm 0.06$			SI		67FAR/PAG

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ HCl ₃ O ₂ ⁻ triCl-benzoquinone ⁻ * -423±17 b 2.52±0.05			Est2 IMRE	$\Delta_f H(A) = -180 \pm 13$	85FUK/MCI
C ₆ HF ₄ O ⁻ 2,3,5,6-tetrafluorophenoxide ⁻			Est2	$\Delta_f H(AH) = -764 \pm 13$ $BDE(A-H) = 385 \pm 17$	· · · · · · · · · · · · · · · · · · ·
2.75±0.09			ECD		84HER/WEN
$C_6H_2Cl_2O_2^-$			<del></del>		
2,5-diCl-benzoquinone			Est2	$\Delta_f H(A) = -174 \pm 13$	
* -409±22 b 2.43±0.10			TDEq	,	87KEB/CHO
2.29±0.05			IMRE		85FUK/MCI
C ₆ H ₂ Cl ₂ O ₂ ⁻					
2,6-diCl-benzoquinone				$\Delta_f H(A) = -174 \pm 12$	77PED RYL
* -414±21 ^b 2.48±0.10			TDEq		87KEB/CHO
2.39±0.11			IMRE		85GRI/CAL
2.40±0.05			IMRE		85FUK/MCI
C ₆ H ₂ Cl ₃ O ⁻			Est	$\Delta_f H(AH) = -164 \pm 8$	
3,4,5-triCl-phenoxide	~			$BDE(A-H) = 362 \pm 13$	
* -310±21 ^a 3.00±0.26 ^d	1384±12 ^g	1355±8	IMRE		81FUJ/MCI
$C_6H_2FO_2^-$			Est2	$\Delta_f H(AH) = -387 \pm 13$	
fluorobenzoquinonide 2.4±0.1			SI		66FAR/PAG
C ₆ H ₂ N ₃ O ₇ ⁻			Est2	$\Delta_f H(AH) = -159 \pm 21$	
2,4,6-triNO ₂ -phenoxide				$BDE(A-H) = 381 \pm 17$	
<-365±25 a	< 1324±4 g	< 1293	IMRB	I deprotonates	74DZI/CAR
C ₆ H ₃ ClNO ₃ ⁻			Est2	$\Delta_f H(AH) = -151 \pm 17$	
2-Cl-4-NO ₂ -phenoxide				BDE(A-H)= 381±17	
* -328±28 ^a	1353±11 ^g	1323±8	IMRE		86TAF
C ₆ H ₃ Cl ₂ NO ₂ ⁻				<del></del>	
2,3-diCl-nitrobenzene			Est2	$\Delta_f H(A) = 3\pm 8$	
* -116±13 ^b 1.23±0.05			IMRE		85FUK/MCI
C ₆ H ₃ Cl ₂ NO ₂ -					
3,4-diCl-nitrobenzene-			Est	$\Delta_f H(A) = 8\pm 8$	
* -125±13 ^b 1.38±0.05			IMRE		85FUK/MCI
C ₆ H ₃ Cl ₂ O ⁻		· · · · · · · · · · · · · · · · · · ·	Est	$\Delta_f H(AH) = -153 \pm 8$	
3,5-diCl-phenoxide				$BDE(A-H) = 362\pm13$	
* -284±19 ^a 2.85±0.24 ^d	1399±11 g	1370±8	IMRE		81FUJ/MCI
C ₆ H ₃ FO ₂ -					
fluorobenzoquinone.			Est2	$\Delta_f H(A) = -387 \pm 13$	
1.5±0.2			SI		66FAR/PAG

Table 2. Negative Ion Table - Continued

	Table	2. Negative 10	II Table	- Continued	
$\begin{array}{ccc} \text{Ion } \Delta_{\mathbf{f}} H(\mathbf{A}^{-}) & \text{EA}(\mathbf{A}) \\ \Delta_{\mathbf{f}} H(\mathbf{X} \cdot \cdot \mathbf{Y}^{-}) & \text{eV} \end{array}$	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
C ₆ H ₃ F ₂ - m-difluorophenide				$\Delta_f H(AH) = -309 \pm 1$	77PED/RYL
<-264±3 ^a	<1576±1 ^g	<1543	IMRB	< iPrOH	75BRI/RIV
C ₆ H ₃ F ₂ - o-difluorophenide-				$\Delta_f H(AH) = -294 \pm 1$ BDE(A-H) = 460 \pm 13	77PED/RYL
-242±18 ^a 2.0±0.3 ^d	1582±16 ^g	1547±13	IMRB	Between EtO, iPrO	75BRI/RIV
C ₆ H ₃ F ₂ -				$\Delta_f H(AH) = -307 \pm 1$	77PED/RYL
p-difluorophenide -247±16 a 1.9±0.3 d	1590±15 ^g	1555±13	IMRB	<i>BDE(A-H)</i> = 460±13 < MeOH, ≤ EtOH	75BRI/RIV
C ₆ H ₃ FeO ₆					
Fe(CO) ₅ ··OMe ⁻ -1095±37 ^c	188±25 ^g	149±25	IMRB		85LAN/SAL
C ₆ H ₃ N ₃ O ₆ -				4.440	
1,3,5-trinitrobenzene  -191 b 2.6			SI	$\Delta_f H(A) = 62 \pm 2$	77PED/RYL 69PAG/GOO
C ₆ H ₃ O ₂ - benzoquinonide-				$\Delta_f H(AH) = -123 \pm 3$	77PED/RYL
2.00±0.04		<1607	IMRB SI		87JOH/SPE 66FAR/PAG
С ₆ н ₄ -					
o-benzyne  * 440±22 ^b 0.560±0.01	.0		LPES	$\Delta_f H(A) = 494 \pm 21$	<i>80POUHEH</i> 86LEO/MIL
<433			IMRB	$O^- + C_6H_6 \rightarrow$ , D label indicates ortho loss	78BRU/FER
C ₆ D ₄ -					
o-benzyne-d ₄ * 0.551±0.01	.0		LPES		86LEO/MIL
C ₆ H ₄ BrNO ₂					
mBr-nitrobenzene  .  * -38±14 ^b 1.32±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 90 \pm 4$	87KEB/CHO
C ₆ H ₄ BrNO ₂					
oBr-nitrobenzene ⁻ .  * -21±18 b 1.17±0.10			Est2 TDEq	$\Delta_f H(A) = 92 \pm 8$	87KEB/CHO
C ₆ H ₄ BrNO ₂			_		
pBr-nitrobenzene  .  * -35±14 b 1.29±0.10			Est TDEq	$\Delta_f H(A) = 90 \pm 4$	87KEB/CHO
C ₆ H ₄ Cl ⁻				$\Delta_f H(AH) = 54 \pm 1$	85PLA/SIM
chlorophenide 144±24 a 1.6±0.4 d	1620±23 g	1586±21	IMRB	$BDE(A-H) = 460\pm13$	79BAR/MCI

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₆ H ₄ CIF ₂ ⁻ m-C ₆ H ₄ F ₂ ··Cl ⁻ * -598±11 °	61±8 ^g	33±8 32±4	IMRE TDEq		84LAR/MCM2 82FRE/IKU
C ₆ H ₄ ClF ₂ ⁻					
o−C ₆ H ₄ F ₂ ··Cl¯ * −581±11 ^c	60±8 ^g	33±8	IMRE		84LAR/MCM2
C ₆ H ₄ ClF ₂	·····				
p−C ₆ H ₄ F ₂ ··Cl [−] * −592±11 ^c	58±8 ^g	31±8	IMRE		84LAR/MCM2
C ₆ H ₄ CINO ₂ ⁻					
mCl-nitrobenzene			Est	$\Delta_f H(A) = 38 \pm 8$	
* -85±18 b 1.28±0.10			TDEq		87KEB/CHO
1.22±0.11 1.20±0.05			IMRE IMRE		85GRI/CAL 85FUK/MCI
C ₆ H ₄ ClNO ₂ ⁻					***************************************
oCl-nitrobenzene-			Est	$\Delta_f H(A) = 42 \pm 4$	
* -68±14 ^b 1.14±0.10			TDEq		87KEB/CHO
1.08±0.11			IMRE		85GRI/CAL
1.05±0.05			IMRE		85FUK/MCI
C ₆ H ₄ CINO ₂ ⁻					
pCl-nitrobenzene			Est	$\Delta_f H(A) = 38 \pm 8$	
* -84±18 b 1.26±0.10			TDEq		87KEB/CHO
1.19±0.11 1.17±0.05			IMRE IMRE		85GRI/CAL 85FUK/MCI
		·	1111105		wi olymoi
C ₆ H ₄ ClO				$\Delta_f H(AH) = -146 \pm 8$	77PED/RYL
mCl-phenoxide ⁻ * _245+29 a 2 52+0 30 d	1404 04 0	1402.0	D CDT	BDE(A-H)= 362±8	0.477.47.0.407
* -245±29 ^a 2.52±0.30 ^d	1431±21 ^g 1433±21 ^g	1402±8 1404±8	IMRE IMRE		81FUJ/MCI 77MCM/KEB
	14351210	1404±0	IMICE		//WICW/RED
C ₆ H ₄ ClO ⁻			Est2	$\Delta_f H(AH) = -173 \pm 17$	
oCl-phenoxide	_			$BDE(A-H) = 402\pm17$	
* -266±30 ^a 2.87±0.31 ^d	1437±13 ^g	1410±8	IMRE		77MCM/KEB
* <2.58±0.08		·····	PD		75RIC/STE2
C ₆ H ₄ ClO ⁻ pCl-phenoxide				$\Delta_f H(AH) = -153 \pm 8$ $BDE(A-H) = 362 \pm 13$	77PED RYL
* -248±18 ^a 2.47±0.23 ^d	1436±10 g	1407±8	IMRE		81FUJ/MCI
	1438±10 g	1409±8	IMRE		77MCM/KEB
C ₆ H ₄ Cl ₂ ⁻					
o-dichlorobenzene-				$\Delta_f H(A) = 33\pm 2$	85PLA/SIM
24 ^b 9.4			ECD	•	69STE/WEN

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₄ F ⁻				$\Delta_f H(AH) = -116 \pm 1$	77PED RYL
fluorophenide  -26±26 ^a 1.6±0.4 ^d	1620±25 g	1586±22	IMRB	BDE(A-H)= 460±13	75BRI/RIV
C ₆ H ₄ FNO ₂ -			-		
mF-nitrobenzene-			Est	$\Delta_f H(A) = -126 \pm 8$	
* -245±18 ^b 1.23±0.10			TDEq		87KEB/CHO
1.18±0.11			IMRE		85GRI/CAL
1.15±0.05			IMRE		85FUK/MCI
C ₆ H ₄ FNO ₂ ⁻					
oF-nitrobenzene			Est	$\Delta_f H(A) = -118 \pm 8$	
* -221±18 ^b 1.07±0.10			TDEq		87KEB/CHO
1.02±0.11			IMRE		85GRI/CAL
1.04±0.05			IMRE		85FUK/MCI
C ₆ H ₄ FNO ₂ -				·	
pF-nitrobenzene-			Est	$\Delta_f H(A) = -131 \pm 8$	
* -239±18 ^b 1.12±0.10			TDEq		87KEB/CHO
1.05±0.11			IMRE		85GRI/CAL
1.04±0.05			IMRE		85FUK/MCI
C ₆ H ₄ FO ⁻			Est	$\Delta_f H(AH) = -297 \pm 8$	
mF-phenoxide				$BDE(A-H) = 362 \pm 8$	
* -389±18 ^a 2.45±0.19 ^d	1438±10 g	1409±8	IMRE		81FUJ/MCI
	1441±10 g	1413±8	IMRE		77MCM/KEB
2.61±0.09	1422±17 ^e	1393±18 h	ECD		84HER/WEN
C ₆ H ₄ FO ⁻			Est2	$\Delta_f H(AH) = -285$	
oF-phenoxide					
*	1445±12 g	1418±8	IMRE		81FUJ/MCI
	1447±12 g	1420±8	IMRE		77MCM/KEB
C ₆ H ₄ FO ⁻			Est	$\Delta_f H(AH) = -291 \pm 8$	
pF-phenoxide				$BDE(A-H) = 362 \pm 13$	
* -370±18 ^a 2.31±0.23 ^d	1451±10 g	1422±8	IMRE		81FUJ/MCI
	1455±10 g	1426±8	IMRE		77MCM/KEB
C ₆ H ₄ F ₂ N ⁻			Est	$\Delta_f H(AH) = -478 \pm 13$	
2,4-diF-anilide	4540 0	4.00 -			
* -497±25 ^a	1510±12 g	1480±8	IMRE		79BAR/SCO
		1480±8	IMREO		79BAR/SCO
C ₆ H ₄ NO ₂ ⁻ pNO-phenoxide ⁻			Est	$\Delta_f H(AH) = -91\pm8$	
* -246±19 ^a	1376±11 ^g	1345±8	IMRE		86TAF
C ₆ H ₄ NO ₃ ⁻			Est	$\Delta_f H(AH) = -113\pm 8$	
mNO ₂ -phenoxide				BDE(A-H)= 362±8	
* -244±19 ^a 2.85±0.20 ^d	1399±11 g	1370±8	IMRE		81FUJ/MCI
	1400±11 g	1371±8	<b>IMRE</b>		77MCM/KEB

Table 2. Negative Ion Table - Continued

Ion $\triangle_f H(A^-)$ $\triangle_f H(X \cdot Y^-)$	EA(A) ) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₄ NO ₃ - oNO ₂ -pheno	xide -			Est2	$\Delta_f H(AH) = -105 \pm 13$	11.00
*			1379±8	IMRE		77MCM/KEB
C ₆ H ₄ NO ₃ - pNO ₂ -pheno	xide			Est	$\Delta_f H(AH) = -117\pm 8$	and the second s
• -276±19 a		1372±11 ^g	1343±8	IMRE		81FUJ/MCI
$C_6H_4N_2O_4^-$						
mNO2-nitrob					$\Delta_f H(A) = 59 \pm 1$	76FERIPIA
* -101±11 ^b	1.65±0.10			TDEq	·	87KEB/CHO
	1.57±0.11			IMRE		85GRI/CAL
-93±5 ^b	1.57±0.05			IMRE		85FUK/MCI
C ₆ H ₄ N ₂ O ₄ -						
oNO ₂ -nitrob				Est2	$\Delta_f H(A) = 84 \pm 8$	
* -76±18 ^b	1.65±0.10	·		TDEq		87KEB/CHO
C ₆ H ₄ N ₂ O ₄						
pNO ₂ -nitrob					$\Delta_f H(A) = 57 \pm 3$	76FER PIA
* -136±13 ^b	2.00±0.10			TDEq		87KEB/CHO
	1.89±0.11			IMRE		85GRI/CAL
	1.89±0.05			IMRE		85FUK/MCI
C ₆ H ₄ N ₃ ⁻						
benzotriazolio	ie ⁻					
*		1413±11 ^g	1382±8	IMRE		86TAF
C ₆ H ₄ O ₂ -						
o-benzoquino	one"			Est2	$\Delta_f H(A) = -121 \pm 21$	
*	1.620±0.0	48		LPD		85MAR/COM
С ₆ Н ₄ О ₂ -						
p-benzoquing	one"				$\Delta_f H(A) = -123 \pm 3$	77PED/RYL
* -307±13 ^b	1.91±0.10			TDEq		87KEB/CHO
	1.81±0.11			IMRE		85GRI/CAL
	1.990±0.0	48		LPD		85MAR/COM
	1.83±0.05			IMRE		85FUK/MCI
	1.9±0.3			NBIP		75COO/NAF
	> 0.0			ES		70COL/CHR
	1.37±0.08	1		SI		66FAR/PAG
 С ₆ Н ₅ -					$\Delta_f H(AH) = 83$	77PED RYL
phenide					BDE(A-H)= 464±8	82MCM/GOL
* 229±3 a	1.03±0.11	d 1677±2	1636±3	TDEq		86MEO/SIE
			1632±27	IMRB		79BAR/MCI
341±29				EIAP	From benzonitrile	86HEN/ILL2
	1.1±0.3 ^d	1665±25 g	1628±23	IMRB		71BOH/YOU
	2.36±0.04			SI		76FAI/JOY
	2.2			SI		72PAG
	~					

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₅ BrCl ⁻ PhBr··Cl ⁻					
		28	TDEq		82FRE/IKU
C ₆ H ₅ CIF					
PhF··Cl [™]		25	TDEq		82FRE/IKU
C ₆ H ₅ ClFO ⁻ pF-C ₆ H ₄ OH··Cl ⁻			1,11,11		
* -629±18 °	110±8	81±8	TDEq		77CUM/FRE
C ₆ H ₅ ClI⁻ PhI··Cl⁻					
		30	TDEq		82FRE/IKU
C ₆ H ₅ ClN ⁻ mCl-anilide -			Est	$\Delta_f H(AH) = 55\pm 8$ $BDE(A-H) = 368\pm 13$	and the state of t
* 26±18 ^a	1502±10 g	1471±8 1480±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₆ H ₅ CIN ⁻ pCl-anilide ⁻			Est	$\Delta_f H(AH) = 55\pm 8$ $BDE(A-H) = 368\pm 13$	
* 33±18 ^a	1508±10 ^g	1477±8 1482±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₆ H ₅ CINO ₂ ⁻ PhNO ₂ ··Cl ⁻			J-1		
7 m. vo ₂		30	TDEq		82FRE/IKU
C ₆ H ₅ Cl ₂ ⁻ PhCl··Cl ⁻	· · · · · · · · · · · · · · · · · · ·				
* -230±10 ^c	57±8 g	29±8	IMRE		84LAR/MCM2
	57±4 g	29±4 27	IMRE TDEq		84LAR/MCM4 82FRE/IKU
C ₆ H ₅ Cl ₂ O ⁻ pCl-C ₆ H ₄ OH··Cl ⁻		<del></del>			
* -498±18 °	118±8	87±8	TDEq		77CUM/FRE
C ₆ H ₅ FN ⁻ mF-anilide ⁻			Est	$\Delta_f H(AH) = -113 \pm 8$ $BDE(A-H) = 368 \pm 13$	
* -132±19 ^a	1511±11 ^g	1481±8	IMRE	· ·	79BAR/SCO
		1489±8	IMRE ⁰		79BAR/SCO
C ₆ H ₅ FN ⁻ oF-anilide ⁻	_		Est2	$\Delta_f H(AH) = -130 \pm 17$ $BDE(A-H) = 389 \pm 17$	
* -143±29 a 1.91±0.30 c	1 1517±12 ^g	1487±8	<b>IMRE</b>		79BAR/SCO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₆ H ₅ FN ⁻ pF-anilide ⁻				Est	$\Delta_f H(AH) = -109\pm 8$ BDE(A-H) = 368±13	
* -115±19 ^a	1.62±0.24	d 1524±11	g 1494±8 1499±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₆ H ₅ F ₅ NS ⁻				···		
mSF ₅ -anilide*	2.76±0.24	d 1414±11	g 1383±8	IMRE	$BDE(A-H) = 368 \pm 13$	86TAF
C ₆ H ₅ F ₅ NS ⁻						
pSF ₅ -anilide ⁻	2.92±0.24	d 1399±11	g 1368±8	IMRE	$BDE(A-H) = 368 \pm 13$	86TAF
C6H5N- PhN-						
* 263±26 ^a	1 461 . 0 0	1556±16	g 1527±13		Acidity near MeCN	81MCD/CHO
Ť	1.461±0.0	13	1532±13	LPD IMRB ⁰		84DRZ/BRA 81MCD/CHO
C ₆ H ₅ NO ₂ -					4 1//4)	
nitrobenzene ⁻ .  * -30±11 b	1.01±0.10			TDEq	$\Delta_f H(A) = 67 \pm 1$	77PED/RYL 87KEB/CHO
50111	0.96±0.11			IMRE		85GRI/CAL
	0.97±0.05			IMRE		85FUK/MCI
	>0.7±0.2			EnCT		73LIF/TIE
	> 0.4			ES		66COM/CHR
	<1.1				EA: < SO ₂	59HEN/MUC
C ₆ H ₅ N ₂ O ⁻						
PhN = NO ⁻ < 308±25				IMRB	Ph + N ₂ O →; thermochemical limit	77BIE/DEP
C ₆ H ₅ N ₂ O ₂ -	_				$\Delta_f H(AH) = 62 \pm 2$	83NIS/SAK
mNO ₂ -anilide * 6±13 ^a	2.14±0.24	d 1474±11 8	3 1443±8	IMRE	$BDE(A-H) = 368\pm13$	86TAF
C ₆ H ₅ N ₂ O ₂					$\Delta_f H(AH) = 55\pm 2$	83NIS/SAK
pNO ₂ -anilide ⁻ * -38±13 ^a		1437±11 [§]	3 1407±8	IMRE		86TAF
C ₆ H ₅ O ⁻					$\Delta_f H(AH) = -96 \pm 1$	77PED/RYL
phenoxide -		d .			BDE(A-H)= 362±8	82MCM/GOL
* -165±10 a			3 1432±8	IMRE		81FUJ/MCI
•	< 2.36±0.0		Y	PD		75RIC/STE2
		1466±10 8		IMRE		78CUM/KEB
			86SHI/VOR: tau 1441±8	itomer acid IMRE ^O	dities $\Delta_{\text{acid}}$ H(ortho) = 1439±13 kJ, (para) = 1423±8 kJ	79BAR/SCO
C ₆ H ₅ O ₂ - mOH-phenoxic	ie-			<u></u>	$\Delta_f H(AH) = -274 \pm 2$ $RDE(A, H) = -262 \cdot 6$	79KUD KUD
* -354±13 ^a		d 1451±11 8	5 1422±8	IMRE	$BDE(A-H) = 362 \pm 8$	01171110401
557.213	2.2220.20	1431±11 8				81FUJ/MCI
		1444±11 c	7417±0	IMRE		77MCM/KEB

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₅ O ₂ ⁻ oOH-phenoxide ⁻				$\Delta_f H(AH) = -272 \pm 4$	79KUD KUD
*	1421±11 g	1392±8	IMRE		81FUJ/MCI
	1422±11 g	1393±8	IMRE		77MCM/KEB
C ₆ H ₅ O ₂ -			· <u>.</u>	$\Delta_f H(AH) = -264 \pm 2$	79KUD KUD
pOH-phenoxide ⁻ * -328±13 ^a	1466±11 ^g	1436±8	IMRE		81FUJ/MCI
C ₆ H ₅ S ⁻				$\Delta_f H(AH) = 113\pm 1$	77PED/RYL
thiophenoxide -				BDE(A-H)= 335±9	82MCM/GOL
* <2.47±0.06	> 1409±15 e		PD		75RIC/STE2
C ₆ H ₆ Cl ⁻ C ₆ H ₆ ···Cl ⁻					
*	41 g	20±8	IMRE		84LAR/MCM2
		16	TDEq		82FRE/IKU
C ₆ H ₆ ClO ⁻ PhOH··Cl ⁻	, , , , , , , , , , , , , , , , , , ,		<del></del>		
–432 ^c	109	72	TDAs		82FRE/IKU
-426±10 ^c	103±8	83±8	TDEq		77CUM/FRE
	81±8	62±8	TDAs		71YAM/KEB
С ₆ Н ₆ FО [−] РһОН…F¯					
* -518±11 ^c	173±8 ^g	140±8	IMRE		83LAR/MCM
C ₆ H ₆ N ⁻			_	$\Delta_f H(AH) = 87 \pm 1$	77PED RYL
anilide -				BDE(A-H)= 368±8	82MCM/GOL
* 90±12 ^a 1.53±0.20 ^d	1533±11 ^g	1502±8	IMRE		79BAR/SCO
* 1.704±0.030			LPD		84DRZ/BRA2
		1505±8	IMRE ⁰		79BAR/SCO
C ₆ H ₆ NO ⁻				$\Delta_f H(AH) = -90 \pm 2$	86NUN BAR
mNH ₂ -phenoxide				$BDE(A-H) = 362 \pm 8$	
* -153±11 ^a 2.15±0.19 ^d	1467±10 ^g	1438±8	IMRE		81FUJ/MCI
	1469±10 g	1441±8	IMRE		77MCM/KEB
C ₆ H ₆ NO ⁻ oNH ₂ -phenoxide ⁻			Est2	$\Delta_f H(AH) = -105 \pm 17$ BDE(A-H) = 391 \pm 17	
*		1428±8	IMRE		77MCM/KEB
C ₆ H ₆ NO ⁻ pNH ₂ -phenoxide ⁻	, , , , , , , , , , , , , , , , , , ,			$\Delta_f H(AH) = -82\pm 2$ $BDE(A-H) = 368\pm 13$	86NUN  BAR
* -137±11 ^a	1475±10 g	1446±8	IMRE	•	81FUJ/MCI
	1483±10 g	1454±8	IMRE		77MCM/KEB
7 II N O -	······································				
ン6月6N2U2					
$C_6H_6N_2O_2^-$ mNH ₂ -nitrobenzene				$\Delta_f H(A) = 59 \pm 1$	77PED RYL

J. Phys. Chem. Ref. Data, Vol. 17, Suppl. 1, 1988

Table 2. Negative Ion Table - Continued

1.3-cycloheadicnide						
1.3-cycloheadenide	-			Method	Comment	Reference
1.3-cyclobeadienide 138.21 8 0.6±0.4 d 1563e21 8 1531±17 IMRB Between SiH ₄ , IBuOH SELERSQL 78DEP/BIE 138427	C ₆ H ₇ -				$\Delta_f H(AH) = 106$	77PED/RYL
13821   10.640.4	1,3-cyclohexadienide				•	82MCMIGOL
134275 IMRB 78DEP/BIE C6H7 1-methylcytolopentadienide* 1.670±0.039 1.PD 73RIC/STE C6H7FN* PhNH2F*292±11° 131±8 B 98±8 IMRE 83LAR/MCI C6H7OC 9yclobexenone-4-enotate*150±22 a 1496±10 B 146±8 IMRE 86BAR/KIP C6H7OC 9Yclobexenone-4-enotate*150±22 a 1496±10 B 146±8 IMRE 86BAR/KIP C6H7OC 1471±14° - 64±4 34±7 TDAs 86MEO/SIE C6H8B	138±21 ^a 0.6±0.4 ^d	1562±21 ^g	1531±17	IMRB	Between SiH ₄ , tBuOH	86LEE/SQU
1-methylcyclopentadienide 1.670±0.039 LPD 73RIC/STE  C6H7RN PRNH2	134±75			IMRB	·	78DEP/BIE
C6H ₇ FN ⁻ PhNH ₂ ··F ⁻ • -292±11 °	· ,	e_		Est	$\Delta_f H(AH) = 96 \pm 4$	,
PRNFig FT 292±11 °  - 131±8 8 98±8 IMRE	* 1.670±0.03	39		LPD		73RIC/STE
C6H ₇ O ⁻ cyclohexenone-4-enolate ⁻ -150±22 ⁸ 1496±10 ⁸ 1464±8 1473±8 1MRE 1473±8 1MRE 86BAR/KIP  C6H ₇ O ₂ HOH·PhO -471±14 ^c 64±4 34±7 TDAs 86MEC/SIE  C6H ₈ B ⁻ MeE(CH=CH) ₂ CH 17±31 ⁸ 1402±18 ⁸ 1370±17 1MRB Acid: 3-methyl-3-bora-1,4-cyclohexadiene 77SUL  77FEORYL 20clohexenide 82±25 ⁸ 1617±25 ⁸ 1586±21 1MRB 79BAR/SCC 64H ₉ O - cyclohexenide 154±8 154±8 1MRE 79BAR/SCC 67H ₉ O ⁻ cyclohexenide 275±21 153±15 ⁸ 1582±12 ⁸ 1584±8 1MRE 79BAR/SCC 67H ₉ O ⁻ cyclohexenide 275±21 153±15 ⁸ 1580±15 154±8 1MRE 79BAR/SCC 67H ₉ O ⁻ cyclohexenide 377EORYL 20clohexenide 377EORYL						
cyclohexenonc-4-enolate150±22 s	* -292±11 ^c	131±8 ^g	98±8	IMRE		83LAR/MCM
1473±8 IMRE ^O 86BARKIP  C6H ₇ O ₂ ⁻ HOH··PhO ⁻ -471±14 ^c 64±4 34±7 TDAs  86MEO/SIE  C6HgB ⁻ MeB(CH = CH) ₂ CH ⁻ 17±31 ^a 1402±18 ^g 1370±17 IMRB Acid: 3-methyl-3-bora-1,4-cyclohexadiene 77SUL  C6Hg ⁻ cyclohexenide ⁻ 82±25 ^a 1617±25 ^g 1586±21 IMRB  86LEE/SQU  C6Hg ⁻ tBuCaC ⁻ • 157±15 ^a 2.93±0.34 ^d 1582±12 ^g 1544±8 IMRE 79BAR/SCC  C6HgO ⁻ cyclohexanone enolate ⁻ • 1.55±0.05  PD  77PEO/RYL  C6H11 ⁻ cyclohexanide ⁻ 24 H(AH) = -123 BDE(A-H) = -226±2 77PEO/RYL  C6H11O ⁻ CH ₂ = C(tBu)O ⁻ • -280±15 ^a 1.84±0.07 1540±15 ^c 1512±18 ^h PD  77ZIM/REE  C6H11O ⁻ CH ₂ = C(tBu)O ⁻ • -280±15 ^a 1.84±0.07 1540±15 ^c 1512±18 ^h PD  77ZIM/REE	* .			Est2	$\Delta_f H(AH) = -116 \pm 13$	
HOH. PhO $-471\pm14^{\circ}$ 64 $\pm4$ 34 $\pm7$ TDAs 86MEO/SIE C6H8B	* -150±22 ^a	1496±10 ^g			•	
C6H8B ⁻ MeB(CH = CH) ₂ CH ⁻ 17±31 ⁸ 1402±18 ^g 1370±17  IMRB Acid: 3-methyl-3-bora-1,4-cyclohexadiene  77SUL  C6H9 ⁻ cyclohexenide ⁻ 82±25 ^a 1617±25 ^g 1586±21  IMRB  A _f H(AH) = -5  77PED(RYL  C6H9 ⁻ 1BuC=C ⁻ 157±15 ^a 2,93±0,34 ^d 1582±12 ^g 1549±8 1MRE 1544±8 1MRE  79BAR/SCC  C6H9O ⁻ cyclohexanione enolate ⁻ • 1.55±0.05  PD  78ZIM/JAC  C6H11 ⁻ cyclohexanide ⁻ 237±4 ^a 1690±4 ^g 1690±4 ^g 1690±4 ^g 1690±4 ^g 1690±10   A _f H(AH) = -123 BDE(A-H) = -123 BDE(A-H						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-471±14 ^c	64±4	34±7	TDAs		86MEO/SIE2
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				Est	$\Delta_f H(AH) = 146 \pm 13$	
	_	1402±18 g	1370±17	IMRB	Acid: 3-methyl-3-bora-1,4-cyclohexadiene	77SUL
82±25 a $1617\pm25$ g $1586\pm21$ IMRB $86LEE/SQU$ $C_6H_9^ \Delta_f H(AH) = 106\pm3$ $77KUP/SHI$ $BDE(A-H) = 552\pm21$ $BDE(A-H) = 552\pm21$ $A_f H(AH) = 552\pm21$ $A_f H(AH) = 106\pm3$ $A_f H(AH) = 552\pm21$ $A_f H(AH) = 552\pm21$ $A_f H(AH) = 106\pm3$ $A_f H(AH) = 552\pm21$ $A_f H(AH) = 79BAR/SCO$ $A_f H(AH) = -226\pm2$ $A_f H(AH) = -226\pm2$ $A_f H(AH) = -226\pm2$ $A_f H(AH) = -123$ <					$\Delta_f H(AH) = -5$	77PED/RYL
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	82±25 ^a	1617±25 ^g	1586±21	IMRB		86LEE/SQU
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	 С ₆ Н9 ⁻	·······	- A		$\Delta_f H(AH) = 106\pm3$	77KUP SHI
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	tBuC≡C¯				$BDE(A-H) = 552\pm21$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	* 157±15 ^a 2.93±0.34 ^c	d 1582±12 g	1549±8	IMRE		79BAR/SCO
cyclohexanone enolate $^{\circ}$ * 1.55±0.05 PD 78ZIM/JAC $^{\circ}$ C6H ₁₁ $^{\circ}$ $^{$			1544±8	IMRE ⁰	•	79BAR/SCO
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	· ·				$\Delta_f H(AH) = -226 \pm 2$	77PED RYL
cyclohexanide $BDE(A-H) = 400\pm 4$ 82MCM/GO $> 37\pm 4^{ a}$ 1690 $\pm 4^{ g}$ > 1665 IMRB 72BOH/LEE $C_{6}H_{11}O^{-}$ $\Delta_{f}H(AH) = -290\pm 1$ 77PED/RYL $C_{12} = C(tBu)O^{-}$ 8DE(A-H) = 406 $\pm 8$ 77ZIM/REE $C_{6}H_{11}O^{-}$ Est $\Delta_{f}H(AH) = -269\pm 2$ $C_{6}H_{11}O^{-}$ 8DE(A-H) = 381 $\pm 13$	* 1.55±0.05			PD		78ZIM/JAC
$>37\pm4^{a}$ $1690\pm4^{g}$ $>1665$ IMRB 72BOH/LEE $C_6H_{11}O^ \Delta_fH(AH) = -290\pm1$ 77PED/RYL $CH_2 = C(tBu)O^ BDE(A-H) = 406\pm8$ 77ZIM/REE $C_6H_{11}O^ Est$ $\Delta_fH(AH) = -269\pm2$ $tBuCH = CHO^ BDE(A-H) = 381\pm13$	C ₆ H ₁₁ -			··,	$\Delta_f H(AH) = -123$	77PED RYL
$C_{6}H_{11}O^{-}$ $C_{12} = C(tBu)O^{-}$ $C_{13} = C_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U_{13}U$	=				BDE(A-H)= 400±4	82MCM/GOL
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	>37±4 ^a	1690±4 g	> 1665	IMRB		72BOH/LEE
* $-280\pm15$ a $1.84\pm0.07$ $1540\pm15$ c $1512\pm18$ h PD 77ZIM/REE C6H ₁₁ O ⁻ Est $\Delta_f H(AH) = -269\pm2$ tBuCH = CHO ⁻ BDE(A-H) = $381\pm13$					· ·	77PED/RYL
$tBuCH = CHO^ BDE(A-H) = 381\pm13$		1540±15 ^e	1512±18 ^h	PD	, ·	77ZIM/REE
$tBuCH = CHO^ BDE(A-H) = 381\pm13$				Est	$\Delta_f H(AH) = -269 \pm 2$	· · · · · · · · · · · · · · · · · · ·
* -282±21 ^a 1.82±0.06 1517±18 ^e 1490±23 ^h PD 77ZIM/REE	tBuCH = CHO				•	
	* -282±21 ^a 1.82±0.06	1517±18 ^e	1490±23 ^h	PD		77ZIM/REE

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₁₁ O ₂ ⁻ nPnCO ₂ ⁻				$\Delta_f H(AH) = -514\pm 2$ $BDE(A-H) = 444\pm 8$	77PED/RYL
* -597±11 ^a 3.2±0.2 ^d	1447±10	1418±12 ^h	CIDC		81MCL/CAM
C ₆ H ₁₁ O ₂ ⁻ tBuCH ₂ CO ₂ ⁻			Est	$\Delta_f H(AH) = -538 \pm 4$ $BDE(A-H) = 444 \pm 8$	
* -623±15 a	1444±11 ^g	1415±8	IMRE	,	86TAF
C ₆ H ₁₁ S ₂ ⁻ 5,5-dimethyl-1,3-dithianide			Est	$\Delta_f H(AH) = -59 \pm 17$	1997 till der såk krive så serik someres som til krive krivetet i serialisen
* -24±28 ^a	1566±11 ^g	1535±8 1530±8	IMRE IMRE ⁰		81BAR/HAY 81BAR/HAY
C ₆ H ₁₃ O ⁻ Et ₂ C(Me)O ⁻			Est	$\Delta_f H(AH) = -356 \pm 4$ $BDE(A-H) = 440 \pm 4$	
* -330±15 ^a 2.0±0.2 ^d	1556±11 1553±10	1528±13 ^h	CIDC ^o	1021	83BOA/HOU 83BOA/HOU
C ₆ H ₁₃ O	<del> </del>		Est	$\Delta_f H(AH) = -342 \pm 4$	
iPrCH(Et)O ⁻ * -318±15 ^a 2.0±0.2 ^d	1554±11 1551±10	1527±13 ^h	CIDC ^o	$BDE(A-H) = 438\pm4$	83BOA/HOU 83BOA/HOU
C ₆ H ₁₃ O ⁻			Est	$\Delta_f H(AH) = -327 \pm 4$	
iPrCH ₂ CH ₂ CH ₂ O ⁻ * -296±14 ^a 1.9±0.1 ^d	1561±10 1557±10	1533±11 ^h	CIDC ^o	BDE(A-H) = 436±4	83BOA/HOU 83BOA/HOU
C ₆ H ₁₃ O ⁻				$\Delta_f H(AH) = -315 \pm 1$	77PED/RYL
nC ₆ H ₁₃ O ⁻ * -284±12 ^a 1.9±0.2 ^d	1561±11	1533±13 ^h	CIDC	BDE(A-H)= 436±4	83BOA/HOU
MAT III	1557±10		CIDCo		83BOA/HOU
nPrC(Me) ₂ O			Est	$\Delta_f H(AH) = -352\pm 4$ $BDE(A-H) = 440\pm 4$	
* -326±15 ^a 2.0±0.2 ^d	1557±11 1554±10	1529±13 ^h	CIDC ^o		83BOA/HOU 83BOA/HOU
C ₆ H ₁₃ O ⁻ tBuCH(Me)O ⁻			Est	$\Delta_f H(AH) = -351 \pm 4$ $BDE(A-H) = 438 \pm 4$	
* -328±16 ^a 2.05±0.17 ^d	1553±12 ^g	1525±8 1523±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₆ H ₁₃ O ⁻ tBuCH ₂ CH ₂ O ⁻			Est	$\Delta_f H(AH) = -332\pm 4$ $BDE(A-H) = 436\pm 4$	
* -304±15 ^a 2.0±0.2 ^d	1559±11 1555±10	1531±13 ^h	CIDC ^o	,	83BOA/HOU 83BOA/HOU
C ₆ H ₁₃ O ₂ ⁻					AP 2
$nPrOH \cdot \cdot CH_2 = C(Me)O^-$ $-518\pm23^{c}$	61±10 g	33±8	IMRE		84CAL/ROZ

Table 2. Negative Ion Table - Continued

		<del></del>			
Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₆ H ₁₄ BF ₂ ⁻ iPr ₂ BF··F					
<-817 ^c	278		IMRB	$F^-A: SiF_4 > iPr_2BF > iPr_3B$	77MUR/BEA2
C ₆ H ₁₅ BCl ⁻ Et ₃ B··Cl ⁻					
* -476±15 ^c	100±8 g	72±8	IMRE		85LAR/MCM
C ₆ H ₁₅ BF ⁻ Et ₃ B··F ⁻					
* ~611±16 ^c	213±8 ^g 259	182±8	IMRE IMRB	$F^A$ : $iPr_3B > Et_3B > MeSiF_3$	85LAR/MCM 77MUR/BEA2
C ₆ H ₁₅ BFO ₃ ⁻ (EtO) ₃ B···F ⁻					
* -1434±17 ^c	184±13 g	153±8	IMRB		85LAR/MCM
C ₆ H ₁₅ OSi ⁻ Et ₃ SiO ⁻			Est2	$\Delta_f H(AH) = -559 \pm 8$	
-580±19 ^a	1508±11 ^g	1479±8	IMRE		87THO/BAR
C ₆ H ₁₅ O ₂ ⁻ EtOH··tBuO ⁻					
−592±23 ^c	82±10 g	54±8	IMRE		84CAL/ROZ
C ₆ H ₁₅ O ₂ ⁻ MeOH··tBuCH ₂ O ⁻		***************************************			
−569±25 ^c	78±10 ^g	50±8	IMRE		84CAL/ROZ
C ₆ H ₁₅ O ₂ - nPrOH··nPrO-					
-554±21 ^c	88±10 g	60±8	IMRE		84CAL/ROZ
C ₆ H ₁₇ Si ⁻ Et ₃ SiH··H ⁻					
₋₉₈ c	43±23		IMRB		86HAJ/SQU
C ₆ H ₁₈ NSi ₂ ⁻ (Me ₃ Si) ₂ N ⁻				$\Delta_f H(AH) = -477 \pm 6$ BDE(A-H) = > 421	77PED RYL 78ROB WIN
-497±15 a 2.32 d	1509±10 g	1477±8	IMRE		87THO/BAR
C ₇ F ₅ N ⁻					
C6F5CN			Est	$\Delta_f H(A) = -746 \pm 13$	ogwen (CHO
* -852±22 b 1.10±0.1 1.10±0.1			TDEq TDEq		87KEB/CHO 86CHO/GRI
	<del>_</del> _				
perfluorotoluene".				$\Delta_f H(A) = -1187 \pm 8$	77PED/RYL
* -1278±17 b 0.94±0.1			TDEq		87KEB/CHO
0.91±0.1			IMRE		86CHO/GRI 73LIF/TIE
> 1.7±0.3	3		EnCT		/35.117 1115

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₇ F ₁₃ perfluoromethylcyclohexanic	de -		Est	$\Delta_f H(AH) = -2705 \pm 21$	
-3063 b 3.9			EIAP	From c-C ₆ F ₁₁ (CF ₃ )	70LIF/PEE
C ₇ F ₁₄					
perfluoromethylcyclohexane	<del>-</del> .			$\Delta_f H(A) = -2900 \pm 1$	77PED/RYL
* -3002±11 b 1.06±0.10			TDEq		85GRI/CHO
< 1.6			IMRB		85GRI/CAL
C ₇ H ₃ Cl ₂ N ⁻					
2,6-diCl-benzonitrile			Est2	$\Delta_f H(A) = 156 \pm 13$	
* 87±22 ^b 0.72±0.10			TDEq		87KEB/CHO
0.70±0.09			TDEq		86CHO/KEB
C ₇ H ₃ Cl ₃ O ₂ ⁻					
Me-triCl-benzoquinone-			Est2	$\Delta_f H(A) = -212 \pm 17$	
* -449±21 ^b 2.46±0.05			IMRE		85FUK/MCI
C ₇ H ₃ F ₅ O ⁻					
pentafluoroanisole ⁻			Est2	$\Delta_f H(A) = -937 \pm 8$	
-990±17 ^b 0.54±0.09			ECD	·	84HER/WEN
C ₇ H ₃ N ₃ O ₄ ⁻					<del></del>
3-NO ₂ -5-CN-nitrobenzene	; <del>-</del> ,		Est	$\Delta_f H(A) = 188 \pm 4$	
* -20±14 ^b 2.16±0.10			TDEq	·	87KEB/CHO
C ₇ H ₄ ClO ₂ ⁻				$\Delta_f H(AH) = -342 \pm 4$	77PEDIRYL
mCl-benzoate				$BDE(A-H) = 444 \pm 13$	,
* -473±15 ^a 3.69±0.24 ^d	1400±11 g	1368±8	IMRE		77MCM/KEB
C ₇ H ₄ ClO ₂ ⁻	· · · · · · · · · · · · · · · · · · ·	· ·····	•	$\Delta_f H(AH) = -325 \pm 3$	77PED/RYL
oCl-benzoate				$BDE(A-H) = 444 \pm 13$	,,,,,,,,
* -454±14 ^a 3.67±0.24 ^d	1401±11 g	1372±8	IMRE		77MCM/KEB
C ₇ H ₄ ClO ₂ ⁻		······································		$\Delta_f H(AH) = -341 \pm 3$	77PEDIRYL
pCl-benzoate				$BDE(A-H) = 444 \pm 13$	,,,,,,,
* -472±14 ^a 3.69±0.24 ^d	1399±11 ^g	1369±8	IMRE		77MCM/KEB
C ₇ H ₄ FO ₂ ⁻			Est	$\Delta_f H(AH) = -490 \pm 4$	
mF-benzoate				$BDE(A-H) = 444\pm13$	
* -617±15 ^a 3.65±0.24 ^d	1403±11 ^g	1372±8	IMRE	. •	77MCM/KEB
C ₇ H ₄ FO ₂ ⁻			Est2	$\Delta_f H(AH) = -502 \pm 13$	
oF-benzoate				$BDE(A-H) = 460\pm17$	•
* -623±25 ^a 3.76±0.30 ^d	1410±12 g	1378±8	IMRE	• • • • • • • • • • • • • • • • • • • •	77MCM/KEB
C ₇ H ₄ FO ₂ ⁻				$\Delta_f H(AH) = -495 \pm 3$	77PED/RYL
pF-benzoate				$BDE(A-H) = 444\pm13$	/// LU/!!!L
* -620±14 ^a 3.63±0.24 ^d	1405±11 ^g	1376±8	IMRE	, ,	77MCM/KEB
		·-			. / • • • • • • • • • • • • • • • • • •

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₇ H ₄ F ₃ ⁻ CF ₃ -phenide ⁻				$\Delta_f H(AH) = -599 \pm 1$ $BDE(A-H) = 460 \pm 13$	77PED RYL
-511±24 ^a 1.6±0.4 ^d	1618±23 ^g	1586±21	IMRB		79BAR/MCI
C ₇ H ₄ F ₃ NO ₂ ⁻			*******		
mCF ₃ -nitrobenzene ⁻			Est	$\Delta_f H(A) = -604 \pm 8$	
* -740±18 ^b 1.41±0.10			TDEq		87KEB/CHO
1.34±0.11			IMRE		85GRI/CAL
1.33±0.05			IMRE		85FUK/MCI
$C_7H_4F_3NO_2^-$					
oCF ₃ -nitrobenzene ⁻			Est	$\Delta_f H(A) = -604 \pm 4$	
* -732±14 ^b 1.33±0.10			TDEq		87KEB/CHO
C ₇ H ₄ F ₃ NO ₂ ⁻					
pCF ₃ -nitrobenzene			Est	$\Delta_f H(A) = -604 \pm 4$	
* -746±14 ^b 1.47±0.10			TDEq		87KEB/CHO
C ₇ H ₄ F ₃ O ⁻			Est	$\Delta_f H(AH) = -765 \pm 8$	
mCF ₃ -phenoxide			20.	$BDE(A-H) = 362\pm8$	
* -875±18 ^a 2.64±0.19 ^d	1420±10 g	1391±8	IMRE	• •	81FUJ/MCI
C ₇ H ₄ F ₃ O ⁻			Est	$\Delta_f H(AH) = -765 \pm 8$	
pCF ₃ -phenoxide			L31	$BDE(A-H) = 362\pm13$	
* -885±19 a 2.74±0.24 d	1410±11 ^g	1381±8	IMRE		81FUJ/MCI
C ₇ H ₄ F ₃ OS ⁻					
mSCF ₃ -phenoxide				BDE(A-H)= 362±8	
* 2.72±0.20 ^d	1411±11 ^g	1382±8	IMRE		86TAF
C ₇ H ₄ F ₃ OS ⁻					
pSCF ₃ -phenoxide				BDE(A-H)= 362±13	
* 2.81±0.23 d	1403±10 g	1374±8	IMRE	, , , , , , , , , , , , , , , , , , , ,	86TAF
G ** ** O G=					
C7H4F3O3S ⁻				RDE(A_U) 26219	
mSO ₂ CF ₃ -phenoxide ⁻ * 3.06±0.20 ^d	1379±11 g	1350±8	IMRE	$BDE(A-H) = 362 \pm 8$	86TAF
C7H4F3O3S					
pSO ₂ CF ₃ -phenoxide ⁻ * 3.36±0.24 ^d	1250 : 11 9	1221 . 0	DADE.	$BDE(A-H) = 362\pm13$	DATE A TE
3.30±U.24 **	1350±11 g	1321±8	IMRE		86TAF
C ₇ H ₄ F ₄ O ⁻					
2,3,5,6-tetrafluoroanisole			Est	$\Delta_f H(A) = -845 \pm 4$	
-866±13 ^b 0.22±0.09			ECD		84HER/WEN
C ₇ H ₄ NO			Est	$\Delta_f H(AH) = 43\pm8$	
mCN-phenoxide			<b>-</b>	$BDE(A-H) = 362\pm8$	
* -82±18 ^a 2.79±0.19 ^d	1405±10 g	1376±8	IMRE		81FUJ/MCI
	1405±10 g	1377±8	IMRE		77MCM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H$	I _{acid} (AH)	ΔG _{acid} (AH)	Method	Comment	Reference
-	$aff(X \cdot \cdot Y^{-})$	$\Delta G_{aff}(X \cdot Y)$			
C ₇ H ₄ NO ⁻			Est2	$\Delta_f$ H(AH)= 25±13	
oCN-phenoxide				$BDE(A-H) = 378\pm17$	
* -105±25 ^a 3.00±0.30 ^d	1400±12 g	1369±8	IMRE		81FUJ/MCI
	1400±12 g	1369±8	IMRE		77MCM/KEB
C ₇ H ₄ NO ⁻			Est	$\Delta_{f}H(AH) = 43\pm8$	
pCN-phenoxide	_				
* -97±19 ^a	1390±11 ^g	1361±8	IMRE		81FUJ/MCI
	1392±11 ^g	1363±8	IMRE		77MCM/KEB
C ₇ H ₄ NO ₄ ⁻			Est	$\Delta_f H(AH) = -310\pm8$	
mNO ₂ -benzoate				$BDE(A-H) = 444 \pm 13$	
* -458±19 ^a 3.88±0.24 ^d	1382±11 ^g	1350±8	IMRE		77MCM/KEB
	1379±11 ^g	1347±8	IMRE		86TAF
C ₇ H ₄ N ₂ O ₂ ⁻					
mCN-nitrobenzene.			Est	$\Delta_f H(A) = 204 \pm 8$	
* 53±18 b 1.56±0.10			TDEq		87KEB/CHO
1.48±0.11			IMRE		85GRI/CAL
1.49±0.05			IMRE		85FUK/MCI
$C_7H_4N_2O_2^-$					
oCN-nitrobenzene			Est	$\Delta_f H(A) = 204 \pm 4$	
* 48±14 ^b 1.61±0.10			TDEq	,	87KEB/CHO
$C_7H_4N_2O_2^-$					
pCN-nitrobenzene			Est	$\Delta_f H(A) = 202 \pm 4$	
* 36±14 ^b 1.72±0.10			TDEq	•	87KEB/CHO
1.65±0.11			IMRE		85GRI/CAL
C ₇ H ₄ N ₃ O ₆ ⁻				$\Delta_f H(AH) = 39\pm 2$	77PEL
2,4,6-triNO ₂ -C ₆ H ₂ CH ₂					
-112±27 ^a	1379±25 g	1351±21	IMRB		74DZI/CAR
C ₇ H ₅ CINO ⁻		h hyganamushn			
pCN-C ₆ H ₄ OH··Cl ⁻					
	141±8	109±8	TDEq		77CUM/FRE
C ₇ H ₅ ClO ₂ ⁻			-		
2-Cl-5-Me-benzoquinone-			Est2	$\Delta_f H(A) = -180 \pm 17$	
* -375±21 b 2.02±0.05			IMRE	•	85FUK/MCI
C ₇ H ₅ FO					
mF-benzaldehyde ⁻			Est	$\Delta_f H(A) = -230 \pm 8$	
-295±13 ^b 0.67±0.05			ECD	<i>i</i> · · ·	75WEN/KAO
C ₇ H ₅ FO ⁻					
oF-benzaldehyde ⁻			Est	$\Delta_f H(A) = -230 \pm 21$	
-292±25 ^b 0.64±0.04			ECD		75WEN/KAO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₇ H ₅ FO ⁻ pF-benzaldehyde ⁻ · -273±10 ^b 0.49±0	.02		Est ECD	$\Delta_f H(A) = -226 \pm 8$	75WEN/KAO
C ₇ H ₅ F ₃ N ⁻ mCF ₃ -anilide ⁻			Est	$\Delta_f H(AH) = -585 \pm 8$ $BDE(A-H) = 368 \pm 13$	
* -621±18 ^a	1493±10 g	1463±8 1472±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C7H5F3N ⁻ pCF3-anilide ⁻			Est	$\Delta_f H(AH) = -585 \pm 10$	
* -636±19 ^a	1479±10 g	1448±8 1457±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₇ H ₅ F ₃ NO ₂ S ⁻ mSO ₂ CF ₃ -anilide ⁻ * 2.37±0	24 ^d 1451±11 ^g	1421±8	IMRE	BDE(A-H) = 368±13	86TAF
C ₇ H ₅ F ₃ NO ₂ S ⁻ pSO ₂ CF ₃ -anilide ⁻ 2.73±0.	24 ^đ 1417±11 ^g	1386±8	IMRE	BDE(A-H) = 368±13	86TAF
C7H5F3NS ⁻ mSCF ₃ -anilide ⁻ * 2.01±0	24 ^d 1487±11 ^g	1456±8	IMRE	BDE(A-H)= 368±13	86TAF
C ₇ H ₅ F ₃ NS ⁻ pSCF ₃ -anilide ⁻ * 2.19±0	24 ^d 1469±11 ^g	1438±8	IMRE	BDE(A-H)= 368±13	86TAF
C7H5N ⁻ benzonitrile ⁻ 194±4 b 0.26±0 0.3±0.1			ECD ECD	$\Delta_f H(A) = 219 \pm 2$	<i>82CHUI NGU</i> 75WEN/KAO 83ZLA/LEE
C7H5NO3 ⁻ mCHO-nitrobenzene * -188±14 b 1.41±0			<i>Est</i> TDEq	$\Delta_f H(A) = -52 \pm 4$	87КЕВ/СНО
C ₇ H ₅ NO ₃ ⁻ oCHO-nitrobenzene ⁻ * -198±14 ^b 1.51±0			<i>Est</i> TDEq	$\Delta_f H(A) = -52\pm 4$	87KEB/CHO
C7H5NO3 ⁻ pCHO-nitrobenzene ⁻ * -213±14 ^b 1.67±0			<i>Est</i> TDEq	$\Delta_f H(A) = -52 \pm 4$	87KEB/CHO
C ₇ H ₅ N ₂ ⁻ indazolide ⁻	1456±11 ^g	1424±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdots Y^-)$ eV	$\Delta H_{\text{acid}}(AH)$ $\Delta H_{\text{aff}}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₇ H ₅ N ₂ ⁻ mCN-anilide ⁻			Est	$\Delta_f H(AH) = 223 \pm 4$ BDE(A-H) = 368 \pm 13	
* 170±14 ^a 2.11±0.23	d 1477±10 g	1446±8	IMRE	2221119 - 000210	86TAF
C ₇ H ₅ N ₂ ⁻ pCN-anilide ⁻			Est	$\Delta_f H(AH) = 216 \pm 4$	
* 146±14 ^a	1460±10 g	1429±8	IMRE		86TAF
C ₇ H ₅ O ₂ ⁻ benzoate ⁻			_	$\Delta_f H(AH) = -294 \pm 2$ BDE(A-H) = 444 \pm 13	77PEO/RYL
* -407±14 ^a	1418±12 ^g	1388±8	IMRE		78CUM/KEB
	1423±12 ^g	1393±8	IMRE		81FUJ/MCI
C ₇ H ₅ O ₂ ⁻ mCHO-phenoxide ⁻			Est	$\Delta_f H(AH) = -213\pm 8$ $BDE(A-H) = 362\pm 8$	
* -319±18 ^a 2.58±0.19	d 1425±10 g	1396±8	IMRE		81FUJ/MCI
C ₇ H ₅ O ₂ ⁻ pCHO-phenoxide ⁻			Est	$\Delta_f H(AH) = -213\pm 8$	
* -350±19 ^a	1393±11 g	1364±8	IMRE		81FUJ/MCI
C ₇ H ₅ O ₃ -			Est	$\Delta_f H(AH) = -470 \pm 8$	
mOH-benzoate ⁻ * -587±19 ^a 3.54±0.24	d 1414±11 g	1382±8	IMRE	$BDE(A-H) = 444 \pm 13$	77МСМ/КЕВ
C7H5O3 ⁻ oOH-benzoate ⁻				$\Delta_f H(AH) = -495$	77PED RYL
* -660±13 ^a	1365±12 g	1332±8	IMRE		77MCM/KEB
C ₇ H ₅ O ₃ ⁻			Est	$\Delta_f H(AH) = -470\pm 8$	
pOH-benzoate	J.			$BDE(A-H) = 444 \pm 13$	
* -598±19 ^a 3.66±0.24	d 1402±11 g	1371±8	IMRE		77MCM/KEB
C <b>7H6Cl</b> - mCl-C6H4CH2-			Est	$\Delta_f H(AH) = 18\pm 8$ $BDE(A-H) = 356\pm 8$	80PRY
* 53±19 a 1.07±0.20	d 1565±11 ^g	1535±8	IMRE	552(7.77) - 66616	83CAL/BAR
C7H6CI			Est	$\Delta_f H(AH) = 18\pm 8$	
pCl-C ₆ H ₄ CH ₂ ⁻ * 53±19 ^a 1.11±0.20	d 1565±11 ^g	1535±8	IMRE	$BDE(A-H) = 360\pm8$	<i>80PRY</i> 83CAL/BAR
 С ₇ н ₆ F ⁻				A U/ALD 450.0	ood HJDAN
mF-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = -150\pm 8$ $BDE(A-H) = 358\pm 8$	
* -109±19 a 1.03±0.20	d 1571±11 g	1541±8	IMRE	,	83CAL/BAR
C7 <b>H</b> 6F ⁻ pF-C6H4CH2 ⁻				$\Delta_f H(AH) = -148 \pm 1$ PDE(A-H) = -280.12	77PED/RYL
* -90±12 a 0.87±0.24	d 1588±11 g	1558±8	IMRE	BDE(A-H)= 360±13	83CAL/BAR

Table 2. Negative Ion Table - Continued

	$\Delta H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₇ H ₆ FNO ₂ ⁻ 2-Me-4-F-nitrobenzene ⁻ * -246±21 ^b 0.95±0.05			Est2 IMRE	$\Delta_f H(A) = -155 \pm 17$	85FUK/MCI
C ₇ H ₆ FO ⁻ mF-C ₆ H ₃ OMe ⁻			Est	$\Delta_f H(AH) = -267 \pm 8$	
* -208±23 ^a	1589±15 ^g	1556±13	IMRB		83ING/NIB
C ₇ H ₆ FO ⁻ oF-C ₆ H ₃ OMe ⁻			Est	$\Delta_f H(AH) = -264 \pm 8$	
-175±32 ^a	1618±23 ^g	1586±21	IMRB		83ING/NIB
C ₇ H ₆ FO ⁻ pF-C ₆ H ₃ OMe ⁻			Est	$\Delta_f H(AH) = -267 \pm 8$	
-178±32 a	1618±23 g	1586±21	IMRB		83ING/NIB
C ₇ H ₆ NO ⁻ HN = C(Ph)O ⁻				$\Delta_f H(AH) = -101 \pm 13$	82TOR(SAB2
* -149±23 ^a	1482±11 ^g	1452±8	IMRE		86TAF
C ₇ H ₆ NO ⁻ PhCH=NO ⁻			Est	$\Delta_f H(AH) = 108 \pm 8$	
* 54±28 ^a	1477±20 ^g	1447±8 1453±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₇ H ₆ NO ⁻ mNO-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = 55\pm 4$ $BDE(A-H) = 360\pm 13$	
* 64±15 ^a 1.38±0.24 ^d	1539±11 g	1511±8	IMRE		86TAF
C ₇ H ₆ NO ⁻ pCHO-anilide ⁻			Est	$\Delta_f H(AH) = -34 \pm 4$	
* -101±15 ^a	1463±11 g	1432±8	IMRE		86TAF
C ₇ H ₆ NO ⁻ pNO-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = 55 \pm 4$	
* -3±15 a	1472±11 g	1444±8	IMRE		86TAF
C ₇ H ₆ NO ₂ ⁻ mNH ₂ -benzoate ⁻				$\Delta_f H(AH) = -289 \pm 4$ $BDE(A-H) = 444 \pm 13$	77NAB SAB
* -393±15 a 3.42±0.24 d	1426±11 ^g	1395±8	IMRE	· ,	77MCM/KEB
C ₇ H ₆ NO ₂ ⁻ mNO ₂ -C ₆ H ₄ CH ₂ ⁻				$\Delta_f H(AH) = 31 \pm 4$ $BDE(A-H) = 360 \pm 13$	77PED RYL
* 19±15 ^a	1518±11 ^g	1488±8	IMRE	, , , , , , , , , , , , , , , , , , ,	83CAL/BAR
C7H6NO2 ⁻ oNH2-benzoate ⁻				$\Delta_f H(AH) = -298 \pm 2$	77NAB SAB
* -422±14 a	1406±12 g	1377±8	IMRE		77MCM/KEB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₇ H ₆ NO ₂ ⁻ oNO ₂ -C ₆ H ₄ O	`Ho			Est2	$\Delta_f H(AH) = 53 \pm 13$	the second secon
* 13±23 ^a	····Z	1490±11 g	1459±8	IMRE		86TAF
C ₇ H ₆ NO ₂ - pNH ₂ -benzoa	te ⁻				$\Delta_f H(AH) = -294 \pm 4$ $BDE(A-H) = 444 \pm 13$	77NAB/SAB
* -397±15 a		1427±11 g	1397±8	IMRE		77MCM/KEB
C ₇ H ₆ NO ₂ ⁻ pNO ₂ -C ₆ H ₄ C	CH2-				$\Delta_f H(AH) = 30\pm4$	77PED/RYL
* -25±14 a	2	1475±10 g	1445±8	IMRE		86TAF
-23±14 ^a		1477±10 g	1447±8	IMRE		78CUM/KEB
C ₇ H ₆ NO ₃ ⁻ 2-Me-4-NO ₂	-phenoxide			Est	$\Delta_f H(AH) = -142 \pm 8$	
* -297±21 a	•	1375±12 ^g	1343±8	IMRE		81FUJ/MCI
C ₇ H ₆ N ₂ O ₄ -						
2-Me-3-NO ₂		<del>-</del> .		Est2	$\Delta_f H(A) = 203 \pm 13$	
* 69±17 ^b	1.39±0.05			IMRE		85FUK/MCI
C ₇ H ₆ O ⁻						
benzaldehyde					$\Delta_f H(A) = -37 \pm 2$	77PEDIRYL
−78±3 ^b	0.429±0.009			ECD		75WEN/KAO
	0.39±0.05			ECD		83ZLA/LEE
	0.42±0.01	·		ECD		67WEN/CHE
C ₇ H ₆ O ₂ ⁻	<del>.</del> .			<i>F</i> -4	A ((/A) 455.0	
methylbenzoqu * -334±18 b				Est	$\Delta_f H(A) = -155 \pm 8$	OFFICE ACTION
-334±18				TDEq		87KEB/CHO
	1.75±0.11 1.76±0.05			IMRE		85GRI/CAL
	1.70±0.03			IMRE	· · · · · · · · · · · · · · · · · · ·	85FUK/MCI
C7H7					$\Delta_f H(AH) = 50$	77PED RYL
PhCH ₂	000 0 = 4	4500 10 0	4844.5	n	$BDE(A-H) = 368\pm4$	82MCM/GOL
* 113±10 ^a	0.90±0.15 ^d	1593±10 g	1564±8	IMRE		79BAR/SCO
-	0.863±0.013			LPD		84DRZ/BRA2
	0.885±0.065	1600.21 9	1570.20	LPD		75RIC/STE
	2.35±0.07	1609±31 ^g	1579±29	IMRB SI		71BOH/YOU
	2.35±0.07 1.1			SI SI		76FAI/JOY 72PAG
	0.8			SI		
	0.8			SI		69PAG/GOO 68GAI/PAG
	0.0		1558±8	IMRE ⁰		79BAR/SCO
 С ₇ Н ₇ -			*	···-	$\Delta_f H(AH) = 183 \pm 1$	77PED/RYL
cycloheptatrier	nide ⁻				$BDE(A-H) = 305 \pm 8$	82MCM/GOL
	0.49±0.21 d	1570±12 g	1545±8	IMRE	, ,	79BAR/SCO
				IMREO		

Table 2. Negative Ion Table - Continued

			2. Negative 101		Committee	
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{\text{acid}}(AH)$ $\Delta G_{\text{aff}}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₇ H ₇ ⁻ norbornadieni	de ⁻				$\Delta_f H(AH) = 238 \pm 4$	80ROG/CHO
* 380±14 ^a		1672±10 g	1637±6 1628±21	IMRB IMRB	Between EtNH ₂ , nPrNH ₂	86LEE/SQU 81WRI/BEA
C ₇ H ₇ ClNO ₂ ⁻ pNO ₂ -C ₆ H ₄ C						11 11 11 11 11 11 11 11 11 11 11 11 11
			31	TDEq		82FRE/IKU
$C_7H_7F_2^-$ PhCH ₂ F $\cdot\cdot$ F						
* -230 °		102±8 ^g	69±8	IMRE		83LAR/MCM
$C_7H_7NO_2^-$						
mMe-nitrober				Est	$\Delta_f H(A) = 31 \pm 4$	
* -65±14 b	0.99±0.10			TDEq		87KEB/CHO
	0.93±0.11			IMRE		85GRI/CAL
	0.92±0.05			IMRE		85FUK/MCI
	0.8±0.1			ECD		83ZLA/LEE
$C_7H_7NO_2^-$						
oMe-nitroben					$\Delta_f H(A) = 53 \pm 8$	77PED RYL
* -36±18 b	0.92±0.10			TDEq		87KEB/CHO
	0.87±0.11			IMRE		85GRI/CAL
	0.89±0.05			IMRE		85FUK/MCI
$C_7H_7NO_2^-$						
pMe-nitrobenz					$\Delta_f H(A) = 31 \pm 4$	77PED RYL
* -61±13 ^b	$0.95 \pm 0.10$			TDEq		87KEB/CHO
	0.89±0.11			IMRE		85GRI/CAL
	0.91±0.05			IMRE		85FUK/MCI
C ₇ H ₇ NO ₃ -				Est	$\Delta_f H(AH) = -142 \pm 17$	
3-Me-4-NO ₂ - * -292±28 ^a	-phenoxide	- 1380±11 ^g	1350±8	IMRE		81FUJ/MCI
C ₇ H ₇ NO ₃ -						
mOMe-nitrobe	enzene-			Est	$\Delta_f H(A) = -90 \pm 4$	
* -191±14 b				TDEq	2411(7) = -3014	87KEB/CHO
17121	0.98±0.11			IMRE		85GRI/CAL
	0.7020.11					
C ₇ H ₇ NO ₃ -				<b>-</b> ·	A 11/4) 00 1	
pOMe-nitrobe * -178±14 b	nzene .			Est	$\Delta_f H(A) = -90 \pm 4$	A mar Frederic America
-1/8±14 °	0.91±0.10 0.85±0.11			TDEq IMRE		87KEB/CHO 85GRI/CAL
C-H-O-	·				A 1/(A1/) _ 100 1	
C ₇ H ₇ O ⁻ PhCH ₂ O ⁻					$\Delta_f H(AH) = -100\pm 1$ $BDE(A-H) = 436\pm 4$	77PED/RYL
	2.07±0.17	d 1548±12 g	1520±8	IMRE	DDE(N-11)- 40014	79BAR/SCO
*	2.142±0.01		102040	LPD		85MOY/DOD
		<del></del>	1519±8	IMRE ⁰		79BAR/SCO
			101710	TIVILLE		BANGOCO

Table 2. Negative Ion Table - Continued

$\Delta_{\mathbf{f}}H(\mathbf{X}\cdot\cdot\mathbf{Y}^{-})$ eV $\Delta$	∆H _{acid} (AH) \H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₇ H ₇ O ⁻ mMe-phenoxide ⁻				$\Delta_f H(AH) = -132 \pm 1$ BDE(A-H) = 362 \pm 8	79KUD KUD
* -200±11 a 2.19±0.19 d	1463±10 ^g	1434±8	IMRE	, ,	81FUJ/MCI
	1467±10 ^g	1438±8	IMRE		77MCM/KEB
C ₇ H ₇ O ⁻ oMe-phenoxide ⁻				$\Delta_f H(AH) = -124 \pm 1$ $BDE(A-H) = 362 \pm 13$	79KUD KUD
* -192±13 ^a 2.19±0.26 ^d	1462±12 g	1431±8	IMRE	DDE(A 11) = 002110	81FUJ/MCI
* < 2.36±0.06	1,0221	1.0120	PD		75RIC/STE2
· <b></b>	1465±12 g	1434±8	IMRE		77MCM/KEB
C ₇ H ₇ O ⁻				$\Delta_f H(AH) = -125 \pm 2$	79KUD KUD
pMe-phenoxide ⁻ * -190±11 ^a 2.16±0.23 ^d	1466±10 ^g	1437±8	IMRE	BDE(A-H)= 362±13	81FUJ/MCI
-190±11 Z.10±0.Z3	1466±10 g	1437±8 1437±8	IMRE		79BAR/SCO
	1471±10 g	1442±8	IMRE		77MCM/KEB
C ₇ H ₇ O ₂ ⁻ mOMe-phenoxide ⁻			Est	$\Delta_f H(AH) = -250 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -324±18 ^a 2.26±0.19 ^d	1456±10 g	1427±8	IMRE	332(7.17)= 33213	81FUJ/MCI
	1459±10 g	1431±8	IMRE		77MCM/KEB
C ₇ H ₇ O ₂ - oOMe-phenoxide-		······	Est2	$\Delta_f H(AH) = -264 \pm 17$	
*		1433±8	IMRE		77MCM/KEB
C ₇ H ₇ O ₂ ⁻ pOMe-phenoxide ⁻			Est	$\Delta_f H(AH) = -242\pm 8$ $BDE(A-H) = 362\pm 13$	
* -306±18 ^a 2.15±0.23 ^d	1466±10 ^g	1437±8	IMRE		81FUJ/MCI
	1469±10 g	1440±8	IMRE		77MCM/KEB
C ₇ H ₇ O ₂ S ⁻ PhSO ₂ CH ₂ ⁻			····	$\Delta_f H(AH) = -254 \pm 3$	77PED/RYL
* -266±13 a	1518±10 ^g	1487±8	IMRE		78CUM/KEB
C ₇ H ₇ O ₂ S ⁻ mSOMe~phenoxide ⁻			Est	$\Delta_f H(AH) = -194 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -297±18 ^a 2.55±0.19 ^d	1428±10 g	1399±8	IMRE		81FUJ/MCI
C7H7O2S ⁻ pSOMe-phenoxide ⁻			Est	$\Delta_f H(AH) = -194 \pm 8$	
* -312±19 a	1412±11 ^g	1383±8	IMRE		81FUJ/MCI
C7H7O3S ⁻ mSO ₂ Me-phenoxide ⁻			Est	$\Delta_f H(AH) = -443 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -567±18 a 2.77±0.19 d	1406±10 g	1377±8	IMRE	· ,	81FUJ/MCI
C7H7O3S  pSO ₂ Me-phenoxide			Est	$\Delta_f H(AH) = -443 \pm 8$	
* -587±19 ^a	1385±11 ^g	1356±8	IMRE		81FUJ/MCI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ E $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
C7H7S ⁻ MeSC ₆ H ₄ ⁻					$\Delta_f H(AH) = BDE(A-H) =$		77PED/RYL
185±25 ^a		1617±23 ^g	1586±21 1583±33	IMRB IMRB ^O			85ING/NIB 85ING/NIB
C ₇ H ₇ S ⁻ PhSCH ₂ ⁻					$\Delta_f H(AH) =$	98±1	77PED/RYL
* 164±12 ^a		1597±11 ^g	1566±8 1560±8	IMRE IMRE ⁰			85ING/NIB 85ING/NIB
C7H8Cl- PhMe··Cl-							
			17	TDEq			82FRE/IKU
C7H8ClO- PhOMe··Cl-							
			31	TDEq			82FRE/IKU
C7H8ClO- pMe-C6H4OH	· C1 ⁻						
* -453±11 ^c		101±8	69±8	TDEq			77CUM/FRE
C7H8N- PhNMe-		_			$\Delta_f H(AH) = BDE(A-H) =$		78COL/BEN 82MCM/GOL
* 81±15 ^a 1.	.57±0.20	d 1526±11 g	1496±8	IMRE			86TAF
C ₇ H ₈ N ⁻ mMe-anilide ⁻				Est	$\Delta_f H(AH) = BDE(A-H) =$		
* 59±18 ^a 1.	.51±0.23	d 1535±10 ^g	1505±8 1507±8	IMRE IMRE ⁰			79BAR/SCO 79BAR/SCO
C7H8N ⁻ pMe-anilide ⁻				Est	$\Delta_f H(AH) = BDE(A-H) =$		
* 65±15 ^a 1.	.49±0.24	d 1537±11 ^g	1507±8 1510±8	IMRE IMRE ⁰			79BAR/SCO 79BAR/SCO
C7H8NO- pOMe-anilide-				Est	$\Delta_f H(AH) = -BDE(A-H) = -BDE$		
* -53±18 ^a 1.	.50±0.23	d 1536±10 ^g	1505±8 1509±8	IMRE IMRE ⁰			79BAR/SCO 79BAR/SCO
${ m C_7H_8NO_2S^-}$ mSO $_2$ Me-anilide	<del></del>			Est	$\Delta_f H(AH) = -BDE(A-H) = -BDE$		
* -291±15 ^a 2.		d 1475±11 ^g	1445±8	IMRE	, ,		86TAF
C ₇ H ₈ NO ₂ S ⁻ pSO ₂ Me-anilide	_			Est	$\Delta_f H(AH) = -BDE(A-H) =$		
* -312±15 ^a 2.		d 1455±11 ^g	1424±8	IMRE			86TAF

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y)$	Method	Comment	Reference
C ₇ H ₈ NS		· · · · · · · · · · · · · · · · · · ·	Est	$\Delta_f H(AH) = 104 \pm 8$	
mSMe-anilide  * 89±18 ^a 1.71±0.23 ^d	1515 10 9	1404 0	n (DT	$BDE(A-H) = 368 \pm 13$	#07.4 P (0.00
* 89±18 ^a 1.71±0.23 ^d	1515±10 g	1484±8 1492±8	IMRE IMRE ^C	•	79BAR/SCO 79BAR/SCO
		147216			77BAIQ5CO
С ₇ Н9 ⁻			Est	$\Delta_f H(AH) = 133\pm 4$	
heptatrienide -					
* 1.27±0.03			PD		78ZIM/GYG
C ₇ H ₉ -				$\Delta_f H(AH) = 90\pm 4$	80ROG/CHO
norbornenide _				•	
242±19 ^a	1682±15 g	1648±13	IMRB	between NH ₃ , EtNH ₂	86LEE/SQU
C ₇ H ₉ O ⁻				$\Delta_f H(AH) = -168 \pm 3$	78STE
2-norbornanone enolate					,0012
* 1.61±0.05			PD		78ZIM/JAC
C-WO-	<del></del>			A 11/A10 - 070.4	·
C ₇ H ₁₁ O ⁻ 2,5-diMe-cyclopentanone en	olate [—]		Est	$\Delta_f H(AH) = -272 \pm 4$	
* 1.49±0.04	o.u.c		PD		78ZIM/JAC
	<del> </del>				
C ₇ H ₁₁ O				$\Delta_f H(AH) = -248 \pm 2$	77PED/RYL
cycloheptanone enolate  * 1.48±0.04			PD		78ZIM/JAC
1,1020.01					/ozingjae
$C_7 H_{11} O_4^-$			Est	$\Delta_f H(AH) = -839\pm2$	
HC(CO ₂ Et) ₂	· · · · · · · · · · · · · · · · · ·		_		
* -912±12 ^a	1457±10 g	1432±8	IMRE		78CUM/KEB
C ₇ H ₁₃ O ⁻			Est	$\Delta_f H(AH) = -301 \pm 4$	
$EtCH = C(nPr)O^{-}$				BDE(A-H) = 389±8	
* -296±18 ^a 1.72±0.06	1535±14 ^e		PD		77ZIM/REE
2 II 0-					
$C_7H_{13}O^ Me_2C = C(iPr)O^-$				$\Delta_f H(AH) = -311 \pm 1$ BDE(A-H) = 364 \pm 13	77PED/RYL
* -307±19 a 1.47±0.05	1535±18 ^e	1505±23 h	PD	BDE(A-N)= 304±13	77ZIM/REE
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
C ₇ H ₁₃ O ⁻			Est	$\Delta_f H(AH) = -305\pm 4$	
c-C ₆ H ₁₁ -CH ₂ O	4774 40 0			$BDE(A-H) = 435\pm8$	
* -271±14 ^a 1.90±0.19 ^d	1564±10 g	1536±8	IMRE		86TAF
C ₇ H ₁₃ S			Est	$\Delta_f H(AH) = -116\pm 4$	
c-C ₆ H ₁₁ -CH ₂ S ⁻				$BDE(A-H) = 364\pm10$	
* -171±16 ^a 2.09±0.23 ^d	1475±12 g	1449±8	IMRE		86TAF
	· <u> </u>		<u> </u>	A 1//10	
C ₇ H ₁₅ O ⁻			Est	$\Delta_f H(AH) = -369 \pm 4$ $RDE(A, H) = -498 \pm 4$	
(iPr) ₂ CHO					
(iPr) ₂ CHO ⁻ * -348±15 ^a 2.1±0.2 ^d	1551±11	1523±13 h	CIDC	$BDE(A-H) = 438\pm4$	83BOA/HOU

Table 2. Negative Ion Table - Continued

		$d(AH)$ Method $X \cdot \cdot Y$	i Comment	Reference
C ₇ H ₁₅ O ⁻ Et ₃ CO ⁻		Est	$\Delta_f H(AH) = -366\pm4$ $BDE(A-H) = 440\pm4$	
* -344±15 a 2.1±0.2 d	1552±11 1524±	:13 h CIDC	•	83BOA/HOU
	1549±10	CIDC	0	83BOA/HOU
C ₇ H ₁₅ O ⁻ nBuC(Me) ₂ O ⁻	100 to 10	Est	$\Delta_f H(AH) = -373\pm 4$ $BDE(A-H) = 440\pm 4$	
* -348±15 a 2.0±0.2 d	1555±11 1527±	13 h CIDC	•	83BOA/HOU
	1552±10	CIDC	0	83BOA/HOU
C ₇ H ₁₅ O ⁻	,		$\Delta_f H(AH) = -336 \pm 2$	77PED RYL
nC ₇ H ₁₅ O		_	BDE(A-H)= 436±4	
* -307±13 ^a 2.0±0.2 ^d	1559±11 1531±	:13 ^h CIDC		83BOA/HOU
	1555±10	CIDC	0	83BOA/HOU
С ₇ Н ₁₅ О-		Est	$\Delta_f H(AH) = -371 \pm 4$	
tBuCH(Et)O	~		$BDE(A-H) = 438\pm4$	
* -353±16 ^a 2.10±0.17 ^d	1548±12 ^g 1520±			79BAR/SCO
	1519±	8 IMRE		79BAR/SCO
$C_7H_{15}OS_2^-$				
MeOH··5,5-diMe-1,3-dithia				
-287±38 ^c	62±10 ^g 34±7	' IMRE		84CAL/ROZ
C ₇ H ₁₇ O ₂ -				
EtOH··tBuCH2O				
-605±24 ^c	80±10 ^g 53±8	IMRE		84CAL/ROZ
C ₇ H ₁₇ O ₂ ⁻				
nPrOH··tBuO				
−615±23 ^c	85±10 g 57±8	IMRE		84CAL/ROZ
C ₈ F ₄ N ₂ -				
pCN-perfluorobenzonitrile		Est	$\Delta_f H(A) = -417 \pm 17$	
* -599±26 ^b 1.89±0.10		TDEq	·	87KEB/CHO
1.89±0.10		IMRE		86CHO/GRI
C ₈ HN ₂ O ₂ -				······································
2,3-diCN-benzoquinonide				
1.82±0.09		SI		66FAR/PAG
C ₈ H ₃ F ₅ O ⁻				
C ₆ F ₅ COCH ₃ -		Est	$\Delta_f H(A) = -1052 \pm 17$	
* -1143±26 b 0.94±0.10		TDEq	•	87KEB/CHO
0.94±0.10		IMRE		86CHO/GRI
C ₈ H ₃ F ₆ NO ₂ -				
3,5-diCF ₃ -nitrobenzene		<i>E</i> st	$\Delta_f H(A) = -1276 \pm 4$	
* -1449±14 ^b 1.79±0.10		TDEq		87KEB/CHO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta H_{acid}(AH)$ $\Delta G_{acid}(AH)$ $\Delta f_{acid}(AH)$ $\Delta G_{acid}(AH)$		Reference
C ₈ H ₃ F ₆ O ⁻ 3,5-diCF ₃ -phenoxide ⁻	Est $\Delta_f H(AH) = -1485 \pm 17$ $BDE(A-H) = 362 \pm 13$	
* -1636±28 ^a 3.05±0.24 ^d 1380±11 ^g 1351±8	IMRE	86TAF
C ₈ H ₄ F ₃ N ⁻		
mCF ₃ -benzonitrile ⁻	Est $\Delta_f H(A) = -434 \pm 8$	
* -499±18 ^b 0.67±0.10	TDEq	87KEB/CHO
0.67±0.09	TDEq	86CHO/KEB
C ₈ H ₄ F ₃ N ⁻		
oCF ₃ -benzonitrile.	Est $\Delta_f H(A) = -452 \pm 4$	
* -519±14 ^b 0.70±0.10	TDEq	87KEB/CHO
C ₈ H ₄ F ₃ N ⁻		
pCF ₃ -benzonitrile ⁻ ·	Est $\Delta_f H(A) = -452\pm 4$	
* -525±14 ^b 0.76±0.10	TDEq	87KEB/CHO
$C_8H_4F_3O_2^-$	Est $\Delta_f H(AH) = -976\pm8$	
mCF ₃ -benzoate	$BDE(A-H) = 444 \pm 13$	
* -1114±19 ^a 3.77±0.24 ^d 1392±11 ^g 1361±8	IMRE	86TAF
C ₈ H ₄ F ₃ O ₂ -	Est $\Delta_f H(AH) = -976 \pm 8$	
pCF3-benzoate	$BDE(A-H) = 444 \pm 13$	
* -1115±19 ^a 3.78±0.24 ^d 1391±11 ^g 1361±8	IMRE	86TAF
C ₈ H ₄ F ₆ N ⁻	Est $\Delta_f H(AH) = -1302\pm 8$	
3,5-diCF ₃ -anilide	$BDE(A-H) = 368 \pm 13$	
• -1377±19 ^a 2.33±0.24 ^d 1456±11 ^g 1425±8	IMRE	86TAF
C ₈ H ₄ NO ₂ ⁻	Est $\Delta_f H(AH) = -158 \pm 13$	
mCN-benzoate	$BDE(A-H) = 444 \pm 13$	
• -309±23 ^a 3.90±0.24 ^d 1379±11 ^g 1348±8	IMRE	77MCM/KEB
C ₈ H ₄ NO ₂ -	Est $\Delta_f H(AH) = -158 \pm 13$	
pCN-benzoate	$BDE(A-H) = 444\pm13$	0en ( 0) ( (((1)))
* -314±23 ^a 3.95±0.24 ^d 1374±11 ^g 1345±8	IMRE	77MCM/KEB
C ₈ H ₄ N ₂ -		
mCN-benzonitrile.	$\Delta_f H(A) = 363 \pm 2$	80SAT/SAK
* 275±12 b 0.91±0.10	TDEq	87KEB/CHO
0.91±0.09	TDEq	86CHO/KEB
$C_8H_4N_2^-$		
o-CN-benzonitrile.	Est2 $\Delta_f H(A) = 363 \pm 13$	OSTED IOUA
* 271±22 ^b 0.95±0.10 0.95±0.09	TDEq TDEq	87KEB/CHO 86CHO/KEB
0.95±0.09 1.1±0.1	SI	67FAR/PAG
С. И. М. –		
C ₈ H ₄ N ₂ - p-CN-benzonitrile-	Est2 $\Delta_f H(A) = 363 \pm 8$	
* 257±18 ^b 1.10±0.10	TDEq	87KEB/CHO
	TDEq	86CHO/KEB

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₄ O ₃ -					
phthalic anhydride					
* -487±12 ^b 1.21±0.10			TDEq		87KEB/CHO
* 1.20±0.05			IMRE		85FUK/MCI
C ₈ H ₅ ⁻ PhC≡C ⁻				$\Delta_f H(AH) = 306 \pm 2$ BDE(A-H) = 552 \pm 21	85DAVI ALL
* 327±15 ^a 3.25±0.36 ^d	1551±13 g	1518±8	IMRE	3322	79BAR/SCO
		1518±8	IMRE ^C		79BAR/SCO
C ₈ H ₅ CIN ⁻			Est	$\Delta_f H(AH) = 156\pm4$	
mCI-C ₆ H ₄ CHCN	1441 40 0	1.110.0	n		
* 68±18 ^a	1441±13 ^g	1412±8	IMRE		81FUJ/MCI
C ₈ H ₅ CIN ⁻ pCI-C ₆ H ₄ CHCN ⁻			Est	$\Delta_f H(AH) = 156\pm4$	
* 70±18 a	1444±13 g	1416±8	IMRE		81FUJ/MCI
C ₈ H ₅ FN ⁻			Est	$\Delta_f H(AH) = -7\pm 4$	
mF-C ₆ H ₄ CHCN ⁻ * -70±19 ^a	1467±15 g	1439±8	IMRE		86TAF
 C ₈ H ₅ FN ⁻			Est	$\Delta_f H(AH) = -7\pm 4$	
pF-C ₆ H ₄ CHCN					
* -77±15 a	1460±11 ^g	1433±8	IMRE		86TAF
C ₈ H ₅ F ₃ NO ⁻			Est2	$\Delta_f H(AH) = -706 \pm 13$	
$PhN = C(CF_3)O^{-1}$ * $-841\pm23$ a	1395±11 ^g	1366±8	IMRE		86TAF
V1120					
C ₈ H ₅ NO ⁻			_		
mCHO-benzonitrile-			Est	$\Delta_f H(A) = 99 \pm 4$	OFFED ON O
* 2±14 ^b 1.00±0.10			TDEq		87KEB/CHO
1.01±0.09			TDEq		86CHO/KEB
C ₈ H ₅ NO ⁻					
pCHO-benzonitrile-			Est	$\Delta_f H(A) = 99 \pm 4$	
* -19±14 ^b 1.22±0.10			TDEq		87KEB/CHO
1.22±0.09			TDEq		86CHO/KEB
C ₈ H ₅ N ₂ O ₂ -			Est	$\Delta_f H(AH) = 171 \pm 4$	
mNO ₂ -C ₆ H ₄ CHCN ⁻ * 53±19 ^a	1412±15 ^g	1384±8	IMRE		86TAF
JJII7	1412113.6	130410	HVIRE		
$C_8H_5N_2O_2^-$			Est	$\Delta_f H(AH) = 171 \pm 4$	
pNO ₂ -C ₆ H ₄ CHCN ⁻					a. www.u.a ==
* 19±18 ^a	1378±13 ^g	1350±8	IMRE		81FUJ/MCI
C ₈ H ₅ O ₃ ⁻			Est	$\Delta_f H(AH) = -414 \pm 8$	
pCHO-benzoate				BDE(A-H) = 444±13	
* -550±19 ^a 3.74±0.24 ^d	1395±11 ^g	1363±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta_f H(X \cdot \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
$C_8H_6ClO^-$ $mCl-C_6H_4C(=CH_2)O^-$			Est ∆	_f H(AH)= -116±8	
* -152±18 ^a	1495±10 g	1466±8	IMRE		79BAR/SCO
C ₈ H ₆ Cl ₂ O ₂ -					
2,5-diCl-3,6-diMe-benzo * -437±21 ^b 2.14±0.05	quinone.		Est2 △ IMRE	_f H(A)= -230±17	85FUK/MCI
C ₈ H ₆ F ₃ -			Est ∆	_f H(AH)= −622±8	
mCF ₃ -C ₆ H ₄ CH ₂ ⁻ * -608±18 ^a	1545±10 ^g	1515±8	IMRE		83CAL/BAR
C ₈ H ₆ F ₃ ⁻			Est ∆	; H(AH)= -622±8	
pCF ₃ -C ₆ H ₄ CH ₂ - * -617±18 ^a	1536±10 g	1505±8	IMRE		83CAL/BAR
C ₈ H ₆ F ₃ O ₂ -					
pSO ₂ CF ₃ -C ₆ H ₄ CH ₂ -*	1454±11 ^g	1425±8	IMRE		86TAF
C ₈ H ₆ N ⁻			Est Δ _t	H(AH)= 186±4	
PhCHCN ⁻ * 123±18 ^a	1467±13 ^g	1440±8	IMRE		81FUJ/MCI
120210	1471±13 g	1443±8	IMRE		78CUM/KEB
	- // /	1451±8	IMREO		79BAR/SCO
C ₈ H ₆ N ⁻			$\Delta_{t}$	H(AH)= 157±5	77PED RYL
* 89±15 ^a	1461±11 ^g	1431±8	IMRE		86TAF
C ₈ H ₆ N ⁻			Est $\Delta_f$	H(AH)= 183±8	
mCN-C ₆ H ₄ CH ₂  * 198±18 ^a	1545±10 g	1515±8	IMRE		83CAL/BAR
C8H6N			Est $\Delta_f$	H(AH)= 182±8	
pCN-C ₆ H ₄ CH ₂  * 162±19 ^a	1510±11 ^g	1479±10	IMRE		83CAL/BAR
C ₈ H ₆ O ₂ -					
p-CHO-benzaldehyde ⁻ · -211 ^b 0.6			Est $\Delta_f$ ECD	H(A)= -157±8	68KUH/LEV
C ₈ H ₇ ClO-			<b>-</b> .,	11/4)	
mCl-acetophenone ⁻ . -173±9 b 0.583±0.006			Est $\Delta_f$	H(A)= -117±8	69STE/WEN
C ₈ H ₇ ClO ⁻				· · · · · · · · · · · · · · · · · · ·	
pCl-acetophenone			•	$H(A) = -117 \pm 8$	A A ANDREW SERVICE -
-172±9 b 0.567±0.005			ECD		69STE/WEN

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₇ ClO ₂ ⁻			·····		
2-Cl-3,6-diMe-benzoquinor * -398±21 b 1.93±0.05	ne  .		Est2 IMRE	$\Delta_f H(A) = -212 \pm 17$	85FUK/MCI
C ₈ H ₇ FO			··		
mF-acetophenone  -336±11 ^b 0.58±0.03			Est ECD	$\Delta_f H(A) = -280 \pm 8$	75WEN/KAO
C ₈ H ₇ FO ⁻					
oF-acetophenone ⁻ 323±22 b 0.442±0.009			Est ECD	$\Delta_f H(A) = -280 \pm 21$	75WEN/KAO
C ₈ H ₇ FO ⁻					
pF-acetophenone ⁻ 318±10 b 0.40±0.01			Est ECD	$\Delta_f H(A) = -280 \pm 8$	75WEN/KAO
C ₈ H ₇ N ⁻				**************************************	to and the second se
oMe-benzonitrile-			Est	$\Delta_f H(A) = 178 \pm 1$	
* 110±11 ^b 0.70±0.10 110±9 ^b 0.70±0.09			TDEq TDEq		87KEB/CHO 86CHO/KEB
C ₈ H ₇ N ⁻					
pMe-benzonitrile. * 109±9 b 0.76±0.09			<i>Est</i> TDEq	$\Delta_f H(A) = 182 \pm 1$	86СНО/КЕВ
C ₈ H ₇ NO ₃ ⁻					
mCOMe-nitrobenzene*  * -229±14 b 1.31±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = -103 \pm 4$	87КЕВ/СНО
C ₈ H ₇ NO ₃ ⁻					
oCOMe-nitrobenzene			Est2	$\Delta_f H(A) = -84 \pm 8$	
* -217±18 ^b 1.38±0.10			TDEq		87KEB/CHO
C ₈ H ₇ NO ₃ ⁻					
pCOMe-nitrobenzene-			Est	$\Delta_f H(A) = -103 \pm 4$	
* -252±14 ^b 1.55±0.10			TDEq		87KEB/CHO
C ₈ H ₇ O ⁻			5.54	$\Delta_f H(AH) = -87 \pm 2$	77PED RYL
$CH_2 = C(Ph)O^-$ * -105±13 ^a	1512±11 g	1483±8	D-EA IMRE	$BDE(A-H) = 399 \pm 18$	79BAR/SCO
* 2.06±0.08	1312111	1-10020	PD		77ZIM/REE
-101±13 ^a	1516±11 ^g	1487±8	IMRE		78CUM/KEB
		1491±8	IMRE ^C	•	79BAR/SCO
C ₈ H ₇ O ⁻ PhCH = CHO ⁻			Est	$\Delta_f H(AH) = -53\pm4$	
* 2.10±0.08			PD		77ZIM/REE
C ₈ H ₇ O ⁻	·		Est	$\Delta_f H(AH) = -71 \pm 8$	
mCHO-C ₆ H ₄ CH ₂  * -47±19 ^a	1554±11 ^g	1524±8	IMRE		83CAL/BAR

Table 2. Negative Ion Table - Continued

	$H_{\text{acid}}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₇ O ⁻ pCHO-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = -75\pm8$	
* -100±21 ^a	1505±12 ^g	1475±10	IMRE		86TAF
C ₈ H ₇ O ₂ ⁻ PhCH ₂ CO ₂ ⁻			Est	$\Delta_f H(AH) = -320\pm 4$ $BDE(A-H) = 444\pm 8$	
* -423±15 ^a 3.40±0.20 ^d	1428±11 ^g	1398±8	IMRE		86TAF
C ₈ H ₇ O ₂ ⁻ mCOMe-phenoxide ⁻			Est	$\Delta_f H(AH) = -264 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -361±18 ^a 2.50±0.19 ^d	1433±10 ^g	1404±8	IMRE	DDL(A-11)— GOZEO	81FUJ/MCI
C ₈ H ₇ O ₂ -				$\Delta_f H(AH) = -329 \pm 1$	76COLJIM
mMe-benzoate ⁻ * -437±12 ^a 3.46±0.24 ^d	1422±11 ^g	1391±8	IMRE	BDE(A-H) = 444±13	77MCM/KEB
C ₈ H ₇ O ₂ -	<del></del>			$\Delta_f H(AH) = -320 \pm 1$	76COLJIM
oMe-benzoate ⁻ * -436±13 ^a	1415±12 g	1384±8	IMRE		77MCM/KEB
C ₈ H ₇ O ₂			Est	$\Delta_f H(AH) = -264 \pm 8$	
pCOMe-phenoxide ⁻ * -390±19 ^a	1404±11 g	1375±8	IMRE		81FUJ/MCI
C ₈ H ₇ O ₂			·	$\Delta_f H(AH) = -332 \pm 1$	76COLJIM
pMe-benzoate ⁻ * -440±12 ^a 3.46±0.24 ^d	1422±11 ^g	1392±8	IMRE	$BDE(A-H) = 444 \pm 13$	77MCM/KEB
C ₈ H ₇ O ₃ -			Est	$\Delta_f H(AH) = -468 \pm 8$	
mCO ₂ Me-phenoxide ⁻ * -559±18 ^a 2.44±0.19 ^d	1439±10 g	1410±8	IMRE	$BDE(A-H) = 362 \pm 8$	81FUJ/MCI
C ₈ H ₇ O ₃ ⁻			-	$\Delta_f H(AH) = -446 \pm 1$	78COLIJIM
mOMe-benzoate ⁻ * -559±12 ^a 3.51±0.24 ^d	1417±11 ^g	1386±8	IMRE	$BDE(A-H) = 444 \pm 13$	77MCM/KEB
C ₈ H ₇ O ₃ ⁻	***************************************		Est	$\Delta_f H(AH) = -452 \pm 8$	
oOMe-benzoate ⁻ * -567±19 ^a	1415±11 ^g	1386±8	IMRE		77MCM/KEB
C ₈ H ₇ O ₃ ⁻			Est	$\Delta_f H(AH) = -468 \pm 8$	
pCO ₂ Me-phenoxide ⁻ * -587±19 ^a	1411±11 ^g	1382±8	IMRE		81FUJ/MCI
C ₈ H ₈ -				4 ///	7-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2
cyclooctatetraene  . 242±5 ^b 0.58±0.04			ECD	$\Delta_f H(A) = 297 \pm 1$	77PEDIRYL 69WEN/RIS
< 0.8			PD		79GYG/PET

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₈ ClO ⁻					
PhCOMe · · Cl					
		40	TDEq		82FRE/IKU
C ₈ H ₈ NO ⁻				$\Delta_f H(AH) = -129 \pm 1$	77PED/RYL
$PhN = C(Me)O^{-}$					
* -205±11 ^a	1454±10 g	1425±8	IMRE		86TAF
	1476±10 g	1447±8	IMRE		78CUM/KEB
C ₈ H ₈ NO ⁻			Est	$\Delta_f H(AH) = -100 \pm 4$	
mCOMe-anilide				BDE(A-H) = 368±13	
* -125±15 ^a 1.82±0.24 ^d	1505±11 g	1474±8	IMRE		86TAF
C ₈ H ₈ NO ⁻			Est2	$\Delta_f H(AH) = -88\pm4$	
pCOMe-anilide			-912	27.17.17 0027	
* -148±15 ^a	1470±11 g	1439±8	IMRE		86TAF
C ₈ H ₈ NO ₂ ⁻	****		Est	A. H/AH) = 200.4	
mCO ₂ Me-anilide			Est	$\Delta_f H(AH) = -300 \pm 4$ $BDE(A-H) = 368 \pm 13$	
* -322±15 ^a 1.78±0.24 ^d	1509±11 g	1478±8	IMRE	BBE(A-1)/= 000110	86TAF
	· · · · · · · · · · · · · · · · · · ·				
C ₈ H ₈ NO ₂			Est	$\Delta_f H(AH) = -300 \pm 4$	
pCO ₂ Me-anilide ⁻ * -356±15 ^a	1475 11 9	1444.0	n (DP		86TAF
-330#13	1475±11 ^g	1444±8	IMRE		001AF
C ₈ H ₈ O ⁻					
acetophenone.				$\Delta_f H(A) = -87 \pm 2$	77PED/RYL
-119±2 b 0.334±0.004			ECD		75WEN/KAO
0.334±0.004			ECD		67WEN/CHE
C ₈ H ₈ O ⁻					
mMe-benzaldehyde			Est	$\Delta_f H(A) = -71 \pm 8$	
-110±10 ^b 0.41±0.01			ECD		75WEN/KAO
CoHoO-					
C ₈ H ₈ O ⁻ pMe-benzaldehyde ⁻ ·			Est	$\Delta_f H(A) = -75 \pm 8$	
-111±10 b 0.37±0.02			ECD		75WEN/KAO
C ₈ H ₈ O ₂ -			Easo	A . LI/A) 197+9	
2,5-diMe-benzoquinone  .  * -358±18 b 1.77±0.10			<i>Est2</i> TDEq	$\Delta_f H(A) = -187 \pm 8$	87КЕВ/СНО
			IMRE		85GRI/CAL
1.72±0.11			HVINE		0,014,0115
C ₈ H ₈ O ₂ ⁻					
2,6-diMe-benzoquinone			Est	$\Delta_f H(A) = -187 \pm 8$	<u> </u>
* -359±18 ^b 1.78±0.10			TDEq		87KEB/CHO
1.67±0.05			IMRE		85FUK/MCI
C ₈ H ₈ O ₂ ⁻					
mOMe-benzaldehyde.			Est	$\Delta_f H(A) = -182 \pm 8$	
-224±13 b 0.43±0.04			ECD	•	75WEN/KAC

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₈ H ₈ O ₂ ⁻					
methyl benzoate.				$\Delta_f H(A) = -288 \pm 7$	77PED/RYL
–305 ^b 0.2			ECD		68KUH/LEV
 С ₈ Н ₈ О2 [_]					
oOH-acetophenone-			Est2	$\Delta_f H(A) = -100 \pm 13$	
* -184±17 ^b 0.86±0.05			IMRE		85FUK/MCI
C ₈ H ₈ O ₄ ⁻					
2,6-diMeO-benzoquinone					
* 1.73±0.10			TDEq		87KEB/CHO
 С ₈ Н9 [_]					
2-methylenenorborn-5-en-3	-ide				
*	1632±10 g	1603±8	IMRB		86LEE/SQU
				$\Delta_f H(AH) = 29$	77PED/RYL
PhCHMe ⁻				BDE(A-H)= 354±8	81ROB/STE
* 88±10 ^a 0.80±0.19 ^d	1589±10 g	1562±8	IMRE		79BAR/SCO
		1556±8	IMREO		79BAR/SCO
 С ₈ Н9 ⁻					, , , , , , , , , , , , , , , , , , , ,
bicyclo[3.2.1]octa-2,6-dien-4	-ide				
*	1588±11 ^g	1559±8	IMRE		86LEE/SQU
				$\Delta_f H(AH) = 17$	77PED/RYL
mMe-C ₆ H ₄ CH ₂				BDE(A-H)= 368±9	86HAY KRU
* 82±12 a 0.89±0.22 d	1595±12 g	1564±10	IMRE		83CAL/BAR
 С ₈ Н9 [~]		· · · · · · · · · · · · · · · · · · ·		$\Delta_f H(AH) = 18\pm 1$	77PED RYL
pMe-C ₆ H ₄ CH ₂				BDE(A-H) = 367±10	86HAY KRU
* 86±12 a 0.84±0.22 d	1598±11 ^g	1568±10	IMRE		79BAR/SCO
C ₈ H ₉ NO ₂ -					
1,2-diMe-3-nitrobenzene			Est2	$\Delta_f H(A) = 13 \pm 13$	
* -70±22 b 0.86±0.10			TDEq	•	87KEB/CHO
0.81±0.11			IMRE		85GRI/CAL
0.86±0.05			IMRE		85FUK/MCI
C ₈ H ₉ NO ₂ -					
1,2-diMe-4-nitrobenzene			Est	$\Delta_f H(A) = -1 \pm 8$	
* -85±13 ^b 0.87±0.05			IMRE	•	85FUK/MCI
C ₈ H ₉ NO ₂ -	<del></del>				
1,3-diMe-2-nitrobenzene			Est	$\Delta_f H(A) = 40 \pm 13$	
* -33±17 b 0.76±0.05			IMRE	1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	85FUK/MCI
C ₈ H ₉ NO ₂ ⁻					
1,3-diMe-4-nitrobenzene			Est	$\Delta_f H(A) = 20 \pm 8$	
* -60±13 b 0.83±0.05					

Table 2. Negative Ion Table - Continued

	∆H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₉ O ⁻ mEt-phenoxide ⁻				$\Delta_f H(AH) = -146\pm 2$ BDE(A-H) = 362±8	77PED/RYL
* -215±11 ^a 2.20±0.19 ^d	1461±10 ^g	1433±8	IMRE	, ,	81FUJ/MCI
C8H9O ⁻ pEt-phenoxide ⁻				$\Delta_f H(AH) = -144 \pm 1$ BDE(A-H) = 362 \pm 8	77PED/RYL
* -210±10 ^a 2.18±0.19 ^d	1464±10 ^g	1435±8	IMRE		81FUJ/MCI
C ₈ H ₉ OS ⁻ pSOMe-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = -32\pm8$	
* -31±19 a	1531±11 ^g	1503±8	IMRE		86TAF
C ₈ H ₉ O ₂ S ⁻ PhSO ₂ CHMe ⁻	the second se	***************************************	Est	$\Delta_f H(AH) = -280 \pm 4$	
* -283±13 ^a	1527±8 g	1495±8	IMRE		78CUM/KEB
C ₈ H ₉ O ₂ S ⁻ pSO ₂ Me-C ₆ H ₄ CH ₂ ⁻			-	$\Delta_f H(AH) = -273 \pm 3$	77PED/RYL
* -302±14 a	1501±11 ^g	1473±8	IMRE		86TAF
C ₈ H ₉ O ₃ [−] PhOH··MeCO ₂ [−]	109±4	79±7	TDAs		86MEO/SIE2
C ₈ H ₁₀ Cl ⁻ PhEt··Cl ⁻					
		21	TDEq		82FRE/IKU
C ₈ H ₁₀ Cl ⁻ m-xylene··Cl ⁻		16	TDEq		82FRE/IKU
C ₈ H ₁₀ Cl ⁻		·			, , , , , , , , , , , , , , , , , , ,
p-xylene · · Cl		16	TDEq		82FRE/IKU
C ₈ H ₁₀ N ⁻ PhNEt				$\Delta_f H(AH) = 56 \pm 6$ $BDE(A-H) = 366 \pm 8$	77PED RYL
* 50±17 ^a 1.60±0.20 ^d	1523±11 g	1493±8	IMRE	552(1.17) 55525	86TAF
C ₈ H ₁₀ NO ⁻ mNMe ₂ -phenoxide ⁻			Est	$\Delta_f H(AH) = -84 \pm 8$ $BDE(A-H) = 362 \pm 8$	
* -148±18 ^a 2.15±0.19 ^d	1466±10 ^g	1437±8	IMRE		81FUJ/MCI
C ₈ H ₁₀ NO  pNMe ₂ -phenoxide			Est	$\Delta_f H(AH) = -84 \pm 8$	
* -144±18 ^a	1470±10 ^g	1441±8	IMRE		81FUJ/MCI
C ₈ H ₁₀ N ₂ O ₂ ⁻ mNMe ₂ -nitrobenzene ⁻ . * -21±6 b 0.92±0.05			IMRE	$\Delta_f H(A) = 67 \pm 2$	<i>84FUR MUR</i> 85FUK/MCI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A) $\Delta$ $\Delta_f H(X \cdot Y^-)$ eV $\Delta H$	H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₈ H ₁₁ ⁻ 2-methylenenorbornan-3-ide	e_		Est2	$\Delta_f H(AH) = 39 \pm 13$	
* 138±18 ^a	1629±5 g	1600±3	IMRE		86LEE/SQU
C ₈ H ₁₁ ⁻ bicyclo[3.2.1]oct-2-en-4-ide	_		Est2	$\Delta_f H(AH) = 13\pm17$	
* 117±22 ^a	1635±5 g	1604±3	IMRE		86LEE/SQU
C ₈ H ₁₁ ⁻ cyclooctadienide ⁻			Est2	$\Delta_f H(AH) = 42\pm13$	
88±29 ^a	1576±16 g	1548±13	IMRB	between EtOH, nPrOH	86LEE/SQU
C ₈ H ₁₁ O ⁻ 4,4-diMe-cyclohexenone-6-e	anolate		Est2	$\Delta_f H(AH) = -180 \pm 13$	
* -181±22 ^a	1529±10 ^g	1497±8 1500±8	IMRE IMRE ⁰		86BAR/KIP 86BAR/KIP
C ₈ H ₁₁ O ₂ ⁻	2:4-7		Est	$\Delta_f H(AH) = -287 \pm 13$	
5,5-diMe-1,3-cyclohexandion  * -399±22 a	1418±10 g	1385±8	IMRE	Acid: dimedone	78CUM/KEB
C ₈ H ₁₁ O ₂ − EtOH··PhO−					
	81±4	47±7	TDAs		86MEO/SIE2
$C_8H_{12}B^ Me_2C(CH = CH)_2BCH_2^-$			Est	$\Delta_f H(AH) = 86 \pm 13$	
100±32 ^a	1544±19 g	1515±17	IMRB		77SUL
C ₈ H ₁₃ ⁻ cyclooctenide ⁻				$\Delta_f H(AH) = -27 \pm 1$	77PED/RYL
60±26 ^a	1617±25 ^g	1586±21	IMRB	Between EtOH, nPrOH	86LEE/SQU
C ₈ H ₁₃ O ⁻				$\Delta_f H(AH) = -272 \pm 5$	77PED RYL
* 1.63±0.06			PD		78ZIM/JAC
C ₈ H ₁₃ O ₂ -	<del> </del>		Est	$\Delta_f H(AH) = -523 \pm 8$	
cC ₆ H ₁₁ -CH ₂ CO ₂ - * -609±19 ^a 3.23±0.20 ^d	1444±11 ^g	1415±8	IMRE	BDE(A-H) = 444±8	86TAF
C ₈ H ₁₅ O ₄ [−] iPrCO ₂ H··iPrCO ₂ [−]					
	125±4	83±7	TDAs		86MEO/SIE2
C ₈ H ₁₇ O ⁻ nC ₈ H ₁₇ O ⁻				$\Delta_f H(AH) = -355 \pm 1$ $BDE(A-H) = 436 \pm 4$	77PED RYL
* -330±12 a 2.0±0.2 d	1556±11 1553±10	1528±13 ^h	CIDC ^o		83BOA/HOU 83BOA/HOU

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) H _{aff} (X··Y ⁻ )	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₈ H ₁₇ O ⁻ tBuCH(iPr)O ⁻			Est	$\Delta_f H(AH) = -392 \pm 4$ $BDE(A-H) = 438 \pm 4$	
* -379±16 ^a 2.15±0.17 ^d	1543±12 ^g	1515±8 1514±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₈ H ₁₇ O ₅ ⁻ MeO(CH ₂ CH ₂ O) ₂ Me··MeO	CO ₂ -				
	63±4	40±7	TDAs		86MEO/SIE2
C ₈ H ₁₉ O ₂ ⁻ nPrOH · · tBuCH ₂ O ⁻ -627±25 ^c	83±10 ^g	55±8	IMRE		84CAL/ROZ
C8H19O2 ⁻ tBuOH··tBuO ⁻		<del></del>	· · · · · · · · · · · · · · · · · · ·		,
-673±26 ^c	85±10 g	58±8	IMRE		84CAL/ROZ
2,3,5,6-tetracyanopyridine			Est	$\Delta_f H(A) = 669 \pm 17$	
2.17±0.07		<del></del>	SI		67FAR/PAG
3,5-diCF ₃ -benzonitrile  * -1235±14 b 1.14±0.10			Est TDEq	$\Delta_f H(A) = -1125 \pm 4$	87КЕВ/СНО
C9H3F6O2 ⁻ 3,5-diCF3-benzoate ⁻			Est	$\Delta_f H(AH) = -1637 \pm 8$ BDE(A-H) = 444 \pm 13	
* -1810±19 ^a 4.13±0.24 ^d	1357±11 ^g	1328±8	IMRE		86TAF
C ₉ H ₄ N ⁻ pCN-C ₆ H ₄ C≡C ⁻			Est	$\Delta_f H(AH) = 443\pm 8$ $BDE(A-H) = 552\pm 21$	
* 383±18 ^a 4.08±0.32 ^d	1471±10 g	1438±8	IMRE		86TAF
C9 <b>H5</b> CrO3 ⁻ (CO) ₃ CrC ₆ H5 ⁻				$\Delta_f H(AH) = -350 \pm 9$	77PED/RYL
-326±30 ^a	1554±21		IMRB		85LAN/SQU
C ₉ H ₅ F ₃ N ⁻ mCF ₃ -C ₆ H ₄ CHCN ⁻			Est	$\Delta_f H(AH) = -485\pm4$	
* -585±19 a	1431±15 g	1403±8	IMRE		86TAF
C9H5F3N ⁻ pCF3-C6H4CHCN ⁻			Est	$\Delta_f H(AH) = -485 \pm 4$	
* -595±19 a	1420±15 g	1393±8	IMRE		86TAF
C9H5F6 ⁻ 3,5-diCF3-C6H3CH2 ⁻			Est	$\Delta_f H(AH) = -1320 \pm 8$ $BDE(A-H) = 368 \pm 13$	
* -1340±19 ^a 1.76±0.24 ^d	1510±11 ^g	1482±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\triangle_f H(A^-)$ EA(A) $\triangle H_{acid}(AH)$ $\triangle G_{acid}(AH)$		Reference
C ₉ H ₅ N ₂ ⁻		
Ph-C(CN) ₂		
* 1348±11 ^g 1317±8	IMRE	86TAF
C ₉ H ₅ N ₂ ⁻	Est $\Delta_f H(AH) = 322\pm 4$	
mCN-C ₆ H ₄ CHCN		
* 211±18 ^a 1419±13 ^g 1390±8	IMRE	81FUJ/MCI
C ₉ H ₅ N ₂ ⁻	Est $\Delta_f H(AH) = 322\pm4$	
pCN-C ₆ H ₄ CHCN	<b>2</b> /11/11/	
* 192±18 ^a 1400±13 ^g 1372±8	IMRE	81FUJ/MCI
C ₉ H ₆ BrO ₂ ⁻		· · · · · · · · · · · · · · · · · · ·
4-Br-cubyl-CO ₂	BDE(A-H) = 444±8	
* 3.61±0.21 ^d 1407±12 ^g 1378±8	IMRE	86TAF
С9Н6F3O-	Est $\Delta_f H(AH) = -715\pm4$	
PCOCF ₃ -C ₆ H ₄ CH ₂ -	, , ,	
* -776±15 ^a 1470±11 ^g 1439±8	IMRE	86TAF
С ₉ Н ₆ N ⁻	$\Delta_f H(AH) = 211 \pm 1$	79VIS
quinolinide -	, , ,	
* 289±9 ^a 1608±8 1572±8	$ ext{TDEq}$	87MEO
С ₉ H ₆ NO ⁻	Est2 $\Delta_f H(AH) = 15\pm13$	
pCOCN-C6H4CH2	, , ,	
* -69±23 ^a 1446±11 ^g 1418±8	IMRE	86TAF
С ₉ Н ₇ -	$\Delta_f H(AH) = 163 \pm 1$	80KUD KUD
indenide	$BDE(A-H) = 351 \pm 13$	82MCM/GOL
* 106±12 ^a 1.98±0.24 ^d 1473±11 ^g 1442±8	IMRE	86TAF
C ₉ H ₇ F ₃ O ⁻		· · · · · · · · · · · · · · · · · · ·
mCF ₃ -acetophenone ⁻	Est $\Delta_f H(A) = -805 \pm 8$	
-869±9 b 0.663±0.009	ECD	75WEN/KAO
C ₉ H ₇ F ₃ O ⁻		
oCF ₃ -acetophenone	Est $\Delta_f H(A) = -805 \pm 8$	
-867±9 ^b 0.642±0.009	ECD	75WEN/KAO
C ₉ H ₇ F ₃ O ⁻		
pCF ₃ -acetophenone-	Est $\Delta_f H(A) = -805\pm8$	
-867±9 ^b 0.642±0.009	ECD	75WEN/KAO
C ₉ H ₇ NO ⁻		
pCOMe-benzonitrile	Est $\Delta_f H(A) = 49\pm4$	
* -61±14 ^b 1.13±0.10	$TDE_q$	87KEB/CHO
1.12±0.09	TDEq	86СНО/КЕВ

Table 2. Negative Ion Table - Continued

	$AH_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₉ H ₇ O ₂ ⁻ cubyl-CO ₂ ⁻			Est2	$\Delta_f H(AH) = 238 \pm 21$ $BDE(A-H) = 444 \pm 8$	
* 136±33 ^a 3.40±0.21 ^d	1428±12 g	1398±8	IMRE	, ,	86TAF
C ₉ H ₇ O ₃ ⁻ pCOMe-benzoate ⁻			Est	$\Delta_f H(AH) = -464 \pm 4$ $BDE(A-H) = 444 \pm 13$	
* -595±15 ^a 3.69±0.24 ^d	1399±11 g	1369±8	IMRE	, ,,	86TAF
С ₉ Н ₈ -					
indene ⁻ . 146±3 ^b 0.17±0.03			ECD	$\Delta_f H(A) = 163 \pm 1$	<i>80KUD KUD</i> 81WOJ/FOL
C9H8N ⁻ pMe-C6H4CHCN ⁻			Est	$\Delta_f H(AH) = 153\pm 8$	
* 94±23 ^a	1471±15 ^g	1443±8	IMRE		86TAF
C ₉ H ₈ NO ⁻ pOMe-C ₆ H ₄ CHCN ⁻			Est	$\Delta_f H(AH) = 30\pm4$	W
* -29±19 a	1471±15 ^g	1443±8	IMRE		86TAF
C ₉ H ₈ O ⁻ PhCH = CHCHO ⁻ ·			Est	$\Delta_f H(A) = 21 \pm 8$	
-59±13 b 0.82±0.04			ECD		67WEN/CHE
С9Н9-				$\Delta_f H(AH) = 151 \pm 1$	82FUC HAL
1-phenylcyclopropanide ⁻ 260±17 ^a	1639±16 g	1607±13	IMRB		84AND/DEP
C ₉ H ₉ - CH ₂ = C(Ph)CH ₂ -				$\Delta_f H(AH) = 113\pm 4$	69BEN/CRU
196±31 ^a	1613±27 ^g	1586±23	IMRB		84BAR/BUR
C ₉ H ₉ ClO ₂ ⁻		······································			
Cl-triMe-benzoquinone* * -423±21 b 1.86±0.05			Est2 IMRE	$\Delta_f H(A) = -243 \pm 17$	85FUK/MCI
3,5-diMe-benzonitrile ⁻ · * 39±21 ^b 1.14±0.09			<i>Est2</i> TDEq	$\Delta_f H(A) = 149 \pm 13$	86CHO/KEB
<b>C9H9O</b> ⁻ MeCH = C(Ph)O ⁻		······································		$\Delta_f H(AH) = -109 \pm 2$ $BDE(A-H) = 389 \pm 8$	77PED/RYL
* -131±23 ^a	1508±21 g	1481±8	IMRE		79BAR/SCO
	1509±21 ^g	1482±8 1483±8	IMRE IMRE ⁰		78CUM/KEB 79BAR/SCO
MeOH · · PhC≡C¯ 70±26 ^c	56±10 g	32±8	IMRE		84CAL/ROZ

Table 2. Negative Ion Table - Continued

	ΔH _{acid} (AH) ΔH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$C_9H_9O^-$ PhCH = $C(Me)O^-$				$\Delta_f H(AH) = -98 \pm 2$	77PED/RYL
* -163±16 a	1465±15 g	1441±8	IMRE		79BAR/SCO
	1469±15 g	1445±8	IMRE		78CUM/KEB
		1451±8	IMRE		79BAR/SCO
C ₉ H ₉ O ⁻ pCOMe-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = -119 \pm 4$	
* -136±15 ^a	1513±11 ^g	1485±8	IMRE		86TAF
$C_9H_9O_2^-$ $mOMe-C_6H_4C(=CH_2)O^-$			Est	$\Delta_f H(AH) = -244 \pm 4$	
* -264±15 a	1509±11 ^g	1481±8	IMRE		79BAR/SCO
		1490±8	IMRE		79BAR/SCO
C ₉ H ₉ O ₂ ⁻ pCO ₂ Me-C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = -320 \pm 4$	
* -336±15 ^a	1515±11 ^g	1487±8	IMRE		86TAF
C9H9O2S ⁻ PhSO2-cyclopropanide			Est	$\Delta_f H(AH) = -161 \pm 4$	
* -179±14 a	1512±10 g	1485±8	IMRE		78CUM/KEB
С9Н9О3-			Est	$\Delta_f H(AH) = -502 \pm 4$	
mCO ₂ Et-phenoxide ⁻ * -593±14 ^a 2.44±0.19 ^d	1439±10 ^g	1410±8	IMRE	$BDE(A-H) = 362 \pm 8$	81FUJ/MCI
C ₉ H ₁₀ ClO ⁻ PhCH ₂ COMe··Cl ⁻				9999, 4	
rneityeenie ei		45	TDEq		82FRE/IKU
C ₉ H ₁₀ ClO ₂ ⁻		i timo estra una destino monerale de la estra una de caración de la estra de la estra de la estada de la estad	Est2	$\Delta_f H(AH) = -410 \pm 13$	
4-Cl-bicyclo[2.2.2]octene-C * -535±25 ^a 3.63±0.21 ^d	1405±12 ^g	1376±8	IMRE	$BDE(A-H) = 444 \pm 8$	86TAF
C ₉ H ₁₀ O ⁻		<del>*************************************</del>			
propiophenone				$\Delta_f H(A) = -109 \pm 2$	77PED/RYL
-143±3 b 0.351±0.004			ECD	27.164	75WEN/KAO
C ₉ H ₁₀ O ₂ ⁻	G				
benzyl acetate ⁻ 328±18 ^b 0.1±0.1			Est ECD	$\Delta_f H(A) = -313 \pm 8$	83ZLA/LEE
$C_9H_{10}O_2^-$		.,			
triMe-benzoquinone ⁻ .  * -374±13 b 1.60±0.05			Est2 IMRE	$\Delta_f H(A) = -220 \pm 8$	85FUK/MCI
C ₉ H ₁₀ O ₄ -					
2,3-diMeO-5-Me-benzoqui * 1.86±0.10	inone '		TDEq		87КЕВ/СНО

Table 2. Negative Ion Table - Continued

	_{r(} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y^{-})$	Method	Comment	Reference
_{С9} н ₁₁ -				$\Delta_f H(AH) = 4 \pm 1$	77PED/RYL
PhCMe2	_			BDE(A-H)= 350±7	81ROB/STE
* 59±11 ^a 0.79±0.18 ^d	1586±10 ^g	1560±8	IMRE		79BAR/SCO
		1554±8	IMRE		79BAR/SCO
C ₉ H ₁₁ NO ₂ -					
2,4,6-triMe-nitrobenzene			Est2	$\Delta_f H(A) = -17 \pm 13$	
* -84±22 ^b 0.70±0.10			TDEq	·	87КЕВ/СНО
0.67±0.11			IMRE		85GRI/CAL
0.72±0.05			IMRE		85FUK/MCI
C ₉ H ₁₁ O ⁻				$\Delta_f H(AH) = -195 \pm 13$	77PEDIRYL
miPr-phenoxide				$BDE(A-H) = 362\pm8$	
* -264±22 ^a 2.21±0.19 ^d	1461±10 g	1432±8	IMRE		81FUJ/MCI
				$\Delta_f H(AH) = -182 \pm 13$	77PED RYL
oiPr-phenoxide	_			•	
* -258±25 ^a	1454±12 ^g	1423±8	IMRE		81FUJ/MCI
С ₉ H ₁₁ O ⁻				$\Delta_f H(AH) = -209 \pm 13$	77PED/RYL
piPr-phenoxide				$BDE(A-H) = 362\pm13$	
* -278±22 ^a 2.20±0.23 ^d	1461±10 ^g	1433±8	IMRE		81FUJ/MCI
C ₉ H ₁₁ O ₂ ⁻			Est2	$\Delta_f H(AH) = -363 \pm 13$	
bicyclo[2.2.2]octene-CO ₂				$BDE(A-H) = 444 \pm 8$	
* -460±25 ^a 3.35±0.21 ^d	1433±12 g	1403±8	IMRE		86TAF
C ₉ H ₁₁ O ₂ S ⁻			Est	$\Delta_f H(AH) = -319 \pm 2$	
PhSO ₂ CHEt				• • •	
* -326±10 ^a	1523±8 g	1491±8	IMRE		78CUM/KEB
C ₉ H ₁₂ BrO ₂ ⁻			Est2	$\Delta_f H(AH) = -480 \pm 13$	
4-Br-bicyclo[2.2.2]octane-CO ₂	-			$BDE(A-H) = 444 \pm 8$	
* -598±25 a 3.56±0.21 d	1412±12 g	1382±8	IMRE		86TAF
		· · · · · · · · · · · · · · · · · · ·			
1,3,5-triMe-benzene··Cl					
		19	TDEq		82FRE/IKU
PhiPr··Cl ⁻					
		23	TDEq		82FRE/IKU
PhnPr··Cl ^{**}					
		21	TDEq		82FRE/IKU
C ₉ H ₁₂ ClO ₂ ⁻			Est2	$\Delta_f H(AH) = -523 \pm 13$	
3-Cl-bicyclo[2.2.2]octane-CO ₂	<del></del>			BDE(A-H)= 444±8	
* -629±25 a 3.44±0.21 d	1423±12 ^g	1394±8	IMRE	•	86TAF

Table 2. Negative Ion Table - Continued

	$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C9H ₁₂ ClO ₂ ⁻ 4-Cl-bicyclo[2.2.2]octane-C	02-		Est2	$\Delta_f H(AH) = -530 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -645±25 ^a 3.53±0.21 ^d	1415±12 g	1385±8	IMRE	. ,	86TAF
C ₉ H ₁₂ FO ₂ ⁻ 4-F-bicyclo[2.2.2]octane-CO	D ₂ -		Est2	$\Delta_f H(AH) = -677 \pm 13$ BDE(A-H) = 444 \pm 8	
* -790±25 ^a 3.51±0.21 ^d	1417±12 ^g	1387±8	IMRE		86TAF
C ₉ H ₁₂ N ⁻ mNMe ₂ -C ₆ H ₄ CH ₂ ⁻			Est	$\Delta_f H(AH) = 67 \pm 8$	
134±32 ^a	1597±23 ^g	1569±21	IMRB		83CAL/BAR
C ₉ H ₁₂ N ⁻ pNMe ₂ -C ₆ H ₄ CH ₂ ⁻	***************************************	· · · · · · · · · · · · · · · · · · ·	Est	$\Delta_f H(AH) = 71 \pm 8$	
155±32 a	1614±23 ^g	1586±21	IMRB		83CAL/BAR
C ₉ H ₁₂ NO ₄ ⁻ 4-NO ₂ -bicyclo[2.2.2]octane-	-CO ₂ -		Est2	$\Delta_f H(AH) = -537 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -664±25 a 3.65±0.21 d	1403±12 ^g	1374±8	IMRE		86TAF
C ₉ H ₁₃ O ₂ ⁻ bicyclo[2.2.2]octane-CO ₂ ⁻			Est2	$\Delta_f H(AH) = 8 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -82±23 ^a 3.27±0.20 ^d	1440±11 g	1411±8	IMRE		86TAF
C ₉ H ₁₅ O ⁻ cyclononanone enolate			Est	$\Delta_f H(AH) = -279 \pm 8$	
* 1.69±0.06			PD		78ZIM/JAC
C ₉ H ₁₉ O ⁻ (tBu) ₂ CHO ⁻			Est	$\Delta_f H(AH) = -415\pm 4$ $BDE(A-H) = 438\pm 4$	
* -412±16 ^a 2.25±0.17 ^d	1533±12 g	1505±8 1509±8	IMRE IMRE ⁰		79BAR/SCO 79BAR/SCO
C ₉ H ₁₉ O ⁻ nC ₉ H ₁₉ O ⁻				$\Delta_f H(AH) = -376 \pm 2$ BDE(A-H) = 436 \pm 4	77PED/RYL
* -353±13 ^a 2.0±0.2 ^d	1553±11 1551±10	1525±13 ^h	CIDC ^o	. ,	83BOA/HOU 83BOA/HOU
C ₉ H ₂₁ BF ⁻ iPr ₃ B··F ⁻	-				
-773 ^c	272		IMRB	$F^-A$ : $iPr_2BF > iPr_3B > Et_2BF > Et_3B$	77MUR/BEA2
C ₉ H ₂₁ O ₂ ⁻ tBuOH··tBuCH ₂ O ⁻	<del></del>				
-687±27 ^c	85±10 g	57±8	IMRE		84CAL/ROZ
C ₁₀ N ₆ ⁻ hexacyanobutadiene ⁻ ·			Est	$\Delta_f H(A) = 586 \pm 42$	
3.3±0.1			SI		69PAG/GOO
3.3±0.1			SI		67FAR/PAG

Table 2. Negative Ion Table - Continued

$\begin{array}{cccc} \text{Ion} & \Delta_{\mathbf{f}} H(A^-) & \text{EA}(A) & \Delta H_{acid}(AH) \\ & \Delta_{\mathbf{f}} H(X \cdots Y^-) & eV & \Delta H_{\mathit{aff}}(X \cdots Y) \end{array}$		Method Comment	Reference
C ₁₀ HN ₄ -			
2,3,5,6-tetracyanophenide			
2.41±0.04		SI	67FAR/PAG
C ₁₀ H ₂ F ₁₂ O ₆ U ⁻			
UO ₂ .(hexafluoroAcAc) ₂			
1.9±0.3		NBIP	82YOK/QUI
C ₁₀ H ₂ N ₄ ⁻			
1,2,4,5-tetracyanobenzene		Est2 $\Delta_f H(A) = 627 \pm 13$	
2.2±0.2		SI	67FAR/PAG
C ₁₀ H ₄ Cl ₂ O ₂ -			
2,3-diCl-1,4-naphthoquinone		Est2 $\Delta_f H(A) = -162 \pm 10$	
* -374±20 ^b 2.19±0.10		TDEq	87KEB/CHO
2.08±0.11		IMRE	85GRI/CAL
C ₁₀ H ₅ O ₂ ⁻	1 Marin Marin	$\Delta_f H(AH) = -111\pm 4$	77PEDIRYL
1,4-naphthoquinonide			
1641±3	s g < 1607	IMRB	87JOH/SPE
C ₁₀ H ₆ Cl ₄ O ₄ ⁻			
dimethyl tetrachloroterephthalate		Est2 $\Delta_f H(A) = 785 \pm 13$	
711 b 0.8		ECD	68KUH/LEV
$C_{10}H_6N_2O_4^-$			
1,3-diNO ₂ -naphthalene		Est $\Delta_f H(A) = 120\pm 4$	
* -52±14 b 1.78±0.10		TDEq	87KEB/CHO
$C_{10}H_6N_2O_4^-$	<del>,</del>		
1,5-diNO ₂ -naphthalene		Est $\Delta_f H(A) = 120\pm 4$	
* -51±14 b 1.77±0.10		TDEq	87KEB/CHO
$C_{10}H_6O_2^-$			
1,4-naphthoquinone ⁻		$\Delta_f H(A) = -111 \pm 4$	77PED/RYL
* -286±14 b 1.81±0.10		TDEq	87KEB/CHO
1.71±0.11		IMRE	85GRI/CAL
1.71±0.05		IMRE	85FUK/MCI
> 0.8		ECD	83CHE/WEN
>0.6		ES	70COL/CHR
C ₁₀ H ₇		$\Delta_f H(AH) = 150 \pm 1$	82COLJIM
naphthalenide		-1. · · · · · · · · · · · · · · · · · · ·	
* 272±6 ^a 1651±5	1611±5	TDEq	87MEO
C ₁₀ H ₇ Cl ⁻	- · · · · · · · · · · · · · · · · · · ·		
1-Cl-naphthalene ⁻		$\Delta_f H(A) = 120 \pm 10$	77PED RYL
93±10 b 0.277±0.003			· ·• · · · <del>-</del>

Table 2. Negative Ion Table - Continued

** 31±12 b 1.23±0.10 TDEq ***  **C10HyNO2*** 2-NO2**-aphthalene** *** 36±18 b 1.18±0.10 TDEq *** *** 36±18 b 1.18±0.10 TDEq ***  **TDEq *** 50±28 TDEq ***  **TPEDR**  *	Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH _{acid} (AH) ΔH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
2-NO ₂ -naphthalene -  36418 b 1.18±0.10  TDEq  4/H(A)= 150±8  87KEB/Cl  C10H7N2  pMe-C ₆ H ₄ -C(CN) ₂ -  1354±12 g 1323±8 IMRE  86TAF  C10H7O - 2-naphthoxide12±11 a 1438±10 g 1408±8 IMRE  86TAF  C10H8 -  223±13 b 0.69±0.10 0.75±0.11 0.75±0.11 0.68±0.04 0.52±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.68±0.04 0.50±0.08 0.656±0.008  ECD  C10H8 -  137±6 b 0.14±0.05 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.04 0.13±0.06 0.13±0.04 0.13±0.06 0.13±0.04 0.13±0.06 0.13±0.06 0.13±0.01 0.148±0.05 0.148±0.06 0.148±0.06 0.15±0.01 0.148±0.06 0.15±0.01 0.148±0.06 0.15±0.01 0.149±0.05 0.149±0.05 0.149±0.05 0.149±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05 0.140±0.05	1-NO ₂ -naph				TDEq	$\Delta_f H(A) =$	150±2	77PED/RYL 87KEB/CHO
2-NO ₂ -naphthalene ⁻ 36:18 b 1.18±0.10  C10H7N2 pMe-C ₆ H ₄ -C(CN)2 1354±12 g 1323±8 IMRE  86TAF  C10H7O ⁻ 2-naphthoxide ⁻ - 122±11 a 1438±10 g 1408±8 IMRE  86TAF  C10H8- azulene ⁻ 223±13 b 0.69±0.10 0.75±0.11 0.75±0.11 0.68±0.04 0.53±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.50±0.01 0.68±0.04 0.50±0.00 0.68±0.08 0.665±0.008 0.13±0.04 0.13±0.05 0.13±0.04 0.13±0.06 0.13±0.04 0.13±0.06 0.13±0.04 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.04 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.06 0.13±0.0	C II NO -							
PMe-C _G H ₄ -C(CN) ₂ 1354±12 1323±8 IMRE 86TAF  C ₁₀ H ₇ O	2-NO ₂ -naph					$\Delta_f H(A) =$	150±8	87КЕВ/СНО
1354±12 \$ 1323±8   IMRE   86TAF		C(CN)2 ⁻					Andrew State of the Control of the C	
2-naphthoxide* - 122±11 a 1438±10 g 1408±8 IMRE 86TAF  C10H8* azulene* - 223±13 b 0.69±0.10 TDEq 87KEB/CI 0.68±0.04 Kine 85GRI/CF 0.68±0.04 Kine 85GRI/CF 0.65±0.008 ECD 81WOJ/FF 0.65±0.008 ECD 81WOJ/FF 137±6 b 0.14±0.05 ECD 837LAJI 0.13±0.04 ECD 837LAJI 0.14±0.05 ECD 837LAJI 0.14±0.05 ECD 837LAJI 0.14±0.05 ECD 837LAJI 0.14±0.05 ECD 85GRI/CF	*	72	1354±12 g	1323±8	IMRE			86TAF
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2-naphthoxid					$\Delta_f H(AH) =$	−30±1	77PED RYL
azulene	* -122±11 ^a	ı	1438±10 ^g	1408±8	IMRE			86TAF
* 223±13 b 0.69±0.10						Λ : H(A) =	289+3	77PED/RYL
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	* 223±13 b	0.69±0.10			TDEq	-, · · ·		87KEB/CHO
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.75±0.11			-			85GRI/CAL
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.68±0.04			Kine			85GRI/CHO2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		0.52±0.01			ECD			81WOJ/FOL
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		> 0.5			ES			70CHA/CHR
naphthalene $^{-}$ : $\Delta_f H(A) = 150\pm 1$ 82COU// 137±6 $^{\rm b}$ 0.14±0.05 ECD 83ZLA/LI 0.13±0.04 ECD 81WOJ/FG 0.148±0.006 ECD 66BEC/CI 0.148±0.006 ECD 66BEC/CI 0.148±0.006 ECD 81WOJ/FG 0.148±0.006 ECD 66BEC/CI 0.148±0.006		0.656±0.008			ECD			66BEC/CHE
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	C ₁₀ H ₈ -							· · · · · · · · · · · · · · · · · · ·
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						$\Delta_f H(A) =$	150±1	82COLJIM
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	137±6 ^b	$0.14 \pm 0.05$			ECD			83ZLA/LEE
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		$0.13\pm0.04$			ECD			81WOJ/FOL
2,6-diCl-Br-tBu-benzoquinone -   * 2.42±0.05		0.148±0.006			ECD			66BEC/CHE
* 2.42 $\pm$ 0.05	C ₁₀ H ₉ BrCl ₂ C	02-					<del></del>	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		-	none					
1,5-diaminonaphthalenide   * $127\pm22^{a}$	*	2.42±0.05			IMRE			85FUK/MCI
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		aphthalenide			Est	$\Delta_f H(AH) =$	164±13	
$C_{10}H_{9}N_{2}^{-}$	* 127±22 ^a		1493±10 g	1463±8	<b>IMRE</b>			82ARN/VEN
1,8-diaminonaphthalenide 1441±8 IMRE 82ARN/VI 1450±8 IMRE 82ARN/VI $C_{10}H_{9}O_{2}^{-}$ Est $\Delta_{f}H(AH) = -250\pm2$ PhCOCH = C(Me)O 7				1472±8	IMRE ⁰			82ARN/VEN
* 1441±8 IMRE 82ARN/V1 1450±8 IMRE $C_{10}H_{9}O_{2}^{-}$ Est $\Delta_{f}H(AH) = -250\pm2$ PhCOCH = C(Me)O ⁻		aphthalenide			Est2	$\Delta_f H(AH) =$	192±8	
	*	-		1441±8	IMRE			82ARN/VEN
$PhCOCH = C(Me)O^{-}$								82ARN/VEN
		(Me)O			Est	$\Delta_f H(AH) =$	-250±2	
			1422±10 g	1393±8	IMRE			78CUM/KEB

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
$\frac{1}{C_{10}H_{10}Cl_2O_2^{-}}$	-an( )				
2,3-diCl-tBu-benzoquinone	<del>-</del> .				
* 2.25±0.05			IMRE		85FUK/MCI
C ₁₀ H ₁₀ F ₃ O ₂ ⁻ 4-CF ₃ -bicyclo[2.2.2]octene-O	~o		Est2	$\Delta_f H(AH) = -1028 \pm 13$	
* -1153±25 ^a 3.63±0.21 ^d	1405±12 g	1376±8	IMRE	BDE(A-H)= 444±8	86TAF
C ₁₀ H ₁₀ NO ₂ ⁻ 4-CN-bicyclo[2.2.2]octene-C	·n		Est2	$\Delta_f H(AH) = -231 \pm 13$ $BDE(A-H) = 444 \pm 8$	
* -367±25 ^a 3.75±0.21 ^d	1394±12 g	1365±8	IMRE	DUC(A-ri)= 444±0	86TAF
C ₁₀ H ₁₀ O ₄ " dimethyl isophthalate			Est2	$\Delta_f H(A) = -681 \pm 8$	
-734 ^b 0.6		····	ECD		68KUH/LEV
${ m C_{10}H_{10}O_4}^-$ dimethyl phthalate $^-$ $-707^{\rm b}$ 0.6			Est ECD	$\Delta_f H(A) = -654 \pm 17$	68KUH/LEV
C II O -					
C ₁₀ H ₁₀ O ₄ ⁻ dimethyl terephthalate ⁻ . -743 ^b 0.6			Est2 ECD	$\Delta_f H(A) = -681 \pm 8$	68KUH/LEV
C ₁₀ H ₁₁ ClO ₂ ⁻ 2-Cl-5-tBu-benzoquinone ⁻ · * 2.06±0.05			IMRE		85FUK/MCI
 С ₁₀ Н ₁₁ N ₂ ⁻			Est	$\Delta_f H(AH) = 195\pm 8$	
pNMe ₂ -C ₆ H ₄ CHCN ⁻ * 143±23 ^a	1478±15 ^g	1450±8	IMRE	Z411(A1) = 19010	86TAF
C ₁₀ H ₁₁ O ₂ ⁻			Est	$\Delta_f H(AH) = -252 \pm 8$	
triMe-benzoquinone-CH ₂ -0.80±0.09			SI		67FAR/PAG
$C_{10}H_{12}F_3O_2^-$			Est2	$\Delta_f H(AH) = -1148 \pm 13$	
4-CF ₃ -bicyclo[2.2.2]octane-C * -1264±25 ^a 3.55±0.21 ^d	1413±12 ^g	1384±8	IMRE	BDE(A-H)= 444±8	86TAF
C ₁₀ H ₁₂ NO ⁻			Est2	$\Delta_f H(AH) = -130\pm 8$	
mCONMe ₂ -C ₆ H ₄ CH ₂ -* * -95±19 ^a	1564±11 ^g	1536±8	IMRE		86TAF
C ₁₀ H ₁₂ NO ⁻			Est2	Δ _f H(AH)= -130±8	
pCONMe ₂ -C ₆ H ₄ CH ₂ ⁻ * -131±19 ^a	1529±11 ^g	1501±8	IMRE		86TAF
C ₁₀ H ₁₂ NO ₂ ⁻	0 -		Est2	$\Delta_f H(AH) = -354 \pm 13$	
2-CN-bicyclo[2.2.2]octane-C * -478±25 ^a 3.63±0.21 ^d	1405±12 g	1376±8	IMRE	BDE(A-H)= 444±8	86TAF

Table 2. Negative Ion Table - Continued

)	
Est2 $\Delta_f H(AH) = -354 \pm 13$ BDE(A-H) = 444 \pm 8	
IMRE	86TAF
Est2 $\Delta_f H(AH) = -350 \pm 13$ BDE(A-H) = 444 \pm 8	
IMRE	86TAF
Est2 $\Delta_f H(A) = -138 \pm 13$ ECD	69WEN/RIS
TDEq	87КЕВ/СНО
•	87КЕВ/СНО
IMRE	85FUK/MCI
Est $\Delta_f H(AH) = -202\pm 8$	
BDE(A-H) = 362±8	0177170467
IWKE	81FUJ/MCI
Est2 $\Delta_f H(AH) = -186 \pm 13$	
IMRE	81FUJ/MCI
Est $\Delta_f H(AH) = -202\pm 8$	
$BDE(A-H) = 362\pm13$	04771777407
INIC	81FUJ/MCI
Est2 $\Delta_f H(AH) = -395 \pm 13$	
IMRE	86TAF
Est $\Delta_f H(AH) = -349\pm 2$	
IMRE	78CUM/KEB
$\Delta_f H(A) = -42\pm 8$ ECD	<i>75GOO</i> 81WOJ/FOL
$\Delta_f H(A) = -46 \pm 8$	<i>75GOO</i> 81WOJ/FOL
	$BDE(A-H) = 444\pm 8$ IMRE $Est2  \Delta_f H(AH) = -350\pm 13$ $BDE(A-H) = 444\pm 8$ IMRE $Est2  \Delta_f H(A) = -138\pm 13$ ECD $TDEq$ $Est  \Delta_f H(A) = -252\pm 8$ $TDEq$ $IMRE$ $Est  \Delta_f H(AH) = -202\pm 8$ $BDE(A-H) = 362\pm 8$ IMRE $Est2  \Delta_f H(AH) = -186\pm 13$ IMRE $Est2  \Delta_f H(AH) = -202\pm 8$ $BDE(A-H) = 362\pm 13$ IMRE $Est2  \Delta_f H(AH) = -395\pm 13$ $BDE(A-H) = 444\pm 8$ IMRE $Est2  \Delta_f H(AH) = -395\pm 13$ $BDE(A-H) = 444\pm 8$ IMRE $Est2  \Delta_f H(AH) = -349\pm 2$ IMRE $Est2  \Delta_f H(AH) = -349\pm 2$ IMRE

Table 2. Negative Ion Table - Continued

	$I_{acid}(AH)$ $aff(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₁₀ H ₁₅ - pentaMe-cyclopentadienide-			Est2	$\Delta_f H(AH) = -33\pm17$	
* -54±29 a	1510±12 ^g	1485±8	IMRE		86TAF
C ₁₀ H ₁₅ O ₂			Est2	$\Delta_{f} H(AH) = -515 \pm 13$	
4-Me-bicyclo[2.2.2]octane-CC * -609±25 ^a 3.31±0.21 ^d	1436±12 ^g	1407±8	IMRE	BDE(A-H)= 444±8	86TAF
C ₁₀ H ₁₅ O ₃ -			Est2	$\Delta_f H(AH) = -628 \pm 13$	
3-OMe-bicyclo[2.2.2]octane-( * -720±25 ^a 3.30±0.21 ^d	CO ₂ 1438±12 g	1408±8	IMRE	$BDE(A-H) = 444 \pm 8$	86TAF
C ₁₀ H ₁₅ O ₃ ⁻ 4-OMe-bicyclo[2.2.2]octane-(	70. ⁻⁷		Est2	$\Delta_f H(AH) = -631 \pm 13$	
* -732±25 ^a 3.38±0.21 ^d	1430±12 g	1400±8	IMRE	$BDE(A-H) = 444 \pm 8$	86TAF
C ₁₀ H ₁₇ O ⁻			Est	$\Delta_f H(AH) = -304 \pm 4$	
cyclodecanone enolate * 1.83±0.07			PD		78ZIM/JAC
C ₁₀ H ₂₃ O ₂ ⁻	<del></del>				
tBuCH2OH··tBuCH2O					
-698±26 ^c	90±10 g	62±8	IMRE		84CAL/ROZ
C ₁₁ H ₇ N ⁻					
1-naphthonitrile			Est2	$\Delta_f H(A) = 286 \pm 13$	
* 221±22 ^b 0.68±0.10 0.68±0.09			$ ext{TDEq}$		87KEB/CHO 86CHO/KEB
C ₁₁ H ₇ N ⁻			<del></del>		
2-naphthonitrile.			Est2	$\Delta_f H(A) = 286 \pm 13$	
* 223±22 ^b 0.65±0.10			TDEq	, , ,	87КЕВ/СНО
0.65±0.09			TDEq		86CHO/KEB
C ₁₁ H ₈ O ⁻			_		
1-naphthaldehyde ⁻ · * -37±18 ^b 0.70±0.10			Est	$\Delta_f H(A) = 31 \pm 8$	OFFICE ALL
0.68±0.02			TDEq ECD		87KEB/CHO 75WEN/KAC
0.74±0.07			ECD		67WEN/CHE
C ₁₁ H ₈ O ⁻					
2-naphthaldehyde ⁻			Est	$\Delta_f H(A) = 31 \pm 8$	
* -32±18 b 0.65±0.10			TDEq	• **	87KEB/CHO
0.62±0.02			ECD		75WEN/KAC
0.62±0.04			ECD		67WEN/CHE
C ₁₁ H ₈ O ₂ -					
2-Me-1,4-naphthoquinone ⁻ * -295±18 b 1.74±0.10			Est	$\Delta_f H(A) = -127 \pm 8$	
* -295±18 0 1.74±0.10 1.66±0.05			TDEq		87KEB/CHO
CU.U±00.1			IMRE		85FUK/MCI

Table 2. Negative Ion Table - Continued

	Table	2. Negative Ion	n Table	- Continued	
	$I_{acid}(AH)$ $aff(X \cdot \cdot Y^-)$	$\Delta G_{ m acid}(AH)$ $\Delta G_{ m aff}(X \cdots Y^-)$	Method	Comment	Reference
C ₁₁ H ₉ NO ₂ ⁻ 2-Me-1-NO ₂ -naphthalene ⁻ * 18±14 ^b 1.03±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 117 \pm 4$	87KEB/CHO
C ₁₁ H ₉ NO ₃ ⁻ 4-MeO-1-NO ₂ -naphthalene ⁻ * -127±14 ^b 1.10±0.10	·.		<i>Est</i> TDEq	$\Delta_f H(A) = -21 \pm 4$	87KEB/CHO
C ₁₁ H ₉ O ₄ ⁻ 4-CO ₂ Me-cubyl-CO ₂ ⁻ * 3.55±0.21 d	1413±12 ^g	1384±8	IMRE	BDE(A-H)= 444±8	86TAF
C ₁₁ H ₁₀ ⁻ 1-Me-naphthalene ⁻ 97±13 b 0.2±0.1			ECD	$\Delta_f H(A) = 113\pm 2$	<i>74SAB CHA</i> 81WOJ/FOL
C ₁₁ H ₁₀ ⁻ 2-Me-naphthalene ⁻ 97±9 b 0.14±0.07			ECD	$\Delta_f H(A) = 111 \pm 2$	74SAB/CHA 81WOJ/FOL
C ₁₁ H ₁₃ O ⁻ nPrOH··PhC≡C ⁻ 8±26 c	64±10 ^g	37±8	IMRE		84CAL/ROZ
C ₁₁ H ₁₄ ClO ₂ ⁻ 3-Cl-1-adamantyl-CO ₂ ⁻ • -692±23 ^a	1416±11 ^g	1387±8	Est2	$\Delta_f H(AH) = -577 \pm 13$ $BDE(A-H) = 444 \pm 8$	86TAF
C ₁₁ H ₁₄ O ⁻ 2,4,6-triMe-acetophenone ⁻ -252±8 b 0.49±0.04			ECD	$\Delta_f H(A) = -205 \pm 4$	77PED/RYL 69WEN/RIS
C ₁₁ H ₁₅ NO ₂ ⁻ p-t-amyl-nitrobenzene ⁻ -306±29 b 2.2±0.2			Est2 CIDC	$\Delta_f H(A) = -97 \pm 13$	84BUR/FUK
C ₁₁ H ₁₅ O ₂ ⁻ 1-adamantyl-CO ₂ ⁻ * -624±23 a	1438±11 ^g	1408±8	Est2	$\Delta_f H(AH) = -532\pm13$ $BDE(A-H) = 444\pm8$	86TAF
C ₁₁ H ₁₆ ⁻ pentamethylbenzene ⁻ -93±10 b 0.18±0.01			Est2 ECD	$\Delta_f H(A) = -75 \pm 8$	81WOJ/FOL
C ₁₁ H ₂₅ O ₂ ⁻ tBuCH ₂ OH··tBuCH(Me)O ⁻ -736±28 ^c	89±10 g	62±8	IMRE		84CAL/ROZ
C ₁₂ F ₁₀ ⁻ C ₆ F ₅ -C ₆ F ₅ ⁻ * -873±22 b 0.91±0.10 0.91±0.10			Est2 TDEq IMRE	$\Delta_f H(A) = -785 \pm 13$	87KEB/CHO 86CHO/GRI

Table 2. Negative Ion Table - Continued

	∆H _{acid} (AH) ∆H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method		Comment	Reference
C ₁₂ N ₆ ⁻						
hexacyanobenzene 2.5±0.1			<i>Est</i> SI	$\Delta_f H(A) =$	900±21	67FAR/PAG
C ₁₂ H ₄ N ₄ ⁻						
tetracyanoquinodimethane	<b></b>			$\Delta_f H(A) =$	770±10	77PED/RYL
* 500±19 b 2.8±0.1			NBIP			74KLO/COM
2.8±0.3 2.8±0.1			NBIP			77COM/COO
2.9±0.2			SI SI			79NAZ/POK 67FAR/PAG
C ₁₂ H ₈ -						
acenaphthylene.				$\Delta_f H(A) =$	260	81KUD KUD
221±3 b 0.40±0.03			ECD			81WOJ/FOL
C ₁₂ H ₈ N ⁻ carbazolide ⁻				$\Delta_f H(AH) =$	= 229±4	81KUDIKUD2
* 143±15 ^a	1444±11 ^g	1412±8	IMRE			86TAF
C ₁₂ H ₈ O ₂ ⁻						
2-Ph-benzoquinone-						
* 2.04±0.10			TDEq			87KEB/CHO
C ₁₂ H ₉ NO ₂ ⁻						
mPh-nitrobenzene			Est2	$\Delta_f H(A) =$	167±8	
* 58±18 ^b 1.13±0.10			TDEq			87KEB/CHO
C ₁₂ H ₉ NO ₂ ⁻						
oPh-nitrobenzene-			Est2	$\Delta_f H(A) =$	188±8	OZIZED/OUG
* 85±18 ^b 1.07±0.10			TDEq			87KEB/CHO
$C_{12}H_9NO_2^-$						
pPh-nitrobenzene-			Est2	$\Delta_f H(A) =$	167±8	OTTED (CITO
* 52±18 ^b 1.20±0.10			TDEq			87KEB/CHO
$C_{12}H_{10}^{-}$						77PED/RYL
biphenyl"			EOD	$\Delta_f H(A) =$	182±1	81WOJ/FOL
170±5 b 0.13±0.04			ECD			
C ₁₂ H ₁₀ N				$\Delta_f H(AH)=$	= 219±3	78STE
Ph ₂ N ⁻ * 157±14 ^a	1468±11 ^g	1438±8	IMRE			86TAF
C ₁₂ H ₁₀ O ⁻						
1-acetonaphthone			Est	$\Delta_f H(A) =$	-21±8	
-79±11 b 0.60±0.03			ECD	<u> </u>		75WEN/KAO
C ₁₂ H ₁₂ -						2227 11172
1,4-diMe-naphthalene				$\Delta_f H(A) =$	83±8	69STU/WES
59±16 b 0.25±0.08			ECD			81WOJ/FOL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ EA(A $\Delta_f H(X \cdot Y^-)$ eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₁₂ H ₁₂ ⁻ 1-Et-naphthalene ⁻ · 82±14 ^b 0.15±0	0.06		Est ECD	$\Delta_f H(A) = 96 \pm 8$	81WOJ/FOL
C ₁₂ H ₁₂ ⁻ 2,3-diMe-naphthalen 67±21 b 0.2±0.3			ECD	$\Delta_{f} H(A) = 84 \pm 8$	<i>69STU  WES</i> 81WOJ/FOL
C ₁₂ H ₁₂ ⁻ 2,6-diMe-naphthalendeset 11 b 0.16±0			Est ECD	$\Delta_f H(A) = 84 \pm 4$	81WOJ/FOL
C ₁₂ H ₁₂ ⁻ 2-Et-naphthalene ⁻ 67±14 ^b 0.20±0	.06		Est ECD	$\Delta_{f}H(A) = 86\pm8$	81WOJ/FOL
C ₁₂ H ₁₄ O ₄ ⁻ diethyl phthalate ⁻ -740 b 0.5			ECD	$\Delta_f H(A) = -688 \pm 12$	77PED/RYL 68KUH/LEV
C ₁₂ H ₁₅ O ₄ ⁻ 4-CO ₂ Et-bicyclo[2.2.2 * -865±28 ^a 3.50±0		1389±8	Est2 IMRE	$\Delta_f H(AH) = -753 \pm 17$ $BDE(A-H) = 444 \pm 8$	86TAF
C ₁₂ H ₁₈ - hexamethylbenzene98±4 b 0.12±0	.02		ECD	$\Delta_f H(A) = -87 \pm 3$	<i>77PED RYL</i> 81WOJ/FOL
C ₁₂ H ₂₁ O ⁻ cyclododecanone enola * 1.90±0			Est PD	$\Delta_f H(AH) = -350 \pm 8$	78ZIM/JAC
C ₁₂ H ₂₇ O ₂ - tBuCH(Me)OH··tBu	CH(Me)O ⁻				1.00 87
-768±31 °  C ₁₃ F ₁₀ O ⁻ (C ₆ F ₅ ) ₂ CO ⁻ ·  * -2023±31 ^b 1.61±0.		62±8	Est TDEq IMRE	$\Delta_{f}H(A) = -1868 \pm 21$	84CAL/ROZ 87KEB/CHO 85GRI/CAL
C ₁₃ H ₈ F ₂ O ⁻ p,p'-diF-benzophenon • -403±13 b 0.79±0.			<i>Est</i> IMRE	$\Delta_f H(A) = -327 \pm 8$	85FUK/MCI
C ₁₃ H ₉ ⁻ fluorenide ⁻ * 129±12 ^a 1.86±0.	24 ^d 1472±11 ^g 1478±11 ^g	1439±8 1446±8	IMRE IMRE	$\Delta_f H(AH) = 187 \pm 1$ $BDE(A-H) = 339 \pm 13$	81KUD/KUD 70TRO/BAZ 86TAF 78CUM/KEB

Table 2. Negative Ion Table - Continued

<del>-</del>	H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₁₃ H ₉ - perinaphthalenide-			Est2	$\Delta_f H(AH) = 226 \pm 13$	
* 1.1±0.1			PD		79GYG/PET
C ₁₃ H ₉ ClO ⁻			_		
pCl-benzophenone ⁻ .  * -53±13 b 0.85±0.05			<i>Est</i> IMRE	$\Delta_f H(A) = 29 \pm 8$	85FUK/MCI
С ₁₃ Н ₉ FO ⁻					
pF-benzophenone-			Est	$\Delta_f H(A) = -134 \pm 8$	
* -196±18 ^b 0.64±0.10			TDEq		87KEB/CHO
0.74±0.05		10 APACA	IMRE		85FUK/MCI
C ₁₃ H ₉ O ₂ -			Est	$\Delta_f H(AH) = -131 \pm 8$	
mCOPh-phenoxide	_			$BDE(A-H) = 362 \pm 8$	
* -232±18 ^a 2.54±0.19 ^d	1428±10 g	1400±8	IMRE		81FUJ/MCI
C ₁₃ H ₉ O ₂ ⁻ pCOPh-phenoxide ⁻			Est	$\Delta_f H(AH) = -131 \pm 8$	
* -268±19 ^a	1393±11 g	1364±8	IMRE		81FUJ/MCI
C ₁₃ H ₁₀ ⁻					
fluorene -				$\Delta_f H(A) = 188 \pm 1$	81KUD KUD
162±3 b 0.28±0.03			ECD	•	81WOJ/FOĻ
C ₁₃ H ₁₀ Cl ⁻			Est	$\Delta_f H(AH) = 110\pm 4$	
mCl-C ₆ H ₄ -CH(Ph)				, , ,	
* 85±16 ^a	1505±12 g	1482±8	IMRE		86TAF
C ₁₃ H ₁₀ F		· · · · · · · · · · · · · · · · · · ·	Est	$\Delta_f H(AH) = -53\pm8$	
mF-C ₆ H ₄ CH(Ph)				• • •	
* -76±21 ^a	1507±12 g	1479±8	IMRE		86TAF
С ₁₃ Н ₁₀ О-					
benzophenone".				$\Delta_f H(A) = 50 \pm 3$	78SAB/LAF3
* -10±13 ^b 0.62±0.10			TDEq		87KEB/CHO
0.61±0.11			IMRE		85GRI/CAL
0.69±0.05			IMRE		85FUK/MCI
0.64±0.05			ECD		83CHE/WEN
С ₁₃ Н ₁₁ -				$\Delta_f H(AH) = 140\pm3$	77PED/RYL
Ph ₂ CH				BDE(A-H)= 351±4	82MCM GOL
* 131±13 ^a 1.47±0.14 ^d	1521±10 g	1499±8	IMRE		79BAR/SCO
	1512±10 ^g	1489±8	IMRE		78CUM/KEB
0.8±0.3			SI		68GAI/PAG
		1502±8	IMRE		79BAR/SCO
C ₁₃ H ₁₁ FO					
mF-C ₆ H ₄ CH ₂ OPh ⁻			Est	$\Delta_f H(A) = -166 \pm 4$	
0.28±0.09			ECD		84HER/WEN

Table 2. Negative Ion Table - Continued

	Table	2. Negative Ion	n Table	- Continued	
	H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{ ext{acid}}(AH)$ $\Delta G_{ ext{aff}}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₁₃ H ₁₁ F ₁₂ PUO ₁₀ ⁻ UO ₂ .(hexafluoroAcAc) ₂ .OP( 1.5±0.3	(OMe) ₃		NBIP		82YOK/QUI
O II O C-				A LI/ALD 160.12	
C ₁₃ H ₁₁ O ₂ S ⁻ pSO ₂ Ph-C ₆ H ₄ CH ₂ ⁻ * -187±23 ^a	1504±11 ^g	1473±8	Est2 IMRE	$\Delta_f H(AH) = -160 \pm 13$	86TAF
C ₁₃ H ₁₂ ⁻ Ph ₂ CH ₂ ⁻ · 125±7 b 0.16±0.04			ECD		81WOJ/FOL
C ₁₃ H ₁₂ Cl ⁻ Ph ₂ CH ₂ ···Cl ⁻		31	TDEq		82FRE/IKU
C ₁₃ H ₁₅ O ⁻ tBuOH · · PhC≡C ⁻					
-57±28 ^c	72±10 g	44±8	IMRE		84CAL/ROZ
C ₁₃ H ₂₁ O ₂ ⁻ tBuCH(Me)OH··PhCH ₂ O ⁻ -523±27 ^c	90±10 ^g	63±8	IMRE		84CAL/ROZ
C ₁₄ H ₇ ClO ₂ ⁻ 1-Cl-9,10-anthraquinone ⁻ * -290±22 b 1.71±0.10			<i>Est2</i> TDEq	$\Delta_f H(A) = -125 \pm 13$	87KEB/CHO
C ₁₄ H ₇ O ₂ ⁻ 9,10-anthraquinonide ⁻				$\Delta_f H(AH) = -95\pm7$	77PED/RYL
		1607±17	IMRB		87JOH/SPE
C ₁₄ H ₈ O ₂ ⁻ 9,10-anthraquinone ⁻ -249±16 b 1.59±0.10 1.1±0.1			TDEq SI	$\Delta_f H(A) = -95 \pm 7$	77PED/RYL 87KEB/CHO 69PAG/GOO
C ₁₄ H ₉ Cl ⁻ 1-Cl-anthracene ⁻ * 126±14 ^b 0.78±0.10			Est TDEq	$\Delta_f H(A) = 201 \pm 4$	87КЕВ/СНО
C ₁₄ H ₉ Cl ⁻ 2-Cl-anthracene ⁻ 128±14 b 0.75±0.10			<i>E</i> st TDEq	$\Delta_f H(A) = 201 \pm 4$	87КЕВ/СНО
C ₁₄ H ₉ Cl ⁻ 9-Cl-anthracene ⁻ * 118±14 ^b 0.86±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = 201 \pm 4$	87КЕВ/СНО

Table 2. Negative Ion Table - Continued

	H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
C ₁₄ H ₉ NO ₂ ⁻ 9-NO ₂ -anthracene ⁻			Est	$\Delta_f H(A) = 213 \pm 4$	**************************************
* 75±14 ^b 1.43±0.10			TDEq	·	87KEB/CHO
C ₁₄ H ₁₀					
PhC≡CPh~·				$\Delta_f H(A) = 402 \pm 4$	82CHI/LIE
371±11 b 0.32±0.07			ECD		81WOJ/FOL
$C_{14}H_{10}^{-}$					
anthracene.				$\Delta_f H(A) = 230 \pm 1$	79KUD KUD4
* 172±11 b 0.60±0.10			TDEq		87KEB/CHO
0.48±0.04 0.57±0.02			ECD ECD		81WOJ/FOL 68LYO/MOR
0.556±0.008			ECD		66BEC/CHE
C ₁₄ H ₁₀				A 11/A) 007.4	70// 10/// 104
phenanthrene  . 181±4 ^b 0.27±0.04			ECD	$\Delta_f H(A) = 207 \pm 1$	<i>79KUD KUD4</i> 81WOJ/FOL
0.307±0.007			ECD		66BEC/CHE
	· <del></del>	······································			
C ₁₄ H ₁₀ F ₃			Est	$\Delta_f H(AH) = -528 \pm 4$	
mCF ₃ -C ₆ H ₄ -CH(Ph) ⁻ * -574±14 ^a	1484±10 g	1462±8	IMRE		86TAF
C ₁₄ H ₁₀ F ₁₂ O ₇ U ⁻	· · · · · · · · · · · · · · · · · · ·				
UO ₂ .(hexafluoroAcAc) ₂ .TH	F ⁻				
1.6±0.2			NBIP		82YOK/QUI
C ₁₄ H ₁₀ N ⁻			Est	$\Delta_f H(AH) = 276 \pm 4$	
mCN-C ₆ H ₄ -CH(Ph)				• • •	
* 216±14 a	1470±10 ^g	1448±8	IMRE		86TAF
C ₁₄ H ₁₁ -		<del>,</del>	Est2	$\Delta_f H(AH) = 155 \pm 8$	
2-Me-fluorenide					
* 100±21 ^a	1475±12 ^g	1443±8	IMRE		86TAF
C ₁₄ H ₁₁			Est2	$\Delta_f H(AH) = 109 \pm 13$	
9-Me-fluorenide				•	
* 47±23 ^a	1468±11 ^g	1437±8	IMRE		86TAF
C ₁₄ H ₁₁ O ⁻			Est	$\Delta_f H(AH) = 26\pm 4$	
pCOPh-C ₆ H ₄ CH ₂			•	, , ,	
* 3±15 ^a	1507±11 ^g	1479±8	IMRE		86TAF
$C_{14}H_{11}O_2S^-$			Est2	$\Delta_f H(AH) = -141 \pm 13$	
9-SO ₂ Me-fluorenide					
* -287±23 ^a	1384±11 ^g	1351±8	IMRE		86TAF
C. H.o-					
$C_{14}H_{12}^-$ (E)-PhCH = CHPh $^-$				$\Delta_f H(A) = 235 \pm 3$	77PED/RYL 81WOJ/FOL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
C ₁₄ H ₁₂ - Ph ₂ C = CH ₂ - 208±10 b	0.39±0.06			ECD		81WOJ/FOL
$C_{14}H_{15}O_2^-$ PhCH ₂ OH · · P	hCH ₂ O-					
-276±18 ^c		93±4	66±7	TDAs		84CAL/ROZ
C ₁₄ H ₂₀ O ₂ ⁻ 2,6-di-tBu-ber * -516±22 b				Est2 TDEq	$\Delta_f H(A) = -335 \pm 13$	87КЕВ/СНО
C ₁₅ H ₉ N ⁻ 9-CN-anthrace * 244±14 ^b				<i>Est</i> TDEq	$\Delta_f H(A) = 366 \pm 4$	87КЕВ/СНО
C ₁₅ H ₁₀ O ⁻ 9-anthraldehyd * -16±18 ^b	1.31±0.10 1.0±0.1			Est2 TDEq ECD	$\Delta_f H(A) = 110 \pm 8$	87KEB/CHO 67WEN/CHE
	iehyde  0.724±0.00 0.7±0.1	09		Est2 ECD ECD	$\Delta_f H(A) = 70\pm 8$	75WEN/KAO 67WEN/CHE
C ₁₅ H ₁₃ ⁻ 9-Et-fluorenid * 27±23 ^a	e	1469±11 ^g	1437±8	Est2	$\Delta_f H(AH) = 88 \pm 13$	86TAF
C ₁₅ H ₁₃ O ⁻ PhCH ₂ OH · · Pl 145±26 ^c	hC≊C¯	82±10 \$	54±8	IMRE		84CAL/ROZ
C ₁₆ H ₁₀ - fluoranthene- 228 b	0.6			ECD	$\Delta_f H(A) = 289 \pm 1$	81KUDKUD 69MIC
	0.50±0.03 0.591±0.00	98		ECD ECD	$\Delta_f H(A) = 216\pm 1$	79KUD/KUD2 68LYO/MOR 66BEC/CHE
C ₁₆ H ₁₂ O ⁻ 9-COMe-anthr * -34±14 b				Est TDEq	$\Delta_f H(A) = 60\pm 4$	87КЕВ/СНО
C ₁₆ H ₁₂ O ₂ ⁻ 2-Et-9,10-anth * -299±14 b		<del>-</del> .		<i>Est</i> TDEq	$\Delta_f H(A) = -149 \pm 4$	87КЕВ/СНО

Table 2. Negative Ion Table - Continued

	$I_{acid}(AH)$ $aff(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y^{-})$	Method	Comment	Reference
C ₁₆ H ₁₅ - 9-iPr-fluorenide-	-		Est2	$\Delta_f H(AH) = 59 \pm 13$	
* -2±23 ^a	1470±11 g	1437±8	IMRE		86TAF
C ₁₇ H ₁₂ Cl ⁻ 2-Ph-5-pCl-C ₆ H ₄ -cyclopent	adienide	***	Est2	$ \Delta_f H(AH) = 293 \pm 13 $	
* 170±23 ^a	1407±11 ^g	1376±8	IMRE		86TAF
C ₁₇ H ₁₃ ⁻ 1,4-diphenylcyclopentadienide	; <del>-</del>		Est	$\Delta_f H(AH) = 322\pm 8$	
* 205±18 ^a	1413±10 g	1383±8	IMRE		86TAF
C ₁₇ H ₁₇ ⁻ 9-iBu-fluorenide ⁻			Est2	$\Delta_f H(AH) = 42 \pm 13$	
* -21±23 ^a	1468±11 ^g	1435±8	IMRE		86TAF
C ₁₇ H ₁₇ ⁻ 9-tBu-fluorenide ⁻			Est2	$\Delta_f H(AH) = 25 \pm 17$	
* -36±28 ^a	1469±11 ^g	1438±8	IMRE		86TAF
C ₁₈ H ₁₂ ⁻ benz[a]anthracene ⁻ 224±2 b 0.630±0.008			ECD	$\Delta_f H(A) = 285 \pm 1$	79KUDIKUD2 66BEC/CHE
C ₁₈ H ₁₂ ⁻ benzo[c]phenanthrene  240±2 ^b 0.545±0.008			ECD	$\Delta_f H(A) = 293 \pm 1$	<i>79KUD!KUD2</i> 66BEC/CHE
C ₁₈ H ₁₂ ⁻ chrysene ⁻ 246±2 b 0.397±0.008			ECD	$\Delta_f H(A) = 284 \pm 1$	79KUD/KUD2 66BEC/CHE
C ₁₈ H ₁₂ ⁻ naphthacene ⁻ 199±5 b 0.88±0.04			ECD	$\Delta_f H(A) = 284 \pm 1$	79KUDIKUD2 68LYO/MOR
C ₁₈ H ₁₂ ⁻ triphenylene ⁻ 242±2 b 0.285±0.008			ECD	$\Delta_f H(A) = 270 \pm 1$	79KUD/KUD2 66BEC/CHE
C ₁₈ H ₁₅ -			Est	$\Delta_f H(AH) = 288 \pm 8$	
2-Ph-5-p-tolyl-cyclopentadio * 171±19 ^a	enide [—] 1413±11 ^g	1381±8	IMRE		86TAF
C ₁₈ H ₁₆ O ₂ ⁻ 2-tBu-9,10-anthraquinone ⁻ * -353±14 b 1.56±0.10			<i>Est</i> TDEq	$\Delta_f H(A) = -202 \pm 4$	87КЕВ/СНО
C ₁₈ H ₁₉			Est	$\Delta_f H(AH) = 4 \pm 17$	
9-tBuCH ₂ -fluorenide*  * -74±28 a	1452±11 ^g	1419±8	IMRE		86TAF

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
 С ₁₉ Н ₁₁ -			·····			
fluoradenide ⁻						
*		1391±10 g	1359±8	IMRE		86TAF
C ₁₉ H ₁₃ ⁻ 9-Ph-fluorenio	ie ⁻			Est2	$\Delta_f H(AH) = 318 \pm 13$	
* 224±23 ^a		1436±11 ^g	1404±8	IMRE		86TAF
C ₁₉ H ₁₅ ⁻ Ph ₃ C ⁻					$\Delta_f H(AH) = 271 \pm 4$	77PED RYL
242±16 ^a		1501±12 g	1467±8	IMRE		86TAF
		1510±13 ^g	1476±10	IMRE		84BAR
	2.56			IMRE	Solution equilibrium + solvation cycle	30BEN
	0.8			SI	From hexaphenylethane	68GAI/PAG
C ₁₉ H ₁₆ Cl ⁻ Ph ₃ CH··Cl ⁻						
-			17	TDEq		82FRE/IKU
C ₂₀ H ₁₂ -						
benz[a]pyrene					$\Delta_f H(A) = 289 \pm 4$	77STE/GOL
- 227	0.680±0.0	008		ECD	,	66BEC/CHE
C ₂₀ H ₁₂ - benz[e]pyrene- 210±5 b	0.534±0.0	008		Est ECD	$\Delta_f H(A) = 261 \pm 4$	66BEC/CHE
С. и			······································	<b>—</b> .,	A 1/410	
C ₂₁ H ₁₅ - 1,3-diphenyling	denide_			Est	$\Delta_f H(AH) = 371 \pm 8$	
* 244±18 ^a		1403±10 ^g	1376±8	IMRE		86TAF
C ₂₂ H ₁₄ -						
C22 ¹¹ 14 dibenz[a,h]anth	ıracene -				$\Delta_f H(A) = 336 \pm 4$	77STE/GOL
279±5 b	0.595±0.0	08		ECD	27.109 0002.	66BEC/CHE
С. и -		<u> </u>				
C ₂₂ H ₁₄ ⁻ dibenz[a,j]anth	racene			Ec+	A.H/A)- 236.4	
279±5 b	0.591±0.0	08		<i>Est</i> ECD	$\Delta_f H(A) = 336 \pm 4$	KADECICUE
						66BEC/CHE
C ₂₂ H ₁₄ -				_		
picene  . 274±9 ^b	0.542.00	.00		Est	$\Delta_f H(A) = 326 \pm 8$	
2/4±9°	0.542±0.0	U8		ECD		66BEC/CHE
C ₂₇ H ₁₉ -						
1,2,3-triPh-ind	enide_	9.40 0				
•		1404±11 ^g	1373±8	IMRE		86TAF
<del></del>						
CaH ⁻ CaH ⁻ * 139±47 b	0.93±0.05				$\Delta_f H(A) = 229 \pm 42$	82TN270

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CeF ₄ -						
-2005±29	3.60±0.30 ⁱ	459±29 ^k		TDEq		81SID/SOR
CeI ⁻					**	· · · · · · · · · · · · · · · · · · ·
CeI ⁻ ·						
	> 0.3±0.3			EIAP	From CeI ₃	76CHA
CeI ₂ -						
CeI ₂					$\Delta_f H(A) = -192$	76CHA
<-221 b	> 0.3±0.2			EIAP	From CeI ₃	76CHA
CeI ₃ -						
CeI ₃					$\Delta_f H(A) = -339$	76CHA
<-368 b	> 0.3			IMRB	CeI ₂ ⁻ + CeI ₃ →	76CHA
CeI ₄ ⁻						
CeI ₄		200 22	242.42	mp 17		M.COVV.
-808 ^c		280±33	245±42	TDEq		76CHA
Cl-						
CI ⁻			h		$\Delta_f H(A) = 122$	85JANAF
* -227±1 ^a	3.617±0.003	1395±1 ^e 1396±9 ^g	1372±1 ^h 1374±8	LOG IMRE		85HOT/LIN 81FUJ/MCI
		137027	137410			
ClCrO-					A 11/A) 440 40	COCLEUM
CrOCI 231±48	1.2±0.1			EIAP	$\Delta_f H(A) = -116 \pm 48$ From CrO ₂ Cl ₂	<i>69FLE/WHI</i> 69FLE/WHI
201210						
ClCrO ₂						
CrO ₂ C1 ⁻ -531±48	2.4±0.4			BIAD	$\Delta_f H(A) = -309 \pm 48$ From CrO ₂ Cl ₂	<i>69FLE/WHI</i> 69FLE/WHI
-331240	2.410.4					031 <u>EE</u> , W111
CIF-						
CIF ⁻ · -195±29 b	15.02			NBIP	$\Delta_f H(A) = -50$	<i>85JANAF</i> 78DIS/LAC
-193±29 ·	>1.5±0.5 >1.5±0.2			EIAP	From CF ₂ Cl ₂ From CFCl ₃	79ILL/SCH
	2.9±0.2			EIAP	From CIF ₃	79DUD/GOR
	>1.5±0.4			EIAP	From SF ₅ Cl	72THY
CIFH-						
HF··CI						
* -591±10 ^c		91±8 g	63±8	IMRE		84LAR/MCM2
CIFO-						
CIOF-				Est2	$\Delta_f H(A) = 54 \pm 21$	
	> 2.0±0.2			EIAP		80BAL/NIK2
CIFO ₂ -				<del></del>		
CIO ₂ F-					$\Delta_f H(A) = -33$	73BAR
-255 b	> 2.3			EIAP	•	83ALE/FED

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
CIF ₂ -						
-	> 3.2±0.2 > 0.9±0.2			EIAP EIAP	From CIF ₅ From CIF ₃	80BAL/NIK 79DUD/GOR
$\begin{array}{c} \hline \\ CIF_2OS^- \\ F_2SO \cdots CI^- \end{array}$						
* -851±30 ^c		72±8 ^g	43±8	IMRE		85LAR/MCM
CIF ₃ -						
CIF ₃	> 2.4±0.1			EIAP	$\Delta_f H(A) = -163 \pm 2$ From CIF ₅	<i>82BAU COX</i> 80BAL/NIK
CIF ₃ OP						
PF ₃ O··Cl [−] * -1497±12 ^c		58±8 ^g	32±8	IMRE		85LAR/MCM
CIF ₃ P-						
* -1211±12 ^c		65±8 ^g	38±8	IMRE		85LAR/MCM
CIF ₄ Si ⁻						
SiF ₄ · · Cl [−] * −1940±12 ^c		98±8 g	70±8	IMRE		85LAR/MCM
CIHI-					·	The state of the s
HCl··I [−] * -343±9 ^c		62±8	37±11	TDAs		85CAL/KEB
Сі <b>Н</b> ₂ О⁻ нон…сі⁻						11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
* -532 °		62±1	38±6	TDAs		80KEE/CAS2
		62±8	38±11	TDAs		86YAM/FUR
		60±8 ^g	35±8	IMRE		84LAR/MCM2
		62	37	TDAs		82BUR/HAY
		55±8	30±8	TDAs		71YAM/KEB
CIH ₂ O ₂ - HOOH··CI-						
-456±6 ^c		92±4	65±4	TDEq	Relative to HOH··Cl ⁻ , 80KEE/LEE	84ВОН/ҒАН
CIH ₂ O ₄ S ⁻ HCI··HSO ₄ ⁻	<u> </u>					
		66±4	47±4	TDEq	Relative to HOH··HSO ₄ ⁻ , 84BOH/FAH	84BOH/FAH
CIH ₃ N ⁻						
NH ₃ ··Cl [−] * −317±18 ^c		44±17g	19±8	IMRE		84LAR/MCM2

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{\text{acid}}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^-)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CII-				<del></del>	**************************************	
ICI -					$\Delta_f H(A) = 18$	85JANAF
−215±10 ^b				NBIP	·	73AUE/HUE
-155	1.8 ⁱ			Endo	I + NOCI →	77REF/FRA
	1.48±0.05	5		NBIP	Vertical EA	76HUB/KLE
CIK-						
KCl					$\Delta_f H(A) = -215$	85JANAF
−276 ^b	0.6			Scat	,	79DEV/WIJ
	>1.3			EIAP	From (KCl) ₂	64EBI
CILi ⁻		<del></del>				
LiCi					$\Delta_f H(A) = -196 \pm 8$	85JANAF
-255±10 b	0.610±0.0	)20		LPES	-1 · · · · · · · · · · · · · · · · · · ·	76CAR/PET
	> 1.3			EIAP	From (LiCl) ₂	64EBI
CINa ⁻		<del></del>		···		
NaCl ⁻ ·					$\Delta_f H(A) = -181 \pm 8$	85JANAF
-255 b	0.8			Scat	2711(19 - 10120	79DEV/WIJ
-233	> 1.3			EIAP	From (NaCl) ₂	64EBI
	71.5			———	Prom (Nacr)2	
ClO-					$\Delta_f H(AH) = -79\pm8$	82BAU COX
CIO-					BDE(A-H)= 399±9	82TN270
* -108±18 ^a	2.170	1502±9 ^e	1474±10 ^h	LPD		79LEE/SMI
	$2.4 \pm 0.2$			EIAP	From Cl ₂ O	80BAL/NIK2
	$1.9 \pm 0.3$			IMRB		78DOT/ALB
<-54±21	>1.6±0.2	i		Endo	Cl ⁻ + O ₂ →	77VOG/DRE
ClOV-						
VOCI ⁻						
-310±48	1.4±0.4			EIAP	From VOCl ₃	75FLE/SVE
ClO ₂ -						
OCIO-					$\Delta_f H(A) = 97 \pm 8$	82BAUICOX
-29±50 b	1.3±0.4			ECD	-1	81WEC/CHR
-27±30 -	1.8±0.4			EIAP	From FCIO ₃	80BAL/NIK2
CIO 8=						
ClO ₂ S ⁻						
SO ₂ ··Cl		22.2	// · 0	TTD A =		85CAL/KEB
* -617±11 ^c		93±8	66±8	TDAs	Deletine to HOH. CIT in COVERA DE	84BOH/FAH
		93±8	63±7	_	Relative to HOH··Cl [−] in 80KEE/LEE	80KEE/LEE
		91±1	62±1	TDAs		85LAR/MCM
		87±8 ^g	62±8	IMRE		79ROB/FRA
<-565				IMRB		78SUL/BEA2
-326	<u>-</u>			IMRB		/03UL/BEA/
CIO3 ⁻						
CIO ₃ -					$\Delta_f H(A) = 126 \pm 21$	82TN270
-183±21 ^b	>32			EIAP	From ClO ₃ F	83ALE/FED

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
ClO ₃ S ⁻ SO ₃ ··Cl ⁻						
3		<1312±8		EIAP	From CISO ₃ H (Appearance Potential = 0 eV)	86ADA/SMI
CIO ₄ S ₂ -						
so ₂ ··so ₂ ci⁻	-					
-982				IMRE		80KEE/CAS
<-920	,			IMRB		79ROB/FRA
ClPb-						
PbCl ⁻						
	1.0±0.2		· · · · · · · · · · · · · · · · · · ·	EIAP	From PbCl ₂	67HAS/BLO
ClRb-						
RbCl					$\Delta_f H(A) = -229$	82TN270
	>1.5			EIAP	From (RbCl) ₂	64EBI
ClXe ⁻ Xe··Cl ⁻						
		13		Mobi		84GAT
		13		Mobl		80THA/EIS
		< 13		Mobl		79DEV/WIJ2
Cl ₂ -						
	2.4±0.2			NBIP		77DIS/LAC2
	2.3			ECD	Vertical EA: 1.02 eV	81AYA/WEN
	$2.3\pm0.1$			EnCT		73HUG/LIF
	$2.5 \pm 0.1$			IMRB		72DUN/FEH
	$2.5\pm0.1$			NBIP		72BAE
	2.5±0.2			EIAP	From CCl ₄	71DEC/FRA
	1.02±0.05			NBIP	Vertical EA	76HUB/KLE
	2.4±0.1			EnCT		71CHU/BER
	3.2±0.2		·	NBIP		70LAC/HER
Cl ₂ CrO ⁻						
CrOCl ₂					$\Delta_f H(A) = -309 \pm 48$	69FLE WHI
-550±48	2.5±0.1			EIAP	From CrO ₂ Cl ₂	69FLE/WHI
Cl ₂ Ge ⁻						
GeCl ₂					$\Delta_f H(A) = -172 \pm 4$	79TPIS
-418 b	2.6			EIAP	From GeCl ₄	77PAB/MAR
Cl ₂ H ⁻						
HCI··CI		400.0	<b></b>	ans.		OSCIAT GEOD
* -419±10 ^c		100±8	72±11	TDAs		85CAL/KEB
		97±8 g	67±8	IMRE		84LAR/MCM2
× 501.40		99±1	70±1	TDAs	From CUCL.	74YAM/KEB 80SCH/ILL
<-521±48				EIAP	From CHCl ₃	000CII/ILL

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Cl ₂ I ⁻		· · · · · · · · · · · · · · · · · · ·				
ICI ₂		_				
-605		377 ^k		Latt		77FIN/GAT
Cl ₂ O-						
Cl ₂ O					$\Delta_f H(A) = 105 \pm 2$	82TN270
<-109 b	> 2.2			ECD		81WEC/CHR
Cl ₂ OP						
Cl ₂ PO						
	3.8±0.3			NBAP	From POCI ₃	76MAT/ROT
Cl ₂ OV					The state of the s	
voci2-						
−590±48	3.2±0.5			EIAP	From VOCi ₃	75FLE/SVE
Cl ₂ O ₂ S ⁻						
SO ₂ Cl ₂					$\Delta_f H(A) = -364 \pm 2$	82TN270
<-598 b	> 2.4			IMRB	EA: > Cl ₂	79ROB/FRA
Cl ₂ P						
PCI ₂						
2	$0.9 \pm 0.1$			EIAP	From PCl ₃	78PAB/MAR
<-891±19				EIAP	From POCl ₃	74HAL/KLE
Cl ₂ Si ⁻						
SiCl ₂					$\Delta_f H(A) = -166$	82TN270
<b>.</b>	$0.8 \pm 0.1$			EIAP	From SiCl ₄	77PAB/MAR
-228±21	> 2.5			EIAP	From SiCl ₄	68JAE/HEN
Cl ₂ Sn ⁻						
SnCl ₂					$\Delta_f H(A) = -203 \pm 4$	82TPIS
-95	1.0			EIAP	From SnCl ₄	77PAB/PER
Cl ₂ V						
VCl ₂					$\Delta_f H(A) = -1073 \pm 8$	82TN270
-1189±28 b	1.2±0.2			EIAP	From VOCl ₃	75FLE/SVE
 Cl ₃ -						
Cl ₃						
-300		70 ^k		IMRE		79ROB/FRA2
-300±21	>4.3±0.2			IMRB		79ROB/FRA
>-410 ^c		< 182		PDis		79LEE/SMI
Cl ₃ Ge ⁻				······································		
GeCl ₃						
	> 2.6				From GeCl ₄	79MAT/ROT
	1.8±0.1			EIAP	From GeCl ₄	78PAB/MAR
	1.8			EIAP	From GeCl ₄	77PAB/MAR

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Cl ₃ OP					1	
Cl ₃ PO  . -694±20 b	1.4±0.2			NBIP	$\Delta_f H(A) = -558 \pm 1$	<i>82TN270</i> 76MAT/ROT
Cl ₃ OV ⁻						
VOCI ₃ <-1043±49	h a c a s				$\Delta_f H(A) = -696$	82TN270
<-1043±49	~ 3.6±0.5			IMRB	EA: > Cl ⁻	75FLE/SVE
Cl ₃ O ₂ S ⁻						
SO ₂ Cl ₂ ··Cl						
<-644±21				IMRB	$Cl^-A: > Cl_2, SO_2$	79ROB/FRA
Cl ₃ P ⁻						
PCl ₃ -					$\Delta_f H(A) = -289 \pm 2$	85JANAF
−368±12 ^b	$0.8 \pm 0.1$			NBIP		76MAT/ROT
	>3.6			IMRB	From PCI ₅	74HAL/KLE
Cl ₃ Si ⁻				······································	$\Delta_f H(AH) = -481 \pm 8$	81BEUPER
SiCl ₃					$BDE(A-H) = 382\pm4$	81WAL
<-510±13 ^a	> 2.0	< 1501 e		EIAP	From SiCl ₄	77PAB/MAR
-589±21	3.5±0.4			EIAP	From SiCl ₄	68JAE/HEN
Cl ₃ Sn ⁻ SnCl ₃ ⁻			· · · · · · · · · · · · · · · · · · ·			
oneig	3.4±0.2			NBAP	From SnCl ₄	83LAC/MAN
	3.7±0.5				From SnCl ₄	79MAT/ROT
	2.53±0.01			EIAP	From SnCl ₄	78PAB/MAR
-583	2.5			EIAP	From SnCl ₄	77PAB/PER
Cl ₃ Ti ⁻				**************************************		
TiCl ₃					$\Delta_f H(A) = -542 \pm 2$	82TN270
-601±18 b	0.6±0.2			NBAP	From TiCl ₄	79MAT/ROT
	0.6±0.1				From TiCl ₄	78PAB/MAR
-597±13	0.6±0.2			EIAP	From TiCl ₄	74BEN/PAB
Cl ₃ V ⁻						
VCl ₃ -						
-569±48	2.2±0.5			EIAP	From VOCl ₃	75FLE/SVE
Cl ₄ I ⁻					AND THE RESERVE OF THE PROPERTY OF THE PROPERT	
ICl ₄						
-631				Latt		77FIN/GAT
 Cl ₄ Nb ⁻					4	
NbCl ₄					$\Delta_f H(A) = -561 \pm 2$	82TN270
<-696 b	> 1.4			EIAP	From NbCl ₅	75BEN/MAR
CL.Cn=	····					
Cl ₄ Sn ⁻ SnCl ₄					$\Delta_f H(A) = -472 \pm 2$	82TN270
OTICIA					writing Treats	
	2.2±0.2			NBIP		83LAC/MAN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdots Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Cl ₄ Ta ⁻ TaCl ₄ ⁻ <-696 b	> 1.4			EIAP	$\Delta_f H(A) = -561 \pm 2$ From TaCl ₅	<i>82TN270</i> 75BEN/MAR
Cl ₄ Ti ⁻ TiCl ₄ ⁻ · -1041±17 ^t	° 2.9±0.2			NBIP	$\Delta_f H(A) = -763 \pm 2$	<i>85JANAF</i> 79MAT/ROT
Cl ₅ Si ⁻ SiCl ₄ ··Cl ⁻ * -986±12 ^c		101±8 ^g	74±8	IMRE		85LAR/MCM
Co ⁻ * 361±2 b  372 a	0.662±0.0	003 1437±5 ^e	1395±13	LPES IMRB	$\Delta_f H(A) = 425 \pm 2$	<i>82TN270</i> 86LEO/LIN 85SAL/LAN
CoH ⁻ CoH ⁻ * 412±14 ^b	0.671±0.0	010		LPES	$\Delta_f H(A) = 477 \pm 13$	<i>81ARM BEA</i> 87MIL/FEI
CoH ₂ ⁻ CoH ₂ ⁻	1.450±0.0	014		LPES		86MIL/FEI
CoD ₂ ⁻ CoD ₂ ⁻	1.465±0.0	013		LPES		86MIL/FEI
Co ₂ - Co ₂ - * 576±9 b	1.110±0.0	008		LPES	$\Delta_f H(A) = 683 \pm 8$	<i>82TN270</i> 86LEO/LIN
Cr ⁻ Cr ⁻ * 332±3 ^b	0.666±0.0	012	1389±13	LPES IMRB	$\Delta_f H(A) = 397 \pm 2$	<i>82TN270</i> 85HOT/LIN 85SAL/LAN
CrCl ⁻ CrCl ⁻ · -145±48	1.1±0.2			EIAP	$\Delta_f H(A) = 48 \pm 48$ From $\text{CrO}_2\text{Cl}_2$	<i>69FLE/WHI</i> 69FLE/WHI
CrCl ₂ ⁻ CrCl ₂ ⁻ -309±48	1.7±0.2		(MAIA	EIAP	$\Delta_f H(A) = -128 \pm 2$ From $CrO_2Cl_2$	<i>82TN270</i> 69FLE/WHI
CrF - CrF - -67±48	1.0±0.4		·	EIAP	$\Delta_f H(A) = 21$ From $CrO_2F_2$	81WOO 69FLE/WHI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
CrFO ⁻						
CrOF.					$\Delta_f H(A) = -309 \pm 48$	69FLE WHI
-367±48	0.7±0.2			EIAP	From CrO ₂ F ₂	69FLE/WH
CrFO ₂ -						
CrO ₂ F					$\Delta_f H(A) = -473 \pm 48$	69FLEIWHI
-724±48	2.5±0.2			EIAP 	From CrO ₂ F ₂	69FLE/WH
CrF2 ⁻						
CrF ₂					$\Delta_f H(A) = -216$	81W00
-540±48	1.5±0.4			EIAP	From CrO ₂ F ₂	69FLE/WHI
CrF ₂ O ⁻						
CrOF ₂					$\Delta_f H(A) = -618 \pm 48$	69FLE WHI
-820±48	2.1±0.1			EIAP	From CrO ₂ F ₂	69FLE/WHI
CrH ⁻						
CrH ⁻						
*	0.563±0.01	10		LPES		87MIL/FEI
CrHO ₃ -						
HCrO ₃		<u>.</u>				
-1132±40	2.37±0.42	! 		TDEq		72MIL
CrH ₂ ⁻						
CrH ₂	> 2.500			I DIZC		
	- Z.300			LPES		86MIL/FEI
CrKO ₄ -						
KCrO ₄ - -1000±16				TO IZ-		ACD LID WID
-1000±10				TDEq		85RUD/SID
CrO ⁻ CrO ⁻					A 1//A) 010:00	00858444
	1.3±0.7			HIAP	$\Delta_f H(A) = 218\pm29$ From CrO ₂ F ₂	83PEDIMAF
					. 1011 01071 7	69FLE/WHI
CrO ₂ -					A 1//A)	00T1 10T
CrO ₂ ⁻ <-594±42				INADD	$\Delta_f H(A) = -59 \pm 21$	82TN270
	2.3±0.7			IMRB	From CrO. F.	72MIL
	2.J±V./			EIAP	From CrO ₂ F ₂	69FLE/WHI
CrO3  CrO3					A L/A)_ 200:0	20712-5
	3.70±0.30 i			<b>ጥ</b> ነው~	$\Delta_f H(A) = -386 \pm 2$	82TN270
-838±82 ^a				$ ext{TDE}_{ ext{q}}$		85RUD/SID 72MIL
CrO ₄ -		· · · · · · · · · · · · · · · · · · ·				
CrO ₄						
-785±30				TDEq		85RUD/SID

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Cr ₂ O ₆ - Cr ₂ O ₆	16.00					
	1.6±0.3			EIAP	From (CrO ₃ ) ₃	75WAN/MAR
Cr ₃ O ₉ ⁻ ·	1.8			EIAP	From (CrO ₃ ) ₅	75WAN/MAR
Cs ⁻					$\Delta_f H(A) = 76$	82TN270
* 31±5 ^a	0.472	1445±3 ^e		LPD		85HOT/LIN
CsI ₂ ⁻ CsI··I ⁻ -492±5 ^c		151±5		TDAs		79GUS/GOR
Cs ₂ I ₃ -						
Cs ₂ I ₂ ··I [−] -766±13		115±13 ^k		TDAs		79GUS/GOR
Cu ⁻ Cu ⁻ * 220±1 b	1.228±0.010	0 1459±22 ^f		LPES	$\Delta_f H(A) = 338$	<i>82TN270</i> 85HOT/LIN
Cu ₇ -						
Cu ₇	1.870±0.080	)		LPES		86ZHE/KAR
Cu ₈ -						
Cu ₈	< 1.440			LPES		86ZHE/KAR
Cu9						
Cu ₉	2.270±0.060	)		LPES		86ZHE/KAR
Cu ₁₀ ⁻ Cu ₁₀ ⁻						
Cu ₁₀	2.010±0.060	)		LPES		86ZHE/KAR
Cu ₁₁ ⁻ Cu ₁₁ -						
Cu ₁₁	2.380±0.060	)		LPES		86ZHE/KAR
Cu ₁₂ - Cu ₁₂ -						
Cu ₁₂ -	2.140±0.070	)		LPES		86ZHE/KAR
Cu ₁₃ ⁻ Cu ₁₃ ⁻						
Cu ₁₃	2.605±0.175	i		LPES		86ZHE/KAR

Table 2. Negative Ion Table - Continued

Ion A III A	EACAN	ALI (ATT)	AC (ATT)	M-4" - 1	0	D - C · · · ·
Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y^{-})$	Method	Comment	Reference
Cu ₁₄ -						
Cu ₁₄	2.075±0.0	125		LPES		86ZHE/KAR
	2.073±0.0			LITES		60ZIIL/KAK
Cu ₁₅ -						
Cu ₁₅	2.575±0.1	.35		LPES		86ZHE/KAR
Cu ₁₆ - _{Cu₁₆-}						
Cu ₁₆	2.325±0.1	.15		LPES		86ZHE/KAR
				<del></del>		
Cu ₁₇ - _{Cu₁₇-}						
1/	< 2.720			LPES		86ZHE/KAR
Cu ₁₈ -	. 7:71					
Cu ₁₈ Cu ₁₈ -						
	2.570±0.1	.30		LPES		86ZHE/KAR
 Cu ₁₉ -						
Cu ₁₉						
	2.705±0.2	265		LPES		86ZHE/KAR
F-				. =		
F ⁻ * -249±2 ^a	2 200 - 0 0	03 1554±1 ^e	1530±2 ^h	73.Y A	$\Delta_f H(A) = 79$	85JANAF
	3.399±0.0	1334±1 °	1530±2 ·- 1530±8	PLA IMRE ⁰		85HOT/LIN 79BAR/SCO
rnı HF…"						
* -524±10 ^c		63±8		Est	Extrapolated from other bihalide data	84LAR/MCM3
FH ₂ O ⁻						
HOH··F						
−588 ^c		97±8	76±8	TDAs		70ARS/YAM
FH ₂ S ⁻						
HSH··F		_				
* -414±11 ^c		145±8 ^g	121±8	IMRE		83LAR/MCM
FK-						
KF.	400=				$\Delta_f H(A) = -327 \pm 2$	85JANAF
−427±22 ^b	1.0±0.2 <1.50			EIAP IMRE	From K ₂ BO ₂ F	76SHE/ILJ
	0.2			Scat		80SID/SKO 79DEV/WIJ
	>1.3			EIAP	From (KF) ₂	64EBI
FLi-		<del></del>			**************************************	<del></del>
LiF ⁻ ·					$\Delta_f H(A) = -340$	82TN270

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
FN-						
FN  . 184±2 ^b	0.5			EIAP	$\Delta_f H(A) = 232 \pm 2$	<i>84BERIGRE</i> 82SID
FNP-		*				
NPF-						
<-285				IMRB	$NH_2^- + PF_3 \rightarrow$	78SUL/BEA
FNa ⁻						
NaF ⁻ ·					$\Delta_f H(A) = -291$	82TN270
−399±20 b	1.1±0.2			EIAP	From Na ₂ BO ₂ F	76SHE/ILJ
	0.4			Scat	<del></del>	79DEV/WIJ
	> 1.4			EIAP	From (NaF) ₂	64EBI
FNa ₂ -						
Na ₂ F						
-300±42				EIAP	From Na ₂ BO ₂ F	76SHE/ILJ
FO-					$\Delta_f H(AH) = -96 \pm 4$	82BAU COX
FO ⁻					BDE(A-H)= 412±13	82BAUICOX
−89±13 ^b	2.05±0.08			EIAP	From F ₂ O	84ALE/VOL
	>1.4±0.5			EIAP	From CF ₃ OF	70THY/MAC
FOV-						
VOF						
-473±48	1.2±0.4			EIAP	From VOF ₃	75FLE/SVE
FO ₂ S ⁻						
so ₂ ··F		_				
* -729±12 ^c		183±8 ^g	154±8	IMRE		83LAR/MCM
<-595				EIAP	From SO ₂ F ₂	80WAN/FRA
-511				IMRB		78SUL/BEA
	2.8			SI		69PAG/GOC
-715				EIAP	From SO ₂ F ₂	58REE/DIB
FO ₃ S ⁻						
SO ₃ ··F						
* -971±45 ^c	4.6±0.6 ^d	326±42 ^g	297±42	<b>IMRB</b>		85LAR/MCM
<-971±13 ⁸	ı	<1312±8		EIAP	From FSO ₃ H (Appearance Potential = 0 eV)	86ADA/SMI
FS-						
FS ⁻					$\Delta_f H(A) = 13\pm6$	85JANAF
-180±55 ^b	2.0±0.5			Est	From trends in EA of SF _X	82JANAF
FXe ⁻						
Xe·F						
−276 ^c	·	27±4		Mobl		79DEV/WIJ2
F2-						
F ₂	2.1			TOD	W	
-29/	3.1			ECD	Vertical EA: 1.24 eV	81AYA/WEN
	$2.9 \pm 0.2$			EIAP	From NF ₃	74HAR/FRA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₂ -						
F2  ·						
	2.9±0.2			EIAP	From BF ₃	71DEC/FRA
	3.2			EIAP	From SO ₂ F ₂	80WAN/FRA
	$> 2.8 \pm 0.3$			EIAP	From CF ₂ O	72THY
	3.1±0.1			EnCT		71CHU/BER
	> 3.0			EIAP	From SO ₂ F ₂	58REE/DIB
F ₂ Ge ⁻	<del></del>					
GeF ₂					$\Delta_f H(A) = -573$	81W00
-695±29	>1.3±0.3			EIAP	From GeF ₄	72HAR/CRA
 F ₂ H ⁻						
FH··F						
* -683±11 ^c		162±8 ^g	134±8	IMRE		83LAR/MCM
<-666±19		> 145±19 ^k		EIAP	From CHF = CHF	85HEN/ILL
E INOD-						
F ₂ HNOP- HNOPF ₂ -						
<-1079				IMRB		70CY II /DE A
<b>\-1079</b>			NILL" + OPR.		$F_2^- + HF; HNOPF_2^- + OPF_3 \rightarrow (F_3PO)_2N^- + HF$	78SUL/BEA
			1112 7 0113	7111011	2 + III, INOIT2 + OTT3 - (T3TO)2N + III	
F ₂ HNP ⁻						
HNPF ₂						
<-556				IMRB	$NH_2^- + PF_3 \rightarrow$	78SUL/BEA
F ₂ K ⁻						· · · · · · · · · · · · · · · · · · ·
KF.·F						
-806±11 ^c		224±3		TDAs		81NIK/SID
−790±6 ^c		200±4			F ⁻ A: 1100K; ΔHf(KF ₂ ⁻ ): 298K	80SID/NIK
<-803±21				•	2 / 2 - 2	79GUS/GOR
F ₂ Mn ⁻						
MnF ₂					$\Delta_f H(A) = -525$	81W00
-943±15 b	4.36±0.15			TDEq	271107 - 020	82SID/GUB
F ₂ N ⁻				····	A 1//ALD 07 0	
NF ₂					$\Delta_f H(AH) = -65\pm6$ $BDE(AH) = -314\pm10$	69PANIZER
	1.28±0.20	d 1502±10 g	1472+0	IMDE	$BDE(A-H) = 314\pm10$	84BERIGRE
-32#13 ·	1.20±U.2U	1302±10 8	1473±8	IMRE		86TAF
-123±31	1 7+0 2		1477	IMRE	E NE	81KOP/PIK
<-45±19	1.7±0.2			EIAP	From NF ₃	74HAR/FRA
~ <del>~4</del> J±13	>0.7±0.2			EIAP	From NF ₃	79DUD/BAL
	> 0.4±0.1			EIAP	From N ₂ F ₄	78DUD/BAL
	3.0		······································	SI		69PAG/GOO
F ₂ NOP-						
ONPF ₂ -						
<-582					$HNO^- + PF_3 \rightarrow NOPF_2^- + HF$	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
F ₂ OP						
F ₂ PO ⁻						
<-962					HNO ⁻ + OPF ₃ →	78SUL/BEA
-448±19	3.4±0.2	<del></del>		EIAP	From F ₃ PO	71RHY/DIL
F ₂ OPS ⁻						
F ₂ POS						
<-1033				IMRB	HS ⁻ + OPF ₃ →	78SUL/BEA
F ₂ OV	***************************************					
VOF ₂						
-925±48	2.8±0.5			EIAP	From VOF ₃	75FLE/SVE
F ₂ O ₂ P ⁻						
F ₂ PO ₂						
<-1167				IMRB	$HO^-$ or $EtO^- + OPF_3 \rightarrow$	78SUL/BEA
F ₂ O ₂ S ⁻	· · · · · · · · · · · · · · · · · · ·	<u>, , , , , , , , , , , , , , , , , , , </u>		<u></u>		
SO ₂ F ₂					$\Delta_f H(A) = -759 \pm 8$	87HER
<u>2</u> - <u>2</u>	< 3.1			IMRB	EA: $\langle F_2 \rangle$	78GAL/FAI
			· · · · · · · · · · · · · · · · · · ·			
$F_2O_2U^-$						
UO ₂ F ₂ -	004 050			m		0.4.C.O.D. (DV.)
	3.36±0.52	·····		TDEq		84GOR/PYA
F ₂ P ⁻						
PF ₂					$\Delta_f H(A) = -482 \pm 2$	84BERIGRE
-636±51 b	1.6±0.5			EIAP	From PF ₂ NCS	72THY
	$> 1.6 \pm 0.5$			SI		69PAG/GOC
	1.5±0.5			Est2		82JANAF
F ₂ PS ⁻						
F ₂ PS						
<b>4</b>	2.6±1.0			EIAP	From PF ₃ S	71RHY/DIL
F ₂ V ⁻						
VF ₂						
-703±48	0.4±0.5			EIAP	From VOF ₃	75FLE/SVE
FaCr-						
F ₃ Cr ⁻ CrF ₂ ··F ⁻						
-1124±15				TDEq		83IGO
F ₃ Cu ⁻						
CuF ₂ ··F	>5.26 i	351±17		TDEq	Anchor: FA(FeF3) 84CHI/KOR	86KUZ/KOF
n n -						
F ₃ Fe ⁻						
FeF ₂ ··F -1069±12 c	3.62±0.13	i <i>359±9</i>		TDEq		86SID/BOR
100/114	J.J. 2011J	J	Corrections to 8		), better neutral pressure determination	
					,	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₃ Fe ⁻						
$FeF_2 \cdot \cdot F^-$						
-1138±14 ^c	4.30±0.20	) ¹ 441±14		TDEq	F ⁻ A: 64±5 kJ < AlF ₃	81SOR/SID
F ₃ Ge ⁻						
GeF ₃						
-860±21	1.1±0.4			EIAP	From GeF ₄	74WAN/MAR
-858	1.6			EIAP	From GeF ₄	74FRA/WAN
	3.1±0.1			EIAP	From GeF ₄	72HAR/CRA
F ₃ Mn ⁻						
$MnF_2 \cdot \cdot F^-$						
–1213 ^c	4.36 ⁱ	430		TDEq		81SID/SOR
F ₃ Ni ⁻						
NiF ₂ ··F						
		338±15		TDEq	Reanalyzed literature data, 150 kJ < AIF ₃	86NIK/IGO
F ₃ OS ⁻						
$F_2SO \cdot \cdot F^-$						
* -904±42 ^c		156±8 ^g	126±8	IMRE		83LAR/MCM
F ₃ OV ⁻						
VOF ₃					$\Delta_f H(A) = -1234 \pm 29$	75FLE SVE
_	3.1±0.4			IMRB	$EA: > VOF_2^-, < F^-$	75FLE/SVE
F ₃ OW ⁻			-			
wor ₃						
	>0.3			EIAP	From WOF ₄	77HIL
F ₃ O ₂ S ⁻						
$SO_2F_2 \cdot \cdot F$						
* -1157±19 °		150±8 ^g	115±8	IMRE		83LAR/MCM
-1284±21				IMRB		78GAL/FAI
F ₃ Pb ⁻					(White Address of the Control of the	
PbF ₃ -					$\Delta_f H(A) = -510 \pm 54$	75BEN/WAN
-867±54	3.7			EIAP	From PbF ₄	75BEN/WAN
-887	4.3			EIAP	From PbF ₄	74FRA/WAN
F ₃ S ⁻						
SF ₃					$\Delta_f H(A) = -488 \pm 25$	87HER
-785±44 b	3.1±0.2			NBAP	From SF ₆	78COM/REI
	2.9±0.1			EIAP	From SF ₄	71HAR/THY
	2.7±0.7			Est	Reanalysis: 71HAR/THY	82JANAF
	2.7			SI		69PAG/GOO
F ₃ Se ⁻				· · · · · · · · · · · · · · · · · · ·		
SeF ₃						
-774				EIAP	From SeF ₆	69BRI

Table 2. Negative Ion Table - Continued

$ \begin{array}{cc} \Delta_{\mathbf{f}}H(\mathbf{A}^{-}) \\ \Delta_{\mathbf{f}}H(\mathbf{X}\cdot\mathbf{Y}^{-}) \end{array} $	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₃ Si ⁻					$\Delta_f H(AH) = -1201 \pm 21$	85JANAF
SiF ₃					$BDE(A-H) = 419\pm4$	81WAL
* -1284±35 ^a	2.9±0.1	1446±14 ^e	1414±15 ^h	PD		75RIC/STE4
-1176	2.0			EIAP	From SiF ₄	74FRA/WAN
-1176	2.0			EIAP	From SiF ₄	73WAN/MAF
	3.7			EIAP	From SiF ₄	70MAC/THY
	3.4			SI	·	69PAG/GOO
3Sn						
SnF ₃						
	>1.2			EIAP	From SnF ₄	77PAB/PER
-632	> 1.2			EIAP	From SnF ₄	75BEN/WAN
-887	2.6			EIAP	From SnF ₄	74FRA/WAN
F ₃ V ⁻ VF ₃ ⁻						
-1033±48	1.6±0.4			EIAP	From VOF ₃	75FLE/SVE
F ₄ Cr ⁻						
$CrF_3 \cdot \cdot F$						
-1467±15				TDEq		83IGO
			$FeF_3^- + CrF_A^-$	_	+ $CrF_3$ , $\Delta_{rxn}H = 9 kJ$	
				· · · · · · · · · · · · · · · · · · ·	J - 1/11	· · · · · · · · · · · · · · · · · · ·
√4Fe ⁻						
FeF ₃ ··F						
-1423±18 ^c		451±10		TDEq	$F^-A: 92.5 \text{ kJ} > \text{FeF}_2$	86SID/BOR
1490 ^c		456±14			$F^A: 37 \text{ kJ} < AlF_3$	84CHI/KOR
-1412±14 ^c	5.45±0.20 i	439±14			$F^A$ : 62 kJ < $AlF_3$	81SOR/SID
G4Ge2						
Ge ₂ F ₄						
<-121				IMRB		72HAR/CRA
4La						
LaF3 · F						
-2004±33				TDEq		79GUS/GOR
4Mn-						
$MnF_3 \cdot \cdot F^-$						
-1463±60 ^c		421±13		TDEq	$F^-A: 72\pm 3 \text{ kJ} < AlF_3$	84CHI/KOR
-1466±60	5.23±0.03 ⁱ				FTA: 79 kJ < AIF ₃	84KOR/CHI
4OP					***************************************	
F ₃ PO··F						
* -1660±13 ^c		200±8 g	168±8	IMRE		85LAR/MCM
-1594±46 ^c		134±42			$FTA: SF_4 > F_3PO > SF_5$	71RHY/DIL
4OU ⁻	7.	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-			***************************************	
UOF ₃ ··F¯	2 00 . 0 42			(DD T		
	3.80±0.43			TDEq		84GOR/PYA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₄ P-						
PF ₃ ··F™						
* -1336±13 °	!	168±8 ^g	136±8	IMRE		83LAR/MCM
		209±21		IMRB	$F^-A$ : < $OPF_3$ , > $F$ , $SF_4$ , $Me_3SiF$ , $HCN$ , $SO_2$	78SUL/BEA
F ₄ PS ⁻						
$F_3PS \cdot \cdot F^-$						
-1374±106	c	134±42		IMRB	FA: between SF ₄ , SF ₅	71RHY/DIL
F ₄ Pt ⁻	*					
PtF ₄					$\Delta_f H(A) = -524 \pm 25$	83KORIBON
•	5.20±0.16			TDEq	EA: $2.5 \text{ kJ} > \text{MnF}_4$	84KOR/CHI
F ₄ Rh ⁻						
RhF ₄	5.00±0.20 ⁱ	401±14		TDFa	F ⁻ A: 22 kJ < MnF ₃	84CHIAKOD
	J.00±0.20	701114		TDEA	1. A. 22 KJ \ WIII - 3	84CHI/KOR
F ₄ S ⁻					A LUA) _ 700,04	05 (44)
SF ₄ * -990±31 b	24.01			Y) (D)D	$\Delta_f H(A) = -763 \pm 21$	85JANAF
-990±31	0.8±0.1			NBIP	EA: between NO ₂ , HS	81BAB/STR2
	1.3±0.1			ES		78COM/REI 74DON/HAR
F ₄ Sc ⁻		· · · · · · · · · · · · · · · · · · ·		<del></del>		
ScF ₃ ··F						
-2013±13 ^c		495±10		TDEq	$F^-A: 10 \text{ kJ} < AIF_3$	81SKO/NIK
-2009±13 ^c		487±10			$F^-A: 17 \text{ kJ} < AlF_3$	81NIK/SID
		470±10			Reanalyzed data, 18 kJ < AlF ₃	86NIK/IGO
F ₄ Se ⁻						
SeF ₄		1				
·	1.7±0.1			EIAP	From SeF ₆	73HAR/THY
-795±42				EIAP	From SeF ₆	69BRI
F ₄ Te ⁻						**************************************
TeF ₄ -						
-895±42	2.2±0.1			EIAP	From TeF ₆	73HAR/THY
-09J±42	-m-			EIAP	7.44.4	69BRI
F ₄ Ti ⁻					A 1/40)	
TiF ₄	- 00			F74	$\Delta_f H(A) = -1552 \pm 2$	82TN270
	>0.0	*****		EIAP		74BEN/PAB
F ₄ U ⁻						
UF ₄		6			$\Delta_f H(A) = -1599 \pm 2$	82TN270
* -1725±30	1.24±0.36 ⁱ < 1.8	415±42 ^k		TDEq IMRB	Critical review	84PYA/GUS 80SID/SKO
		· · · · · · · · · · · · · · · · · · ·				.,
F ₄ W ⁻ WF ₄ ⁻ ·					$\Delta_f H(A) = -1029$	81WOO
-1280 b	2.6			EIAP	From WF ₆	77DEW/NEU
	> 2.3±0.1				From WF ₆	73THY/HAR2
					0	· • 1111/11/11/4

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₄ W ⁻				······································		<del></del>
WF ₄					$\Delta_f H(A) = -1029$	81W00
	> 1.0			EIAP	From WF ₆	77HIL
F ₅ Cr ⁻			· · · · · · · · · · · · · · · · · · ·			
CrF ₄ ··F						
-1753±15				TDEq		83IGO
			$FeF_3^- + CrF_5^-$	= FeF ₄	$+ \operatorname{CrF_4}^-, \Delta_{\operatorname{rxn}} H = -48 \text{ kJ}$	
F ₅ Fe ₂ -						
$FeF_2 \cdot \cdot FeF_3^-$						
* -1740±43 ^c	3.80±0.40	i 202±37		TDEq		86SID/BOR
-1769±17 ^c		201±4		_	$\Delta_{\rm f} H({ m A}^-)$ at 0K	81SOR/SID
F ₅ Ge ⁻					44	
GeF ₄ ··F						
-1856±26		418±29 ^k		Latt		84MAL/ROS
<-2038 ^c		> 405		IMRB		72HAR/CRA
F ₅ Hf ⁻				*		
HfF ₅						
-2386±17 ^c		429±17		TDEq	Reanalyzed literature data, 59 kJ < AlF ₃	86NIK/IGO
		405±9			$FA: 84 \text{ kJ} < AlF_3$	80NIK/SOR
F ₅ Mn ⁻						
MnF ₅						
-1565±84		348±84		TDEq	$F^A: 73 \text{ kJ} < \text{MnF}_3$	84KOR/CHI
F ₅ Mo ⁻						
MoF ₅					$\Delta_f H(A) = -1241$	85JANAF
3	> 3.5			NBAP	From MoF ₆	78COM/REI
	> 3.3±0.4				From MoF ₆	77MAT/ROT
F ₅ Pt ⁻						
PtF ₅						
J	6.50			TDEq		79SID/NIK
F ₅ S ⁻			· · · · · · · · · · · · · · · · · · ·			
SF ₅						
* -1195±31 ^c	3.01±0.29	i <i>183±8 g</i>	151±8	IMRE		83LAR/MCM
<-1263±33					$F^-A: SF_4 > SF_5$	81BAB/STR2
-1251±25					From SF ₆	74LEF/TAN
-1269±33 ^b	3.7±0.2			Est	Literature average	82JANAF
	2.7±0.2			NBAP	From SF ₆	78COM/REI
	> 2.9±0.1				From SF ₆	75HUB/LOS
	> 2.8±0.1			EnCT	-	73LIF/TIE
	> 2.8±0.2			NBAP	From SF ₆	73COM/COC
	3.2±0.2				From SF ₆ , new EA(F ⁻ )	61CUR2
	3.66±0.04			SI	•	64KAY/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{\text{acid}}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
F ₅ Se ⁻				· · · · · · · · · · · · · · · · · · ·		All the second s
SeF ₅					$\Delta_f H(A) = -476 \pm 42$	69BRI
-1385±40	>5.1 ⁱ			NBAP	From SeF ₆	78COM/REI
	$3.3 \pm 0.1$			EIAP	From SeF ₆	73HAR/THY
<-1197				EIAP	From SeF ₆	69BRI
 F ₅ Si ⁻		**************************************				· · · · · · · · · · · · · · · · · · ·
SiF ₄ ··F						
* -2115±19 °		251±17g	226±17	IMRE		85LAR/MCM
		285±21		IMRB	$F^-A$ : $< BF_3$ , $> iPr_2BF$	77MUR/BEAS
<-2318				IMRB	3, 1102	70MAC/THY
F ₅ Te ⁻		NIII. III. III. III. III. III. III. III				
TeF ₅					$\Delta_f H(A) = -586 \pm 42$	69BRI
<b>3</b>	4.5			NRAP	From TeF ₆	78COM/REI
	4.2±0.1			EIAP	From TeF ₆	73HAR/THY
<-1397	7.22.0.1			EIAP	From TeF ₆	69BRI
2 m –	<del></del>	<del></del>	· <del>····································</del>			
F ₅ Th ⁻						
$ThF_4 \cdot \cdot F^-$						
-2432±13		436±15 ^k		TDEq	$F^-A: 88 \text{ kJ} < AlF_3, 15 \text{ kJ} < ZrF_4$	83SID/ZHU
$F_5U^-$						
UF ₅ ~						
-2275±19 ^c				TDEq	Reanalyzed literature data, 61 kJ < AlF ₃	86NIK/IGO
* -2322±15	3.47±0.26			TDEq	Critical review, other literature data corrected	84PYA/GUS
-2256±4 ^c	3.30±0.16			TDEq	$F^A: 93 \text{ kJ} < AIF_3$	80SID/SKO
-2297±33	3.78±0.40	i 448±36 ^k		TDEq		80PYA/GUS
-2297±33				TDEq		79GUS/GOR
-2297±33	> 1.9±0.4	i		NBAP	From UF ₆	77MAT/ROT
-2265±14	4.0±0.4 ⁱ			NBAP	From UF ₆	77COM
75W ⁻						
WF ₅					$\Delta_f H(A) = -1397$	81W00
>-1631	< 3.5			IMRB	EA: $WF_5 < WF_6$	79GEO/BEA
	> 1.8±0.3				From WF ₆	78COM/REI
<-1338±25				EIAP	From WF ₆	77HIL
- 1330343	1.2±0.3				5	77DIS/LAC
	1.2±0.3 1.3±0.2			ELAP	•	
	0.8±0.2	270 ^k		EIAP	From WF ₆ From WF ₆	77DEW/NEU 73THY/HAR2
				·····	V	
F <b>5Zr</b> − ZrF ₄ ··F−						
-2338±31 °		415±8		TDFa	$F^-A: 92\pm 3 \text{ kJ} < AlF_3$	82SKO/SOR
-2343±17 ^c		403±4			FA: 97 kJ < AIF ₃	81SKO/NIK
'-Foa-						
F ₆ Fe ₂ - Fe ₂ F ₆ -						

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot Y^{-})$	Method	Comment	Reference
F ₆ Ge ₂ -						
Ge ₂ F ₆						
<-117				IMRB		72HAR/CRA
F ₆ Ir ⁻						
IrF6 ⁻ ·					$\Delta_f H(A) = -544 \pm 21$	82TN270
	>5.1±0.5			NBIP	·	78COM/REI
—————— F ₆ Mo [–]						
MoF ₆					$\Delta_f H(A) = -1558 \pm 1$	85JANAF
	> 5.1±0.5			NBIP	•	78COM/REI
	>4.5±0.4			NBIP		77MAT/ROT
F ₆ P-						
PF ₅ ··F  * -2200±46 ^c		356±42 g	200.42	IMDI7		OST AD ACOM
-2200±40		330±42¢ 423±33	308±42	IMRE		85LAR/MCM
***************************************		423±33		latt		84MAL/ROS
F ₆ Pt ⁻						
PtF6-					$\Delta_f H(A) = -676 \pm 28$	86KOR∤NIK
* -1448±57 b		1			EA: $272 \text{ kJ} > \text{PtF}_4$	81NIK/SID2
	>5.1±0.5			NBIP		78COM/REI
F6Re-						
ReF ₆ -					$\Delta_f H(A) = -1349$	84BARIYEH
	>5.1±0.5			NBIP		78COM/REI
F ₆ S ⁻				•		
SF ₆					$\Delta_f H(A) = -1221 \pm 1$	85JANAF
* -1322±10 b	1.05±0.10	159±15 ^k		TDEq	•	85GRI/CHO
	0.542			LPD		82DRZ/BRA
	0.8			Kine		83LIF
			Review: literatur		ent with $\Delta S^{\frac{1}{2}}$ for detachment = -59 J/mol-K	
	$0.5\pm0.2$			NBIP		78COM/REI
	$1.4 \pm 0.1$			Kine		83HEN/BEN
	>0.7			ECD		83CHE/WEN
	1.2±0.3			Est	Literature average	82JANAF
<-1310				CIDT		78REF/FRA
	0.3±0.1			NBIP		75HUB/LOS
	0.8±0.1			NBIP		74LEF/TAN
	>0.6±0.1			EnCT		73LIF/TIE
	0.5±0.1			NBIP		73COM/COO
	0.5±0.2			NBIP		73COM/COO
	0.9±0.5			IMRB		71FEH
	0.4			IMRB		70LIF/HUG
	> 0.7			ECD		68CHE/GEO
	1.1			ES		66COM/CHR
	1.5±0.2			SI		64KAY/PAG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₆ Sb ⁻				·····		
SbF ₅ ··F						
	>6.0			NBAP	From Sb ₂ F ₁₀	80COM/REI
F ₆ Se ⁻						
SeF6					$\Delta_f H(A) = -1117 \pm 21$	82TN270
−1397±40 b	2.9±0.2			NBIP	•	78COM/REI
F ₆ Te ⁻			***************************************			
TeF6-					$\Delta_f H(A) = -1318 \pm 21$	82TN270
* -1636±31 b	3.3±0.1			NBIP		78COM/REI
	3.3±0.2			NBIP		73COM/COO2
	3.3±0.2			NBIP		73COM/COO
F ₆ U-						
UF6					$\Delta_f H(A) = -2147 \pm 2$	82TN270
* -2680±25	$5.58\pm0.31$			TDEq	Critical review	84PYA/GUS
-2649±30	5.20±0.34			TDEq	$F^A: 55\pm 8 \text{ kJ} > UF_4$	83SKO/SOR
-2628±24 ^c	4.89±0.25	424±17		TDEq	F ⁻ A:(1100K) 14±1 kJ > UF ₄ . $\Delta_f H(A^-)$ :298K	80SID/SKO
	6.33±0.50			TDEq		80PYA/GUS
-2724±42	5.8±0.3 i			Latt		84MAL/ROS
	> 3.6			IMRB		80STR/NEW
	> 5.5			IMRB		80ANN/STO
	$>4.3\pm0.4$			NBIP		77MAT/ROT
	>5.1			NBIP		77COM
	4.9±0.5			IMRB	Endo F transfer to BF3 at 1.5 eV observed	76BEA
	2.9			SI		69PAG/GOO
F ₆ W ⁻						
wr ₆ -					$\Delta_f H(A) = -1722 \pm 8$	82TN270
-2046±28 ^b	$3.4 \pm 0.2$			IMRB		85VIG/PAU
-2061±25	3.5±0.1			IMRB	EA: > F ⁻ , < Cl ⁻	79GEO/BEA
	>5.1±0.5			NBIP		78COM/REI
	>4.9±0.4			NBIP		77MAT/ROT
	3.7±0.2			NBIP		77DIS/LAC
	2.7			SI		69PAG/GOO
F ₇ Fe ₂						
FeF ₃ ··FeF ₄						
-2379±37 ^c	4.5±0.2 i	189±24		TDAs		86SID/BOR
-2280±18		204±4		TDAs	Δ _f H(A ⁻ ) at 0K	81SOR/SID
F ₇ MnPt ⁻						
$MnF_3 \cdot PtF_4$						
-2054±105				TDEq		84KOR/CHI
F ₇ Mn ₂ -						
$MnF_3 \cdot \cdot MnF_4$	-					
-2517±84				TDAs		84KOR/CHI

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
F ₇ Sc ₂ -						· · · · · · · · · · · · · · · · · · ·
$ScF_3 \cdot \cdot ScF_4$		228±1	199±1	TDAs		81NIK/SID
UF ₆ ··F						
-2630±30		237±30 ^k		TDEq	Critical review	84PYA/GUS
-2588±46 ^c		192±42		IMRB		76BEA
F ₇ W ⁻						
$w_{6} \cdot \cdot f$						
-2266±24	< 6.5	289±21 ^k		IMRB	$F^-A: SiF_4 < WF_6 < BF_3$	79GEO/BEA
F ₈ Ge ₂ -						
Ge ₂ F ₈						
<-151	·			IMRB		72HAR/CRA
F ₈ KSc ₂ -						
$KScF_4 \cdot \cdot ScF_4$		144+2	120±4	TTVA		91NII <i>V  </i> 611)
	<del></del>	144±3	12014	TDAs		81NIK/SID
F ₈ U ₂ -						
U ₂ F ₈ ⁻ >-3598±100	12 30 i			TDEA		84PYA/GOR
~ -3J90±1U(		<del>""</del>		TDEq		04F I A/OUR
F ₉ U ₂ -						
U ₂ F ₉ -4130±30	4.30±0.52	500±50 k		TDE		84PYA/GOR
-4130±30 -4138±33	7.30±0.34	, 500±50		TDEq TDEq		80PYA/GUS
Fo7re						
F ₉ Zr ₂ ⁻ ZrF ₄ ··ZrF ₅ ⁻						
-4228±15 c		214±4		TDAs		82SKO/SOR
F ₁₀ U ₂	<del></del>					
$U_2F_{10}^-$						
-4490±30	4.50±0.40	) ⁱ 520±50 ^k		TDEq		84PYA/GOR
$F_{11}U_2^-$			····· ·			
$U_2F_{11}^-$		;				0403/4/000
-4850±40	6.10±0.70	) ⁱ 540±50 ^k		TDEq		84PYA/GOR
$F_{12}U_2^-$						
U ₂ F ₁₂ -5200±79	700.000	ı i		TDEA		84PYA/GOR
> -5200±79	7.90±0.80	) ·		TDEq		on moon
Fe ⁻					$\Delta_f H(AH) = 471 \pm 29$	79DEN/VAN
Fe ⁻				* ====	BDE(A-H)= 163±29	79DEN/VAN
* 402±1 b	0.151±0.0		1000 10	LPES		86LEO/LIN 85SAL/LAN
*	0.162+07	1420±13 g	1389±13	IMRB LPES		85HOT/LIN
> 361±42 ^a	0.163±0.0			EIAP	From Fe(CO) ₅	76COM/STO
> JUII44	~ U.J.EU.∠	1420213		*******		

780

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
FeH ⁻						
FeH¯ *	0.934±0.010			LPES		83STE/FEI
FeH ₂ -						
FeH ₂ -*	1.049±0.014			LPES		86MIL/FEI
FeD ₂ -				_	The second secon	
FeD ₂ -*	1.038±0.013			LPES		86MIL/FEI
FeO-	· · · · · · · · · · · · · · · · · · ·	****			$\Delta_f H(AH) = 133 \pm 17$	80MUR
FeO ⁻ * 107±56 ^a	1.492±0.020	1504±40 ^e		LPES	BDE(A-H)= 336±38	<i>85JANAF</i> 77ENG/LIN
Fe ₂ -						
Fe ₂ ⁻	0.902±0.008			LPES		86LEO/LIN
Ga-			<del></del>	DH	$\Delta_f H(AH) = 220 \pm 13$	
Ga ⁻ 236±36 ^a	0.3±0.1	1546±23 ^e		PD	BDE(A-H) = 262±8	<i>81KAN/MOO</i> 85HOT/LIN
Ge ⁻						
Ge ⁻ * 258±2 ^b	1.233±0.003			LPES	$\Delta_{f} H(A) = 377 \pm 2$	<i>82TN270</i> 86MIL/MIL
GeH ₃ -		,			$\Delta_f H(AH) = 91\pm2$	82TN270
GeH ₃  * 50±17 ^a	1.739±0.043	1490±15 ^e	1455±15 ^h	LPD	BDE(A-H) = 345±10	<i>83NOB  WAL</i> 74REE/BRA
н-					- MARINE HILLIANS	
	0.8	1675 ^e	1649 ^h	Calc	BDE(A-H) = 436 Given: 0.754209(3) eV	<i>85JANAF</i> 85HOT/LIN
	0.78±0.02	<del> </del>		PD		70FEL
H <b>IS</b> ISH					$\Delta_f H(A) = 105$	76REF
<b>-48</b>	1.1			Endo	I + H ₂ S →	76REF
НІ ₂ - ні…г						
* -233±9 °		71±8	41±11	TDAs		85CAL/KEB
HK ₂ O-						
K ₂ OH¯ −345±12				TDEq		84BUR/KUD

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) H _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
HMg ⁻						
MgH ⁻	1.05±0.06			PD		77RAC/FEL
HMn ⁻	· · · · · · · · · · · · · · · · · · ·		······································			
MnH ⁻					$\Delta_f H(A) = 256$	79HUB/HER
* 172 b	0.869±0.010			LPES		83STE/FEI
HMoO ₄ -					$\Delta_f H(AH) = -887 \pm 21$	82TN270
-1055±61 ^a		1362±40		TDEq	$e^- + H_2MoO_4 = HMoO_4^- + H$	79MIL
HN-	17 11.11		<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>		$\Delta_f H(AH) = 189 \pm 1$	85GIBIGRE
NH					$BDE(A-H) = 406\pm18$	85JANAF
* 340±21 ^a	0.381±0.014	1682±20 ^e	1653±21 ^h	LPES	See also 85NEU/LYK	76ENG/LIN
	0.380±0.030			LPES		74CEL/BEN
HNO-						
HNO					$\Delta_f H(A) = 100 \pm 4$	82BAU/COX
* 68±6 ^b	0.338±0.015			LPES		83ELL/ELL
			>1498	IMRB		77SUL
DNO-						
DNO-						
*	0.330±0.015			LPES		83ELL/ELL
HNO ₃ -						
HNO ₃					$\Delta_f H(A) = -135$	82TN270
-190±15 ^b	$0.6 \pm 0.1$			NBIP		76MAT/ROT2
	0.6±0.2			EnCT		82PAU/DAL
HN ₂ O ⁻						
HN=NO						
< 247				IMRB	RONO + NH ₂ ⁻ →	81KIN/MAR
<130±21				IMRB	$CH_2 = N^- + N_2O \rightarrow$	85KAS/DEP
HN ₂ O ₄ -						
HONO·NO2	_					
* -405±22 ^c		136±4		TDAs		80LEE/KEE
HN ₂ O ₆ -						
HNO ₃ ··NO ₃ ⁻	-					
* -545±10 ^c		103±8	87±7	TDEq		77DAV/FEH
HNi ⁻						
NiH-						
*	0.481±0.007			LPES		87MIL/FEI
HO-				w	$\Delta_f H(AH) = -242$	82TN270
но-					BDE(A-H)= 499	85JANAF
* -137 ^a	1.828	1635 ^e	1607±1 ^h	LPD	Given: 1.827670(21) eV	82SCH/MEA
	1.825±0.002			LPD	` '	74HOT/PAT

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdots Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
но-					$\Delta_f H(AH) = -242$	82TN270
HO ⁻					BDE(A-H)= 499	85JANAF
	1.829±0.01	0		LPES		74CEL/BEN
	1.83±0.04			PD		66BRA
	1.8±0.2			EIAP	From MeOH, EtOH, nPrOH	64TSU/HAM
	1.9±0.1			SI		69PAG/GOC
DO-			<del>.</del>		$\Delta_f H(AH) = -249$	82TN270
DO_					$BDE(A-H) = 504\pm1$	82TN270
139±1 ^a	1.826	1640±1 ^e	1615±1 ^h	LPD	Given: 1.822549(37) eV	82SCH/MEA
	1.823±0.00	2		LPD		74HOT/PAT
HO ₂ -					$\Delta_f H(AH) = -136 \pm 1$	82TN270
HOO-					$BDE(A-H) = 365\pm3$	82TN270
* -94±10 a	1.08±0.12 d	1573±9 g	1542±8	IMRE		81BIE/SCH
*	1.078±0.01			LPES		85OAK/HAR
	1.9±0.1			Ther	From a solution phase thermodynamic cycle	80BEN/NAN
	1.19±0.01		1536±12	IMRE ⁰		81BIE/SCH
DO ₂ - DOO-						
*	1.089±0.01′	7 		LPES		85OAK/HAR
HO ₂ S ⁻ HSO ₂ ⁻						
-415 ^c		264±67 ^g	238±67	IMRB		85LAH/HAY
HO ₃ S-						
SO ₂ ··OH ⁻ <-802 ^c		> 368		IMRB	$CO_2 \cdot \cdot HO^- + SO_2 \rightarrow$	84HIE/PAU
HO ₄ S ⁻					$\Delta_f H(AH) = -735 \pm 8$	85JANAF
HSO ₄  <-953±17 ^a		<1312±8	<1281±10 h	EIAD	From H ₂ SO ₄ (Appearance Potential = 0eV)	86ADA/SMI
\-\/\J35\frac{1}{2}17	4.5 ^d	<1312±8	< 1281±10 < 1289		I + H ₂ SO ₄ →	80VIG/PER
		~ 1320 °	1207	HALLO	1 + 112504 /	
HO ₄ W ⁻ HWO ₄ ⁻					$\Delta_f H(AH) = -906 \pm 4$	85JANAF
-1084±46 ^a		1352±41	1322±48 ^h	TDEq	$H_2WO_4 + e^- = HWO_4^- + H$ measured	70JEN/MIL
HP-					$\Delta_f H(AH) = 139 \pm 3$	86BERICUR
PH					$BDE(A-H) = 315\pm11$	86BER/CUR
* 137±12 ^a	1.028±0.010	1528±9 ^e		LPES		76ZIT/LIN
	1.00±0.06			PD		77RAC/FEL
218±18	$> 0.5 \pm 0.2$			EIAP	From PH ₃	69HAL/PLA
	< 1.1			IMRB		64EBI/KRA
HS-				· · · · · · · · · · · · · · · · · · ·	$\Delta_f H(AH) = -21 \pm 1$	82TN270
					BDE(A-H) = 381±1	82TN270
HS ⁻						
	2.32±0.10 ^d	1469±9 g	1443±8	<b>IMRE</b>		79BAR/SCO
	2.32±0.10 ^d 2.310±0.010		1443±8 1443±3 ^h	IMRE LPD		79BAR/SCO 80JAN/REE

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$			$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method		Comment	Reference
HS-					$\Delta_f H(AH) =$	-21±1	82TN270
HS ⁻					BDE(A-H)=		82TN270
	2.302±0.001			LPD			74EYL/ATK
	2.32±0.01			PD			68STE
-69	2.2 ⁱ			Endo			76REF
	2.30±0.04			SI			69PAG/GOO
			1453±8	IMRE	i		79BAR/SCO
HSe ⁻			· · · · · · · · · · · · · · · · · · ·		$\Delta_f H(AH) =$	30±8	82TN270
HSe ⁻					BDE(A-H)=		72DON/LIT
* -34±28 a	2.213	1466±19 ^e	1440±19 h	LPD	` ,		86STO/LAR
	2.21±0.03			PD			72SMY/BRA
		1434±38 g	1407±38		Between H ₂ S	, HCI	72DIX/HOL
HSi ⁻				<del></del>	$\Delta_f H(AH) =$	237+16	81DON/WAL
SiH					BDE(A-H)=		81DON/WAL
* 249±3 b	1.277±0.009			LPES	2020119-	00010	75KAS/HER
HTe ⁻			**************************************		$\Delta_f H(AH) =$	100±2	82TN270
TeH ⁻					•		
*	2.102±0.015			LPES			86FRE/SNO
HZn-							
ZnH [—]	< 0.9			PD			77RAC/FEL
· · · · · · · · · · · · · · · · · · ·			<u></u>			·	//ICAC/FEL
<b>H₂IO⁻</b> нон…г⁻							
+ −472 ^c		42±4	23±9	TDAs			84CAL/KEB
472		46	22±1	TDAs			
		40 43±8	22±1 23±8	TDAs			80KEE/CAS2 70ARS/YAM
H ₂ Mn ⁻	· · · · · · · · · · · · · · · · · · ·					7-3	
MnH ₂							
*	0.444±0.016			LPES			86MIL/FEI
D ₂ Mn ⁻					A1. V. 10.		
MnD ₂	0.465.0024			I DEC			0/3/22 /0002
-	0.465±0.014		. =	LPES	<del></del>		86MIL/FEI
H ₂ N ⁻					$\Delta_f H(AH) =$		82TN270
NH ₂		_			BDE(A-H)=	449±3	82TN270
* 113±4 ^a	0.75±0.06 ^d	1689±3 ^g	1657±3	IMRE			76MAC/HEM
*	0.776±0.037			LPES			74CEL/BEN
	0.744±0.022			LPD			72SMY/BRA
	0.740±0.030			LPD			71SMY/MCI
	0.76±0.04			PD			71FEL
49±19				EIAP	From NH ₃		68COL/HUB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^{-})$	Method	Comment	Reference
H ₂ NO ₃ ⁻ нон··NO ₂ ⁻						
* -494 °		64	34±1	TDAs		80LEE/KEE
		60±8	33±8	TDAs		71PAY/YAM
			34±24	Endo		82PAU/DAL
-431 ^c	2.850		- 1	LPD		79SMI/LEE2
H ₂ NO ₄ - HOH··NO ₃ -						
* -610 °		61±1	30±1	TDAs		80LEE/KEE
		52±8	28±8	TDAs		71PAY/YAM
H ₂ NO ₄ − HOOH··NO ₂	_					
-410±15 c ²	•	85±4	60±4	TDEq	Relative to HOH··NO ₂ -, 80KEE/LEE	84BOH/FAH
H ₂ NO ₅ ⁻ HOOH··NO ₃	-	****			•	
* -524±6 °		80±4	54±4	TDEq	Relative to HOH··NO ₃ ⁻ , 80KEE/LEE	84ВОН/ГАН
H ₂ NS ⁻ H ₂ NS ⁻						
2		1493±16 ^g	1467±13	IMRB		81DEP/BIE
			Between CF ₃ CH	I ₂ OH and	H ₂ S, comparable to MeSH	
			1480±13	<b>IMRB</b>	NH ₂ ⁻ + COS →	84BIE/GRA
			1476±13	IMRBO		81DEP/BIE
<b>H₂Ni</b> ⁻ NiH ₂ ⁻						
*	1.934±0.00	8		LPES		86MIL/FEI
D ₂ Ni ⁻ NiD ₂ ⁻						
*	1.926±0.00	7		LPES		86MIL/FEI
H ₂ O⁻ но…н⁻						
-34±17		287 ^k		IMRB		84DEK/NIB
H ₂ O ₃ ⁻ нон…о ₂						
* -361 °		77±8	52±8 49±8	TDAs IMRE		70ARS/KEB 71PAR
H ₂ P ⁻					$\Delta_f H(AH) = 5\pm 2$	61GUNIGRE
PH2-					BDE(A-H) = 354±5	86BERICUR
	1.19±0.14 d	1 1552±8 g	1520±8	IMRE		79BAR/SCO
*	1.271±0.010	0 1544±6 ^e		LPES		76ZIT/LIN
	1.25±0.03			PD		72SMY/BRA
	1.300±0.030	0		LPD		71SMY/MCI
		1524±19		EIAP		69HAL/PLA
<9±21 ^a	< 1.4±0.3 d	< 1534±19		EIAP		64EBI/KRA

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		ΔH _{acid} (AH) ΔH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
H ₂ P-					$\Delta_f H(AH) = 5\pm 2$	61GUN/GRE
PH ₂ ⁻					$BDE(A-H) = 354 \pm 5$	86BERICUR
	1.6			SI		69PAG/GOO
			1519±8	IMRE ^C	1	79BAR/SCO
H ₂ Si ⁻					$\Delta_f H(AH) = 203 \pm 6$	87BOOIARM
SiH2 ⁻ ·					$BDE(A-H) = 304 \pm 15$	87BOO ARM
* 181±10 ^b	1.123±0.022	1508±17 ^e		LPES		75KAS/HER
H ₃ O ⁻						
нон∙∙н⁻						
-169±17		72±21 ^k		Endo	$HOH \cdot HO^- + H_2 \rightarrow$	84PAU/HEN
-199±49					H ⁻ + HCO ₂ H →	83KLE/NIB
H ₃ OSi ⁻ H ₃ SiO ⁻						
<-107				IMRB	$HO^- + SiH_4 \rightarrow$	76PAY/TAN
H ₃ O ₂ ⁻ нон∙∙он ⁻						
* -479 ^c		100±8	78±8	TDAs		71PAY/YAM
*	2.9±0.2			PD		68GOL/STE
		112±4	84±7	TDEq		86MEO/SIE2
		94±8	71±8	TDAs		70ARS/KEB
		149±29		CIDT		70DEP/GIA
D ₃ O ₂ - DOD··OD-						
-491 ^c		112±3	84±5	TDAs		86MEO/SIE
H ₃ O ₅ S⁻ HOH··HSO ₄		· · · · · · · · · · · · · · · · · · ·				
		50±4	25±4	TDAs		84BOH/FAH
H ₃ O ₆ S⁻ HOOH··HSC	) ₄ ⁻					
-1156±22 ^c		67±4	45±4	TDEq	Relative to HOH··HSO ₄ ⁻ , 84BOH/FAH	84BOH/FAH
H ₃ P ₂ ⁻ P ₂ H ₃ ⁻						
<66				IMRB	PH ₂ ⁻ + PH ₃ →	72SMY/BRA
H ₃ Si ⁻					$\Delta_f H(AH) = 35 \pm 2$	81BEUPER
SiH ₃					BDE(A-H)= 386±8	87BOO/ARM
* 63±10 ^a	1.45±0.17 d	1558±8 g	1522±8	IMRE	•	79BAR/SCO
*	1.406±0.014			LPES		86NIM/ELL2
	<1.440±0.03			LPD		74REE/BRA
486±10				EIAP		64EBI/KRA
			1519±8	IMRE ⁰		79BAR/SCO

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
D ₃ Si ⁻ SiD ₃ ⁻	1.004.04					
	1.386±0.0	)22 		LPES		86NIM/ELL2
H ₄ N⁻ NH ₃ ··H⁻						
	1.110±0.0 1.110±0.0			LPES LPES		87SNO/COE3 85COE/SNO
H ₅ N ₂						
NH ₃ ··NH ₂ ⁻ 16 ^c		50		PDis		87SNO/COE2
H ₅ Si ⁻ SiH ₄ ··H ⁻						
86 °		94±19		IMRE		86HAJ/SQU
H ₇ N ₂ [−] (NH ₃ ) ₂ ··H [−]						
-114 ^c	1.460±0.0	19		LPES		87SNO/COE3
H ₈ N ₃ ⁻	_					
$(NH_3)_2 \cdot \cdot NH_2$	2 1.780±0.0	19		LPES		87SNO/COE2
I ⁻ I ⁻ * -188±1 ^a	3.059	1315 ^e	1294±1 h	LOG	$\Delta_f H(A) = 107$	<i>82BAU COX</i> 83WEB/MCD
IK ₂ -	<del></del>					
K ₂ I [−] −244±11				TDEq		84BUR/KUD
ILi ⁻ LiI ⁻ ·					$\Delta_f H(A) = -91 \pm 8$	85JANAF
<-199 b	>1.1			EIAP	From (LiI) ₂	64EBI
IN ⁻					$\Delta_f H(A) = 215$	76REF2
96±21	1.3±0.2			Endo	$\Gamma + NO_2 \rightarrow$	76REF2
IO ⁻						
<-66	> 2.5 ⁱ	:			I ⁻ + CO →	77VOG/MIS
	> 2.1±0.3	1			$I^- + O_2 \rightarrow$	77VOG/DRE
-42±35	2 ( i			T7 1	T	
-42±35 -79±21 -48	2.6 ⁱ 2.3 ⁱ				$I^- + O_2 \rightarrow I^- + SO_2 \rightarrow$	76REF/FRA2 76REF/FRA

Table 2. Negative Ion Table - Continued

$\begin{array}{cc} \text{(on } \Delta_f H(A^-) \\ \Delta_f H(X \cdot \cdot Y^-) \end{array}$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
OS-	•					
ISO ⁻						
-67				Endo	$I^- + SO_2 \rightarrow$	76REF/FRA
O ₂ S ⁻						
SO ₂ ···I¯						
* -545±10 ^c		60±8	38±11	TDAs		85CAL/KEB
-539±2 ^c		54	37±1	TDAs		80KEE/LEE
S-	·					
IS-					$\Delta_f H(A) = 310$	76REF FRA
47±29	2.7±0.3 ⁱ			Endo	$I^- + H_2S$ and $CS_2 \rightarrow$	76REF
				·		/OKESI
2 ⁻ .					A 4/A) CO	
I ₂ * -181 b	2.5±0.1			MDID	$\Delta_f H(A) = 62$	82BAU/COX
101	1.72±0.05			NBIP NBIP	Vortical EA	73BAE/AUE
	2.3				Vertical EA	76HUB/KLE
	2.4±0.2			ECD	Vertical EA: 1.7 eV	81AYA/WEN
	2.4±0.2 2.4±0.1			EnCT		73HUG/LIF
				NBIP		71MOU/ATE
	2.6±0.1			EIAP	From CHI ₃	71DEC/FRA
	2.6±0.1			EnCT		71CHU/BER
2K-						
KI··I [™]						
-483±8				TDEq		84BUR/KUD
2Sn-			<del></del>			
SnI ₂						
2	1.7			EIAP	From SnI ₄	77PAB/PER
3	· · · · ·			· · · · ·		
3 I ₃ -						
-482		356 ^k	-	Latt		77FIN/GAT
<-207				IMRB		28HOG/HAR
			I ₂ ⁻ + I ₂ →; Firs		ion/molecule reaction reported.	
3K2 ⁻						<del></del>
K ₂ I ₃ -						
-760±15				TDEq		84BUR/KUD
-700±13				TODA		UNION CO
Sn-						
SnI ₃	2 21 - 0 04			DIAD	Engan Cal	70D A D /A A D
	3.21±0.01			EIAP	From SnI ₄	78PAB/MAR
	3.2			EIAP	From SnI ₄	77PAB/PER
Ti ⁻						
TiI ₃					$\Delta_f H(A) = -150 \pm 33$	85JANAF
<-240±18	>09			EIAP	From TiI ₄	74BEN/PAB

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		H _{acid} (AH) I _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
In- In-					$\Delta_f H(A) = 244$	82TN270
* 215±36 ^a	0.3±0.2	1508±28 ^e		PD	1411(A) = 244	85HOT/LIN
	0.8±0.2			EIAP	From InBr	80BRU/COT
r_ -						
Ir ⁻ * 514±3 ^b	1.565±0.008			LPES	$\Delta_f H(A) = 665 \pm 2$	<i>82TN270</i> 85HOT/LIN
31413	1.505±0,008					83HO1/LIN
ζ-					4 ((/4)	0071/070
K [™] * 41 b	0.501	1448±15 ^e	1428±17 ^h	LPD	$\Delta_f H(A) = 89$	<i>82TN270</i> 85HOT/LIN
			1120117			
KO ₄ S ⁻						
KSO ₄ ⁻ -992±11				TDEq		85RUD/SID2
.i ⁻ Li					$\Delta_f H(A) = 161$	0071/070
* 101 a	0.618±0.001	1492 ^e	1470±1 h	LPD	$\Delta f \Pi(A) = 101$	<i>82TN270</i> 85HOT/LIN
				<del> </del>		
⁄Io ⁻ Мо ⁻					$\Delta_f H(A) = 658 \pm 2$	82TN270
* 586±3 b	0.746±0.010			LPES	2411(2) 000=2	85HOT/LIN
			1402±13	IMRB		85SAL/LAN
10O3 ⁻						
MoO ₃					$\Delta_f H(A) = -362$	81W00
-655±40	2.58±0.41 i			TDEq	$H + HMoO_4^- = H_2O + MoO_3^-$	79MIL
IO_						
NO ⁻					$\Delta_f H(A) = 91$	82BAU/COX
* 89±18 ^a	$2.4\pm0.010$	1519±9 ^e	1492±10 ^h	LPES		72SIE/CEL
	$0.1\pm0.1$			ECD		83CHE/WEN
	2.0±0.1			CIDT		78TIE/WU
	0.0±0.1			NBIP		77DUR/PAR
	0.7±0.2			Endo		76REF2
	2.500±0.007			ETS		74BUR
	> 0.1±0.1			NBIP		73NAL/COM
	1.5±0.1			EnCT		73HUG/LIF
	2.60±0.02			Kine		72PAR/SUG
	>6.0±0.1			EnCT		71CHA
	>9.0			EnCT		71BER/CHU
	0.0±0.2			NBIP	T. NO	70LAC/HER
	> 0.7±0.1				From NO ₂	69STO/COM
	0.8±0.1			EIAP	From EtONO, nBuONO	68WIL/HAM
	0.8			SI		69PAG/GOC
	0.9			SI		64FAR/PAG

Table 2. Negative Ion Table - Continued

2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.30±0.10 2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 [¢]	1414±21 1389±18 ^h	TDEq LPES IMRE ECD LPD LPD IMRB CIDT	$NH_2^- + SO_2 \rightarrow$ $\Delta_f H(AH) = -80 \pm 8$ $BDE(A-H) = 331 \pm 9$	84BIE/GRA  82BAU/COX 82BAU/COX 87KEB/CHO 74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
<-142 NO2 ⁻ NO2 ⁻ * -189±10 ^b 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 °		TDEq LPES IMRE ECD LPD LPD IMRB	$\Delta_f H(AH) = -80 \pm 8$	82BAU/COX 82BAU/COX 87KEB/CHO 74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
NO ₂ - NO ₂ - * -189±10 b 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 ^e		TDEq LPES IMRE ECD LPD LPD IMRB	$\Delta_f H(AH) = -80 \pm 8$	82BAU/COX 82BAU/COX 87KEB/CHO 74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
NO ₂ ⁻ * -189±10 ^b 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 ^e	1389±18 h	LPES IMRE ECD LPD LPD IMRB	·	82BAU/COX 87KEB/CHO 74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
* -189±10 b 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 ^e	1389±18 h	LPES IMRE ECD LPD LPD IMRB	BDE(A-H)= 331±9	87KEB/CHO 74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.359±0.100 2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1	1421±18 ^e	1389±18 h	LPES IMRE ECD LPD LPD IMRB		74HER/PAT 85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
2 2 2 2 2 2 2 2 2 2 2 2 2	2.31±0.11 2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1			IMRE ECD LPD LPD IMRB		85GRI/CAL 83CHE/WEN 79SMI/LEE2 74RIC/STE
2 2 2 2 2 2 2 2 2 2 2 2	2.1±0.2 2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1		,	ECD LPD LPD IMRB		83CHE/WEN 79SMI/LEE2 74RIC/STE
2 2 2 2 2 2 2 2 2 2 2	2.350±0.100 2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1			LPD LPD IMRB		79SMI/LEE2 74RIC/STE
2 2 2 2 2 2 2 2 2	2.800±0.050 < 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1			LPD IMRB		74RIC/STE
2 2 2 2 2 2 2 2	< 2.6 2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1			IMRB		
2 2 >> 2 2 2 2	2.4±0.1 2.1 > 2.5±0.1 2.50±0.05 2.3±0.1					MATERIA (TAX 12.1
2 >> 2 2 2 2	2.1 > 2.5±0.1 2.50±0.05 2.3±0.1			CIDT		72FER/DUN
> 2 2 2 2	> 2.5±0.1 2.50±0.05 2.3±0.1			TULL		78TIE/WU
2 2 2 2	2.50±0.05 2.3±0.1			EnCT		76REF2
2 2 2	2.3±0.1			NBIP		73NAL/COM
2.				NBIP		73LEF/JAC
2.				IMRB		73HUG/LIF
	2.38±0.06			IMRB		72DUN/FEH
4	2.5±0.1			NBIP		72BAE
1.	1.8±0.2			NBIP		77DUR/PAR
<	< 3.9			PD		71MIL/JAC
2	2.0			EnCT		71BER/CHU
2	2.3±0.1			EnCT		70LIF/HUG
2	2.1±0.2			IMRB		69VOG
9±29				IMRE	$CO_3^- + NO \rightarrow [isomer?]$	70ADA/BOH
3	3.10±0.05			PD		69WAR
3	3.9±0.2			EIAP	From MeNO ₂ , EtNO ₂	64TSU/HAM
>	> 3.8			IMRB	2 2	62CUR
1	1.800±0.050			LPD		74RIC/STE
4.	4.0			SI		64FAR/PAG
O ₃ -	<del> </del>				$\Delta_f H(AH) = -135$	82BAU/COX
NO ₃					$BDE(A-H) = 424\pm21$	77DAVIFEH
	3.92±0.24 ⁱ	1358±1	1330±1	TDEq	552(r1 1) = 12 142 r	77DAV/FEH
50711 5	3.7220.24	155011		_	ed with current HBr acidity	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		1358±2	rolative to 1151,	TDEq		72FER/DUN
		1371±24		-	I ⁻ + HNO ₃ →	76REF/FRA3
		1380±20			From HNO ₃	76MAT/ROT
3	3.70±0.20	1300120			$NO_3^- + NO = NO_2^- + NO_2$	72MCF/DUN
J.	5.70±0.20	1491		Endo	1103   110=1102   1102	71BER/CHU
<-10		14/1			$O_4^- + NO \rightarrow NO_3^- + O_2$ ; isomer?	70ADA/BOH
-135±21 ^c		276±21		PDis	54 1 110 11103 1 02, isomer:	78SMI/LEE
155121		< 193		PDis	isomer: O ₄ ⁻ + NO →	79SMI/LEE2
O ₄ S ⁻						
SO ₂ ··NO ₂ ⁻ * -594±12 ^c		108.4	62+1	TDAG		SUKEEN EE
-394±12 -		108±1 102±4	62±1 62±4	TDAs	Relative to HOH··NO ₂ , 80KEE/LEE	80KEE/LEE 84BOH/FAH

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$H_{acid}(AH)$ $H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
NO ₅ S ⁻						
SO ₂ ··NO ₃ [−]						
* -676±11 ^c		72±8	40±8		Relative to HOH··NO ₃ , 80KEE/LEE	84BOH/FAH
		76±5	37±4	TDAs		83WLO/LUC
NS ⁻						
NS ⁻						
*	1.194±0.011			LPES		82BUR/FEI
N ₂ O ⁻						
N2O					$\Delta_f H(A) = 82$	82BAUICOX
61±10 b	0.2±0.1	47±12 ^k		CIDT	• • • • • • • • • • • • • • • • • • • •	78TIE/WU
67±12 ^c	0.2±0.1 ⁱ	41±10		CIDT	Vertical detachment: -2.23±0.20 eV	76HOP/WAH
						73NAL/COM
	0.3±0.2			ECD		71WEN/CHE
	0.760±0.100			LPES	Vertical detachment	86COE/SNO
N ₂ O ₂ ⁻						
$N_2 \cdot \cdot O_2^-$						
>-99 ^c		< 57		IMRB	$N_2 \cdot \cdot O_2^- + O_2 \rightarrow O_4^-$	70ADA/BOH
N ₂ O ₃ -						
$N_2O \cdot \cdot O_2^-$						
>-17 ^c		< 57		IMRB	$N_2O \cdot \cdot O_2^- + O_2 \rightarrow O_4^- + N_2O$	70ADA/BOH
N ₃ -					$\Delta_f H(AH) = 294\pm 2$	82TN270
N ₃ -				D-FA	$BDE(A-H) = 387 \pm 21$	02111270
*	2.762±0.043			LPD	55E(A 11) = 557 E21	85ILL/COM
* 203±15 ^a	2.7±0.1	1439±13 g	1414±12	IMRB	Acidity near HCO ₂ H	81PEL/JAC
	> 2.540			LPES		76ENG/LIN
199±29	3.1±0.3 ⁱ	1418±21 ^f		EIAP	From MeN ₃ and HN ₃	58FRA/DIB
Na Oa =						
N ₃ O ₂ ⁻ N ₂ O··NO⁻						
151±18 b	0.258±0.009	19 ^k		LPES		87COE/SNO
N ₄ O ₂ -						
$(N_2O)_2^{-}$						
- <b>-</b>	0.950±0.100			LPES		86COE/SNO
N ₅ O ₃ ⁻		<u> </u>	<del>- p.</del> .			5-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
$(N_2O)_2 \cdot \cdot NO^{-1}$	-					
213±18 ^c		19 ^k		LPES		87COE/SNO
					4 1/410	
Na-					$\Delta_f H(AH) = 130$	82TN270
Na  * 54±1 b	0.540	1455.4.6	1424 o h	Y 1010	$BDE(A-H) = 195 \pm 1$	85JANAF
54±1°	0.548	1455±1 ^e	1434±3 ^h	LPD		85HOT/LIN
Nb-					-	
Nb					$\Delta_f H(A) = 733\pm8$	85JANAF
* 647±11 ^b	0.893±0.025			LPES		85HOT/LIN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$	EA(A) eV	$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdot \cdot Y)$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Ni ⁻						
Ni  * 31843 b	1156.00	24.0			$\Delta_f H(A) = 430 \pm 2$	82TN270
* 318±3 b	1.156±0.0	)10 		LPES		85HOT/LIN
0-					$\Delta_f H(AH) = 39 \pm 1$	85JANAF
0-					$BDE(A-H) = 428 \pm 1$	85JANAF
* 108±2 ^a	1.461	1599±1 ^e	1574±2 ^h	LPD	Given: 1.461122(3) eV	85NEU/LYK
	1.462			LPD		85HOT/LIN
OP-						Allester
OP"					$\Delta_f H(A) = -33 \pm 13$	83PEDI MAR
* -139±14 ^b	1.092±0.0	010		LPES	, , ,	76ZIT/LIN
OS-						
so					$\Delta_f H(A) = 5 \pm 1$	85JANAF
* -100±6 b	1.09±0.05			PD		70FEL
-111	1.12±0.01	Ĺ		Endo	I ⁻ + SO ₂ →	76REF/FRA
	1.1			EIAP	From SO ₂	73HAR/FRA
	>1.2±0.1			EIAP	From SO ₂	72THY
	<1.1			IMRB		61KRA/MUI
100	< 1.1			IMRB	EA: < SO ₂	59HEN/MU
-100 	1.2			EIAP	From SO ₂	58REE/DIB
os ₂ -						
s ₂ o-					$\Delta_f H(A) = -53$	86NIMI ELL
* -234±1 b	1.877±0.0	008		LPES		86NIM/ELL
OSe ⁻						
SeO~					$\Delta_f H(A) = 53$	82TN270
* -87±2 ^b	1.456±0.0	20		LPES	·	86COE/SNO
 ОТе [_]						
TeO ⁻					$\Delta_f H(A) = 69 \pm 21$	83PEDIMAR
* -95±23 b	1.697±0.0	22		LPES	-1·····	86FRE/COE
O					A LI(ALI) - 10.0	goTN/070
O2 ⁻ O2 ⁻ · * -42±1 b					$\Delta_f H(AH) = 10\pm 8$ $BDE(A-H) = 206\pm 8$	82TN270 82TN270
* -42±1 b	0.440±0.0	008 1476±9 ^e	1449±9 h	LPES	DDL(A-11) = 200±0	72CEL/BEN
7211	0.430±0.0		144717	LPES		71CEL/BEN
	0.45±0.05			ECD		83CHE/WEN
	0.4±0.1			CIDT	From O ₂	78TIE/WU
	0.4±0.1			NBIP	<u> </u>	77DUR/PAR
	0.45±0.02	<b>:</b>		ETS		74BUR
	0.5±0.1			NBIP		72BAE
	$> 0.5 \pm 0.1$			EnCT		71TIE/HUG
	0.46±0.05			NBIP		71NAL/CON
	$> 0.6 \pm 0.1$			EnCT		71CHA
	>0.5			EnCT		71BER/CHU
	1.12±0.07	•		IMRB		70VOG/HAI
	$0.5 \pm 0.2$			NBIP		70LAC/HER
	> 1.3±0.2			EnCT		70BAI/MAH
	>1.1±0.1			EIAP	From NO ₂	69STO/COM

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$			$G_{ ext{acid}}(AH)$ Method $G_{ ext{aff}}(X \cdot Y^-)$	d Comment	Reference
O ₂ -				$\Delta_f H(AH) = 10\pm8$	82TN270
o ₂				BDE(A-H)= 206±8	82TN270
	$0.43 \pm 0.02$		Kine		66PAC/PHE
	0.15±0.05		PD		58BUR/SMI
O ₂ P ⁻		- '			
PO2				$\Delta_f H(A) = -280\pm 2$	85JANAF
-645±18	3.80±0.22 i		TDEq		86RUD/VOV
−569 ^b	3.00		IMRE		79WOR/KOE
O ₂ S ⁻					
so ₂				$\Delta_f H(A) = -297 \pm 1$	85JANAF
* -403±2 b	1.107±0.008		LPES		86NIM/ELL
	1.097±0.036		LPES		74CEL/BEN
	$1.00 \pm 0.05$		PD		70FEL
	1.1		EnCT		76REF/FRA
	1.1±0.2		NBIP		75ROT/TAN
	1.0±0.1		EnCT		73HUG/LIF
	1.1±0.1		IMRB	Between NH ₂ ⁻ , C ⁻	61KRA/MUL
O ₂ Se ⁻					
SeO ₂					
*	1.823±0.040		LPES		87SNO/COE
O ₂ Te ⁻					
TeO2					
	> 2.200		LPES		87SNO/COE
03-					
				$\Delta_f H(A) = 143 \pm 2$	
O ₃ -					82TN270
O ₃ -* -60±2 b	2.103±0.003		LPES		
* -60±2 b	1.9±0.1		LPES PD		<i>82TN270</i> 79NOV/ENG 71WON/VOR
* -60±2 b		174±19			79NOV/ENG
* -60±2 b -66 c -66 c	1.9±0.1 2.2±0.4 ⁱ	174±5	PD PDis CIDT		79NOV/ENG 71WON/VOR
* -60±2 b  -66 c  -66 c  >-99 c	1.9±0.1 2.2±0.4 ⁱ 2.06±0.06 ⁱ	174±5 < 207	PD PDis CIDT PDis		79NOV/ENG 71WON/VOR 78SMI/LEE
* -60±2 b -66 c -66 c	1.9±0.1 2.2±0.4 i 2.06±0.06 i 2.2 i	174±5	PD PDis CIDT	Excited state: 81 kJ up	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU
* -60±2 b  -66 c  -66 c  >-99 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i  2.2 i > 1.8	174±5 < 207	PD PDis CIDT PDis		79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS
* -60±2 b  -66 c  -66 c  >-99 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP	Excited state: 81 kJ up	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE
* -60±2 b  -66 c  -66 c  >-99 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i  2.2 i > 1.8	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP		79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV
* -60±2 b  -66 c  -66 c  > -99 c  -66 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP	Excited state: 81 kJ up  I ⁻ + O ₃ →	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU
* -60±2 b  -66 c  -66 c  >-99 c  -66 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i  2.2 i  > 1.8  2.1±0.2  > 2.0	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP	Excited state: 81 kJ up	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU
* -60±2 b  -66 c  -66 c  >-99 c  -66 c  -66 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 85HEN/VIG
* -60±2 b  -66 c  -66 c  >-99 c  -66 c  -66 c  -799 c  -66 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i >1.8 2.1±0.2 >2.0	174±5 < 207	PD PDis CIDT PDis CIDT IMRB NBIP EnCT	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 85HEN/VIG 86RUD/VOV
* -60±2 b  -66 c  -66 c  >-99 c  -66 c  -66 c	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i >1.8 2.1±0.2 >2.0	174±5 < 207 174±10	PD PDis CIDT PDis CIDT IMRB NBIP EnCT	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 85HEN/VIG 86RUD/VOV 83SID/RUD
* -60±2 b  -66 c  -66 c  > -99 c  -66 c  O3P  PO3  -943±16  -993±23	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i >1.8 2.1±0.2 >2.0	174±5 < 207 174±10	PD PDis CIDT PDis CIDT IMRB NBIP EnCT  TDEq TDEq	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 85HEN/VIG 86RUD/VOV
* -60±2 b  -66 c  -66 c  > -99 c  -66 c  -66 c  -766 c  -993±23  <-772±78  -795	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2 > 2.0  4.49±0.53 i  a > 4.6 d	174±5 < 207 174±10	PD PDis CIDT PDis CIDT IMRB NBIP EnCT  TDEq TDEq TDEq 1293±13 IMRB	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 86RUD/VOV 83SID/RUD 85HEN/VIG
* -60±2 b  -66 c  -66 c  > -99 c  -66 c  -66 c  -795  -943±16  -993±23  <-772±78  -795  -795	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2 > 2.0  4.49±0.53 i  a > 4.6 d	174±5 < 207 174±10	PD PDis CIDT PDis CIDT IMRB NBIP EnCT  TDEq TDEq TDEq 1293±13 IMRB	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$ $BDE(A-H) = 456 \pm 167$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN/VIG 86RUD/VOV 83SID/RUD 85HEN/VIG 79WOR/KOB
* -60±2 b  -66 c  -66 c  > -99 c  -66 c  -66 c  -703 P  PO3 -  -943±16  -993±23  <-772±78	1.9±0.1 2.2±0.4 i  2.06±0.06 i 2.2 i > 1.8 2.1±0.2 > 2.0  4.49±0.53 i  a > 4.6 d	174±5 < 207 174±10	PD PDis CIDT PDis CIDT IMRB NBIP EnCT  TDEq TDEq TDEq 1293±13 IMRB	Excited state: 81 kJ up $I^{-} + O_{3} \rightarrow$ $\Delta_{f} H(AH) = -565 \pm 63$	79NOV/ENG 71WON/VOR 78SMI/LEE 78LIF/WU 78COS/MOS 77WU/TIE 77DOT/DAV 75ROT/TAN 71BER/CHU  85HEN VIG 86RUD/VOV 83SID/RUD 85HEN VIG

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		∆H _{acid} (AH) AH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y^-)$	Method	Comment	Reference
O ₃ S ⁻						
so ₃					$\Delta_f H(A) = -396 \pm 1$	82TN270
-560±15 b	1.7±0.2			NBIP		75ROT/TAN
-601±8				TDEq		85RUD/SID2
0 ₃ W ⁻						
wo ₃					$\Delta_f H(A) = -293$	81W00
-698±40	3.64±0.41 ⁱ			TDEq	$HWO_4^- + H = WO_3^- + H_2O$	70JEN/MIL
	> 2.5			IMRB	· -	72CEN
04-						
$O_2 \cdot \cdot O_2^-$						
-194 ^c	2.0±0.2 i	151±19		PDis		78SMI/LEE
	1.9±0.2			PD		72BUR2
_99 °		57±1	17±1	TDAs		68CON/NES
		- · <b>-</b>	17±2	IMRE		71PAR
		< 77±8		IMRB		70ADA/BOH
		- 77 200	$O_4^- + H_2O \rightarrow O_4$		O + O ₂ , anchored on 70ARS/KEB	101 WADOR
O ₄ Re ⁻		<u></u>		······································	$\Delta_f H(AH) = -665 \pm 42$	82TN270
ReO ₄					Δ; π(AΠ)= -000±42	62111270
-976±30				TDEa		92CID/D1 ID
	4.46±0.52 ⁱ	1328±40		TDEq		83SID/RUD 75GOU/MIL
007±02	> 2.5	1326140		TDEq IMRB		73GOO/MIL 72CEN
		·····				7200.1
O ₄ S ⁻						
so ₄						
-744±10				TDEq		85RUD/SID2
O ₄ S ₂ ⁻						
$so_2 \cdot \cdot so_2$						
−801±4 ^c		100±1	58±2	TDAs		80KEE/LEE
$O_5S_2^-$						
$SO_2 \cdot SO_3$						
-912±17 ^c		56	32±1	TDAs		80KEE/LEE
)-		<del> </del>			$\Delta_f H(AH) = 236\pm8$	86BERICUR
P ⁻					$BDE(A-H) = 298 \pm 10$	85JANAF
* 244±1 b	0.747	1538±10 ^e	1514±10 ^h	T DD	DDL(M-T) = 290110	
Z44±1 °	0.747	1338±10°	1314±10"	LPD	Press P	85HOT/LIN
	0.77±0.05		·····	EIAP	From P ₄	74BEN/MAR
P2- P2- * * * * * * * * * * * * * * * * * * *						
P ₂					$\Delta_f H(A) = 144 \pm 2$	85JANAF
* 88±5 b	0.589±0.025			LPES		85SNO/COE
	< 0.7			PD		77FEL/RAC
156±20	0.2±0.2			EIAP	From P ₄	74BEN/MAR
P ₃ -					$\Delta_f H(A) = 249 \pm 17$	74BEN/MAR
160±19	0.9±0.4			EIAP	From P ₄	74BEN/MAR
					•	

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		ΔH _{acid} (AH) ΔH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdots Y^{-})$	Method	Comment	Reference
Pb  Pb  * 160±3 b	0.364±0.008	•		LPES	$\Delta_f H(A) = 195 \pm 2$	<i>82TN270</i> 85HOT/LIN
Pd ⁻ Pd ⁻ * 325±3 ^b	0.557±0.008			LPES	$\Delta_f H(A) = 378 \pm 2$	<i>82TN270</i> 85HOT/LIN
Pt ⁻ Pt ⁻ * 360±2 b	2.128±0.002			LPD	$\Delta_f H(A) = 565 \pm 2$	<i>82TN270</i> 85HOT/LIN
Rb ⁻ Rb ⁻ * 34 ^b	0.486			LPD	$\Delta_f H(A) = 81$	<i>82TN270</i> 85HOT/LIN
Re ₂ - Re ₂ -	1.571±0.008			LPES		86LEO/MIL2
Rh ⁻ Rh ⁻ * 447±3 ^b	1.137±0.008			LPES	$\Delta_f H(A) = 557 \pm 2$	<i>82TN270</i> 85HOT/LIN
S  S  * 77 ^b	2.077	1467±5 ^e	1444±6 ^h	LPD	$\Delta_f$ H(AH)= 139±5 BDE(A-H)= 356±5	<i>85JANAF 85JANAF</i> 85HOT/LIN
S2 ⁻ S2 ⁻ · * -32±5 ^b <46±10	1.663±0.040 >0.8±0.1 i >2.5±0.8		S" + COS → S ₂ "		$\Delta_f H(A) = 129 \pm 1$ $Also S_2^- + COS \rightarrow S_3^- + CO, \text{ etc. to } n = 6$ $Also CS_2^- + COS \rightarrow S_3^- + CO, \text{ etc. to } n = 6$	85JANAF 74CEL/BEN 68DIL/FRA 72THY
S ₃ - * -60±11 b	2.093±0.025 2.0±0.1			LPES PD	$\Delta_f$ H(A)= 142±8	<i>85JANAF</i> 86NIM/ELL 77FEL/RAC
Sb ⁻ Sb ⁻ * 159±7 ^b	1.07±0.05			PD	$\Delta_f H(A) = 262 \pm 2$	<i>82TN270</i> 85HOT/LIN
Sc ⁻ * 360±6 b	0.188±0.020			LPES	Δ _f H(A)= 378±4	<i>82TN270</i> 85HOT/LIN
Se ⁻ Se ⁻ • 32 ^b	2.021			LPD	$\Delta_f H(A) = 227$	<i>82TN270</i> 85HOT/LIN

Table 2. Negative Ion Table - Continued

on $\Delta_f H(A^-)$ $\Delta_f H(X \cdot \cdot Y^-)$		ΔH _{acid} (AH) ΔH _{aff} (X··Y¯)	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Se2 ⁻ Se2 ⁻ * -41±15 b	1.940±0.070	)		LPES	$\Delta_f H(A) = 146 \pm 8$	<i>82TN270</i> 87SNO/COE
Se ₃ - Se ₃ -	> 2.200			LPES		975NO/COE
Si ⁻ Si ⁻ * 322±3 ^b	1.385±0.005	5 1475±11 ^e	1453±12 ^h	LPES	$\Delta_f H(AH) = 377\pm 8$ $BDE(A-H) = 297\pm 10$	87SNO/COE 85JANAF 82TN270 75KAS/HER
Sn Sn 195±4 b	1.113±0.020 1.1±0.1	)		LPES PD	$\Delta_f H(A) = 302 \pm 2$	<i>82TN270</i> 86MIL/MIL 85HOT/LIN
Ta ⁻ Ta ⁻ * 751±1 ^b	0.322±0.012	2		LPES	$\Delta_f H(A) = 782$	<i>82TN270</i> 85HOT/LIN
Te ⁻ * 6 ^b	1.971			LPD	$\Delta_f H(AH) = 143$	79HUB HER 85HOT/LIN
Te2 ⁻ Te2 ⁻ * -17±15 b		)		LPES	$\Delta_f H(A) = 168 \pm 8$	<i>82TN270</i> 87SNO/COE
Te ₃ _	< 2.700			LPES		87SNO/COE
Ti- * 462±3 b	7.9±0.014	1460 ^f		LPES	$\Delta_f H(AH) = 532$	79HUB/HER 85HOT/LIN
TI ⁻ * 163±20 ^b	0.2±0.2 1.1±0.2			PD EIAP	$\Delta_f H(A) = 182 \pm 1$ From TiBr	<i>82TN270</i> 85HOT/LIN 80BRU/COT
V ⁻ V ⁻ * 464±10 b	0.525±0.01	2	1389±13	LPES IMRB	$\Delta_f H(A) = 515 \pm 8$	<i>85JANAF</i> 85HOT/LIN 85SAL/LAN
W ⁻ * 772±7 ^b	0.815±0.00	8		LPES	$\Delta_f H(A) = 851 \pm 6$	<i>85JANAF</i> 85HOT/LIN

Table 2. Negative Ion Table - Continued

Ion $\Delta_f H(A^-)$ $\Delta_f H(X \cdot Y^-)$		$\Delta H_{acid}(AH)$ $\Delta H_{aff}(X \cdots Y^{-})$	$\Delta G_{acid}(AH)$ $\Delta G_{aff}(X \cdot \cdot Y)$	Method	Comment	Reference
Y- Y- * 392±3 ^b	0.307±0.0	012		LPES	$\Delta_f H(A) = 421 \pm 2$	<i>82TN270</i> 85HOT/LIN
Zr ⁻ Zr ⁻ * 569±10 b	0.426±0.0	014		LPES	$\Delta_f H(A) = 610 \pm 8$	<i>85JANAF</i> 85HOT/LIN

#### References to Tables 1 and 2

#### 28HOG/HAR

T.R. Hogness and R.W. Harkness, "The Ionization Processes of Iodine Interpreted by the Mass Spectrograph," Phys. Rev. 32, 784 (1928).

#### 29ROT/MUE

W.A. Roth and F. Mueller, Ber. Deut. Chem. Ges. 62, 1188 (1929).

#### 30BEN

H.E. Bent, "The Electron Affinity of Triphenylmethyl," J. Am. Chem. Soc. 52, 1498 (1930).

#### 47KAP/MAK

A.F. Kaputinskii, I.A. Makalkin and L.I. Krishtalik, Russ. J. Phys. Chem. 21, 125 (1947).

#### 51COL/GIL

L.G. Cole and E.C. Gilbert, J. Am. Chem. Soc. 73, 5423 (1951).

### 54HON

R.E. Honig, "Mass Spectrometric Study of the Molecular Sublimation of Graphite," J. Chem. Phys. 22, 126 (1954).

#### 55ALT

A.P. Altschuller, "Lattice Energies and Related Thermodynamic Properties of the Alkali Metal Borohydrides and of the Borohydride Ion," J. Am. Chem. Soc. 77, 5455 (1955).

#### 56BRO/GIN

H.C. Brown and D. Gintis, J. Am. Chem. Soc. 78, 5378 (1956)

#### 58BEN/BUS

S.W. Benson and J.H. Buss, J. Chem. Phys. 29, 546 (1958). 58BUR/SMI

D.S. Burch, S.J. Smith and L.M. Branscomb, "Photodetachment of O2-," Phys. Rev. 112, 171 (1958).

J.L. Franklin, V.H. Dibeler, R.M. Reese and M. Krauss, "Ionization and Dissociation of Hydrazoic Acid and Methyl Azide by Electron Impact," J. Am. Chem. Soc. 80, 298 (1958).

### 59HEN/MUC

A. Henglein and G.A. Muccini, "Negative Ion-Molecule Reactions," J. Chem. Phys. 31, 1426 (1959).

# 58REE/DIB

R.M. Reese, V.H. Dibeler, J.L. Franklin, "Electron Impact Studies of Sulfur Dioxide and Sulfuryl Fluoride," J. Chem. Phys. 29, 880 (1958).

## 61CUR

R.K. Curran, "Positive and Negative Ion Formation in CCl₃F," J. Chem. Phys. 34, 1069 (1961).

R.K. Curran, "Low Energy Process for F- Formation in SF₆," J. Chem. Phys. 34, 2007 (1961).

### 61DIB/REE

V.H. Dibeler, R.H. Reese and J.L. Franklin, "Mass Spectrometric Study of Cyanogen and Cyanoacetylenes," J. Am. Chem. Soc. 83, 1813 (1961).

#### 61GOW/JON

B.G. Gowenlock, P.P. Jones and J.R. Majer, Trans. Farad. Soc. 57, 23 (1961).

#### 61GUN/GRE

S.R. Gunn and L.G. Green, J. Phys. Chem. 65, 779 (1961). 61KRA/MUL

### K. Kraus, W. Muller-Duysing and H. Neuert, "Uber Stosse Langsamer Negativer Ionen mit Ladungsubertragung," Z. Naturfor. 16A, 1385 (1961).

# 61ZIM/GEI

H. Zimmerman and H. Geisenfelder, Z. Elektrochem. 65, 368 (1961).

#### 62ARM/KRI

G.T. Armstrong and L.A. Krieger, "Progress of International Research on Thermodynamic and Transport Properties" (ed. J.F. Masi and D.H. Tsai, Academic Press, New York, 1962).

R.K. Curran, "Formation of NO2" by Charge Transfer at Very Low Energies," Phys. Rev. 125, 910 (1962).

#### 62MOM/BRA

J. Momigny, L. Brakier and L. D'Or, Bull. Classe Sci. Acad. Roy. Belg. 48, 1002 (1962).

# 63BIB/CAR

M.M. Bibby and G. Carter, "Ionization and Dissociation in Some Fluorocarbon Gases," Trans. Farad. Soc. 59, 2455 (1963).

#### 63NAP/PAG

R. Napper and F.M. Page, "Determination of Electron Affinities. Part 5. Cyanide and Thiocyanate Radicals," Trans. Farad. Soc. 59, 1086 (1963).

#### 63TRE/NEU

L. V. Trepka and H. Neuert, "Uber die Entstehenung von Negativen Ionen aus einigen Kohlenwasserstoffen und Alkoholen durch Elektronenstoss," Z. Naturfor. 18A, 1295 (1963).

#### 64COO/CRU

R.C. Cookson, E. Crundwell, R.R. Hill and J. Hudec, J. Chem. Soc. 3062 (1964).

#### 64EBI

H.Z. Ebinghaus, "Negative Ionen aus Alkalihalogeniden und Electronenaffinitaten der Alkalimetalle und Alkalihalogenide," Z. Naturfor. 19A, 727 (1964).

# 64EBI/KRA

H. Ebinghaus, K. Kraus, H. Neuert and W. Muller-Duysing, "Negative Ionen durch Elecktronenresonanzeinfang in PH3, AsH3, und SiH4," Z. Naturfor. 19A, 732 (1964).

A.L. Farragher, F.M. Page and R.C. Wheeler, "Electron Affinities of the Nitrogen Oxides," Disc. Faraday Soc. 37, 203 (1964).

#### 64GÙN

S.R. Gunn, J. Phys. Chem. 68, 949 (1964).

#### 64GUN/GRE

S.R. Gunn and L.G. Green, J. Phys. Chem. 68, 946 (1964).

### 64KAY/PAG

J. Kay and F.M. Page, "Determination of Electron Affinities. Part 7.- Sulphur Hexafluoride and Disulphur Decafluoride," Trans. Farad. Soc. 60, 1042 (1964).

## 64SMI/GOV

N.K. Smith, G. Govid, W.D. Good and J.P. McCollough, J. Phys. Chem. 68, 940 (1964).

### 64TSU/HAM

S. Tsuda and W.H. Hamill, "Ionization Efficiency Measurements by the Retarding Potential Difference Method," Adv. Mass Spectrom. 3, 249 (1964).

#### 65BAC/BET

R.A. Back and J. Betts, Can. J. Chem. 43, 2157 (1965).

#### 66BEC/CHE

R.S. Becker and E. Chen, "Extension of Electron Affinities and Ionization Potentials of Aromatic Hydrocarbons," J. Chem. Phys. 45, 2403 (1966).

# 66BRA

L.M. Branscomb, "Photodetachment Cross Section, Electron Affinity, and Structure of the Negative Hydroxyl Ion," Phys. Rev. 148, 11 (1966).

### 66COM/CHR

R.N. Compton, L.G. Christophorou, G.S. Hurst and P.W. Reinhardt, "Nondissociative Electron Capture in Complex Molecules and Negative Ion Lifetimes," J. Chem. Phys. 45, 4634 (1966).

#### 66FAR/PAG

A.L. Farragher and F.M. Page, "Experimental Determination of Electron Affinities. Part 9. - Benzoquinone and Chloranil and Related Compounds," Trans. Farad. Soc. 62, 3072 (1966).

#### 66GAI/KAY

A.F. Gaines, J. Kay and F.M. Page, "Determination of Electron Affinities. Part 8. - CCl₄, CHCl₃, and CH₂Cl₂," J. Chem. Soc. Faraday Trans. 62, 874 (1966).

#### 66PAC/PHE

J.L. Pack and A.V. Phelps, "Electron Attachment and Detachment. I. Pure O₂ at Low Energy," J. Chem. Phys. 44, 1870 (1966).

#### 66PAC/PHE2

J.L. Pack and A.V. Phelps, "Electron Attachment and Detachment . II. Mixtures of  $O_2$  and  $CO_2$  and of  $O_2$  and  $H_2O_7$ " J. Chem. Phys. 45, 4316 (1966).

### 66WAD

I. Wadso, Acta Chem. Scand. 20, 544 (1966).

#### 67ARN/SAN

E.M. Arnett, J.C. Sanda, J.M. Bollinger and M. Barber, J. Am. Chem. Soc. 89, 5389 (1967).

D.R. Bidinosti and N.S. McIntyre, Can. J. Chem. **45**, 641 (1967).

#### 67CHE/BAR

C.J. Cheetam and R.F. Barrow, Adv. High Temp. Chem. 1, 7 (1967).

#### 67COL/HUB

J.E. Collin, M.J. Hubin-Franskin and L. D'Or, "Negative Ions Produced by Electron Impact in Ammonia, Methylamine, and Deuterated Methylamine-Nd₂," Adv. Mass Spectrom. 4, 713 (1967).

### 67FAR/PAG

A.L. Farragher and F.M. Page, "Experimental Determination of Electron Affinities. Part 11. - Electron Capture by Some Cyanocarbons and Related Compounds," Trans. Farad. Soc. 63, 2369 (1967).

### 67GUN

S.R. Gunn, J. Phys. Chem. 71, 2934 (1967).

# 67HAS/BLO

J.W. Hastie, H. Bloom and J.D. Morrison, "Electron Impact Studies of PbCl₂, PbBr₂, and PbBrCl," J. Chem. Phys. 47, 158 (1967).

#### 67HIR

J.A. Hirsch, Top. Stereochem. 1, 199 (1967).

#### 67JAE/HEN

K. Jaeger and A. Henglein, "Negative Ionen durch Elektronenstoss aus Organischen Nitroverbindungen. Athylnitrit und Athylnitrat," Z. Naturfor. 22A, 700 (1967).

### 67KOR/PEP

B.L. Korsunskii, V.I. Pepekin, Yu.A. Lebedev and A.Ya. Apin, Bull. Acad. Sci. USSR Div. Chem. Sci. 509 (1967).

### 67LOU/LAI

L.F. Loucks and K.J. Laidler, Can. J. Chem. **45**, 2785 (1967).

#### 67MAN/KOE

A. Mannschreck and O. Koelle, Tetrahedron Lett. 863 (1967).

#### 67SHV/TAY

Y.H. Shvo, E.C. Taylor and J. Bartulin, Tetrahedron Lett. 3259 (1967).

### 67WEN/CHE

W.E. Wentworth and E. Chen, "Experimental Determination of the Electron Affinity of Several Aromatic Aldehydes and Ketones," J. Phys. Chem. 71, 1929 (1967).

# 68BOU/CHA

R. Bougon, J. Chatelet, J.P. Desmolin and P. Plurien, Compt. Rend. Acad. Sci. 266C, 176 (1968).

#### 68BRA/BLA

J.I. Brauman and L.K. Blair, "Gas Phase Acidities of Carbon Acids," J. Am. Chem. Soc. 90, 5636 (1968).

#### 68CHE/GEO

E.C.M. Chen, R.D. George and W.E. Wentworth, "Experimental Determination of Rate Constants for Thermal Electron Attachment to Gaseous SF₆ and C₇F₁₄," J. Chem. Phys. 49, 1973 (1968).

#### 68CHU/RUS

W.A. Chupka and M.E. Russell, J. Chem. Phys. 49, 5426 (1968).

#### 68COL/HUB

J.E. Collin, M.J. Hubin-Franskin, L. D'Or, "Negative Ions Produced by Electron Impact in Ammonia, Methylamine, and Deuterated Methylamine-Nd₂," Adv. Mass Spectrom. **4**, 713 (1968).

#### 68CON/NES

D.C. Conway, L.E. Nesbit, "Stability of  $O_4$ -," J. Chem. Phys. 48, 509 (1968).

#### 68CZA/CAS

J. Czarnowski, E. Castellano and H. Schumacher, "The Energy of the O-F Bond in CF₃OF," Chem. Comm., 1255 (1968).

#### 68DIL/FRA

J.G. Dillard and J.L. Franklin, "Ion-Molecule Reactions of Negative Ions. I. Negative Ions of Sulfur," J. Chem. Phys. 48, 2349 (1968).

#### 68DUN

R.C. Dunbar, "Ion-Molecule Chemistry of Diborane by Ion Cyclotron Resonance," J. Am. Chem. Soc. 90, 5676 (1968).

#### 68GAI/PAG

A.F. Gaines and F.M. Page, "The Stabilities of Negative Ions. I. The Methyl-, Diphenylmethyl, and Triphenylmethyl Negative Ions," Int. J. Mass Spectrom. Ion Phys. 1, 315 (1968).

#### 68GOL/STE

S. Golub and B. Steiner, "Photodetachment of [OH(H₂O)]-," J. Chem. Phys. 49, 5191 (1968).

# 68JAE/HEN

K. Jaeger and A. Henglein, "Die Bildung Negativer Ionen aus SiCl₄ und Organischen Siliciumchloriden durch Elektronenstoss," Z. Naturfor. **23A**, 1122 (1968).

### 68KUH/LEV

W.F. Kuhn, R.J. Levins and A.C. Lilly, Jr., "Electron Affinities and Ionization Potentials of Phthalate Compounds," J. Chem. Phys. 49, 5550 (1968).

### 68LYO/MOR

L.E. Lyons, G.C. Morris and L.J. Warren, "Electron Affinites and the Electron Capture Method for Aromatic Hydrocarbons," J. Phys. Chem. 72, 3677 (1968).

### 68LAC/SKI

J.R. Lacher and H.A. Skinner, J. Chem. Soc. A 1034 (1968). 68LOW

J.P. Lowe, Prog. Phys. Org. Chem. 6, 1 (1968).

### 68STE

B. Steiner, "Photodetachment of Electrons From SH⁻," J. Chem. Phys. 49, 5097 (1968).

# 68WEN/CHE

W.E. Wentworth, E. Chen and J.C. Steelhammer, "Determination of Electron Affinities of Radicals and Bond Dissociation Energies by Electron Attachment Studies at Thermal Energies - Electron Affinity of the Acetate Radical," J. Phys. Chem. 72, 2671 (1968).

### 68TUR/GÒE

R.B. Turner, P. Goebel, B.J. Mallon, W. von E. Doering, J.F. Coburn, Jr. and M. Pomerantz, J. Am. Chem. Soc. 90, 4315 (1968).

# 68WAL/PAP

C. Walling and C.G. Papaioannou, J. Phys. Chem. 72, 2260 (1968).

# 68WIL/HAM

J.M. Williams and W.H. Hamill, "Ionization Potentials of Molecules and Free Radicals and Appearance Potentials by Electron Impact in the Mass Spectrometer," J. Chem. Phys. 49, 4467 (1968).

#### 69BEN/CRU

S.W. Benson, F.R. Cruickshank, D.M. Golden, G.R. Haugen, H.E. O'Neal, A.S. Rogers, R. Shaw and R. Walsh, "Additivity Rules for the Estimation of Thermochemical Properties," Chem. Rev. 69, 279 (1969).

#### 69BER/CHU

J. Berkowitz, W.A. Chupka and T.A. Walter, "Photoionization of HCN: The Electron Affinity and Heat of Formation of CN," J. Chem. Phys. 50, 1497 (1969).

#### 69BOG/GRI

G.M. Bogolyubov, N.N. Grishin and A.A. Petrov, "Organic Derivatives of Group V and Group VI Elements. VIII. Mass Spectra of Phosphines and Diphosphines," Zh. Obs. Khim. 39, 1808 (1969).

#### 69BRI

C.E. Brion, "Negative Ion Formation in the Hexafluorides of Sulphur, Selenium, and Tellurium," Int. J. Mass Spectrom. Ion Phys. 3, 197 (1969).

#### 69FLE/WHI

G.D. Flesch, R.M. White and H.J. Svec, "The Positive and Negative Ion Mass Spectra of Chromyl Chloride and Chromyl Fluoride," Int. J. Mass Spectrom. Ion Phys. 3, 339 (1969).

#### 69GOL/BEN

D.M. Golden and S.W. Benson, Chem. Rev. 69, 125 (1969). 69HAL/PLA

M. Halmann and I. Platzner, "Negative Ions Produced by Electron Capture in Phosphine," J. Phys. Chem. 73, 4376 (1969).

#### 69LIF/GRÁ

C. Lifshitz and R. Grajower, "Dissociative Electron Capture and Dissociative Ionization in Perfluoropropane," Int. J. Mass Spectrom. Ion Phys. 3, 211 (1969).

#### 69MAC/THY

K.A.G. MacNeil and J.C.J. Thynne, "Ionization and Dissociation of Hexafluoroethane, and of 1,1,1-Trifluoroethane and Fluoroform, by Electron Impact," Int. J. Mass Spectrom. Ion Phys. 2, 1 (1969).

### 69MAC/THY2

K.A.G. MacNeil and J.C.J. Thynne, "The Deconvolution of Negation Ion Data," Int. J. Mass Spectrom. Ion Phys. 3, 35 (1969).

#### 69MIC

J. Michl, "Electronic Spectrum of Fluoranthene," J. Mol. Spectrosc. 30, 66 (1969).

#### 69OKA/MEL

H. Okabe and A. Mele, J. Chem. Phys. 51, 2100 (1969).

### 69PAG/GOO

F.M. Page and G.C. Goode, "Negative Ions and the Magnetron," Wiley, NY 1969.

#### 69PAN/ZER

A.V. Pankratov, Z.N. Zercheninov, V.I. Chesnokov and N.N. Zhadanaova, Russ. J. Phys. Chem. 43, 212 (1969).

#### 69SEA/DZ

S.K. Searles, I. Dzidic and P. Kebarle, "Proton Affinities of the Alkali Hydroxides," J. Am. Chem. Soc. 91, 281 (1969).

### 69STE/WEN

J.C. Steelhammer and W.E. Wentworth, "Correlation of Electron Beam and Thermal Electron Attachment Studies for Some Chloro, Bromo, Iodo Aromatic Compounds," J. Chem. Phys. 51, 1802 (1969).

### 69STO/COM

J.A.D. Stockdale, R.N. Compton, G.S. Hurst and P.W. Reinhardt, "Collisions of Monoenergetic Electrons with NO₂: Possible Lower Limits to the Electron Affinities of O₂ and NO," J. Chem. Phys. 50, 2176 (1969).

### 69STU/WES

D.R. Stull, E.F. Westrum, Jr. and G.C. Sinke, "The Chemical Thermodynamics of Organic Compounds," (John Wiley & Sons, New York, 1969).

#### 69TSU/YOK

S. Tsuda, A. Yokohata and M. Kawai, "Measurement of Negative Ions Formed by Electron Impact. II. The Ionization Efficiency Curves of Negative Nitro, Oxygen Atoms, and Nitromethylene," Bull. Chem. Soc. Japan 42, 614 (1969).

#### 69TSU/YOK2

S. Tsuda, A. Yokohata and M. Kawai, "Measurement of Negative Ions Formed by Electron Impact. III. The Ionization Efficiency Curves of Negative Ions of M/E 26 and 42 From Nitroalkanes." Bull Chem. Soc. Japan 42, 1515 (1969).

# 69VOG

D. Vogt, "Uber die Energieanhangigkeit und den Mechanismus von Reaktionen bei Stossen Langsamer Negativer Ionen auf Molekule," Int. J. Mass Spectrom. Ion Phys. 3, 81 (1969).

#### 69WAR

P. Warneck, "Photodetachment of NO₂-," Chem. Phys. Lett. 3, 532 (1969).

#### 69WEN/RIS

W.E. Wentworth and W. Ristau, "Thermal Electron Attachment Involving a Change in Molecular Geometry," J. Phys. Chem. 73, 2126 (1969).

#### 70ADA/BÒH

N. Adams, D.K. Bohme, D.B. Dukin, D. Fehsenfeld and E.E. Ferguson, "Flowing Afterglow Studies of Formation and Reactions of Cluster Ions of O₂⁺, O₂⁻, and O⁻," J. Chem. Phys. 52, 3133 (1970).

#### 70ARS/KEB

M. Arshadi and P. Kebarle, "Hydration of OH- and O₂- in the Gas Phase. Comparative Solvation of OH- by Water and the Hydrogen Halides. Effect of Acidity," J. Phys. Chem. 74, 1483 (1970).

#### 70ARS/YAM

M. Arshadi, R. Yamdagni and P. Kebarle, "Hydration of Halide Negative Ions in the Gas Phase. II. Comparision of Hydration Energies for the Alkali Positive and Halide Negative Ions," J. Phys. Chem. 74, 1475 (1970).

#### 70BAI/MAH

T.L. Bailey and P. Mahadevan, "Electron Transfer and Detachment in Collisions of Low Energy Negative Ions with O₂," J. Chem. Phys. 52, 179 (1970).

### 70BEN/O'N

S.W. Benson and H.E. O'Neal, "Kinetic Data on Gas Phase Unimolecular Reactions," NSRDS-NBS 21, (1970).

#### 70CHA/CHR

E.L. Chaney, L.G. Christophorou, P.M. Collins and J.C. Carter, "Electron Attachment in the Field of the Ground and Excited States of the Azulene Molecule," J. Chem. Phys. 52, 4413 (1970).

# 70COL/CHR

P.M. Collins, L.G. Christophorou, E.L. Chaney and J.G. Carter, "Energy Dependence of the Electron Attachment Cross Section and the Transient Negative Ion Lifetime for p-Benzoquinone and 1,4-Naphthoquinone," Chem. Phys. Lett. 4, 646 (1970).

#### 70COL/LÓC

J.E. Collin and R. Locht, "Positive and Negative Ion Formation in Ketene by Electron Impact," Int. J. Mass Spectrom. Ion Phys. 3, 465 (1970).

### 70DEP/GIA

M. De Paz, A.G. Giardini, L. Friedman, "Tandem-Mass Spectrometer Study of Solvated Derivatives of OD. Total Hydration Energy of the Proton," J. Chem. Phys. 52, 687 (1970).

#### 70EME/KHO

A.M. Emel'yanov, Y.S. Khodeev and L.N. Gorokhov, "Determination of the Ionization Potentials of Atomic Uranium by an Electron Impact Method. I. Measurement of the First Ionization Potential of Uranium," Teplofiz. Vys. Temp. 8, 296 (1970).

#### 70FEL

D. Feldman, "Photoablosung von Electronen bei einigen Stabilen Negativen Ionen," Z. Naturfor. 25A, 621 (1970).

#### 70FIN/GAR

A. Finch and P.J. Gardner, "Progress in Boron Chemistry," Vol. 3 (ed. R. Brotherton and H. Steinberg, Pergamon, New York, 1970).

#### 70FUR/GOL

S. Furayama, D.M. Golden and S.W. Benson, Int. J. Chem. Kinet. 2, 93 (1970).

#### 70HAR/THY

P.W. Harland and J.C.J. Thynne, "Positive and Negative Ion Formation in Hexafluoroacetone by Electron Impact," J. Phys. Chem. 74, 52 (1970).

#### 70HEH/DIT

W.J. Hehre, R. Ditchfield, L. Radom and J.A. Pople, J. Am. Chem. Soc. 92, 4796 (1970).

#### **70JEN**

D.E. Jensen, "Electron Attachment and Compound Formation in Flames. II. Mass Spectrometry of Boron-Containing Flames," J. Chem. Phys. 52, 3305 (1970).

#### 70JEN/MIL

D.E. Jensen and W.J. Miller, "Electron Attachment and Compound Formation in Flames. III. Negative Ion and Compound Formation in Flames Containing Tungsten and Potassium," J. Chem. Phys. 53, 3287 (1970).

#### 70KLO/PAS

E. Kloster-Jensen, C. Pascual and J. Vogt, Helv. Chim Acta 53, 2109 (1970).

#### 70LAC/HER

K. Lacmann and D.R. Herschbach, "Collisional Excitation and Ionization of K Atoms by Diatomic Molecules: Role of Ion-pair States," Chem. Phys. Lett. 6, 106 (1970).

#### 70LIF/HUG

C. Lifshitz, B.M. Hughes and T.O. Tiernan, "Electron Affinites for Endothermic Negative Ion Charge Transfer Reactions. NO₂ and SF₆," Chem. Phys. Lett. 7, 469 (1970).

### 70LIP/PEÉ

C. Lifshitz, A.M. Peers, R. Grajower and M. Weiss, "Breakdown Curves for Polyatomic Negative Ions," J. Chem. Phys. 53, 4605 (1970).

### 70LOC/MOM

R. Locht and J. Momigny, "Mass Spectrometric Determination of the Electron Affinities of Radicals," Chem. Phys. Lett. 6, 273 (1970).

#### 70LON/FIN

F.R. Longo, J.D. Finarelli, E. Schmalzbach and A.D. Adler, J. Phys. Chem. 74, 3297 (1970).

#### 70MAC/THY

K.A.G. MacNeil and J.C.J. Thynne, "The Formation of Negative Ions by Electron Impact on Silicon Tetrafluoride and Carbon Tetrafluoride," Int. J. Mass Spectrom. Ion Phys. 3, 455 (1970).

# 70MOO

C.E. Moore, "Ionization Potentials and Ionization Limits Derived from the Analyses of Optical Spectra," Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U.S.) 34, (1970).

#### 700'H/HUE

P.A.G. O'Hare, W.N. Hubbard, O. Glemser and J. Wegener, J. Chem. Thermodyn. 2, 71 (1970).

#### 70OKA

H. Okabe, J. Chem. Phys. 53, 3507 (1970).

#### 70SOL/GOL

R.K. Solly, D.M. Golden and S.W. Benson, "Kinetics of the Gas Phase Reaction of Acetone with Iodine: Heat of formation of the Acetonyl Radical," Int. J. Chem. Kinet. 2, 11 (1970).

#### 70THY/MAC

J.C.J. Thynne and K.A.G. MacNeil, "Ionisation and Dissociation of Carbonyl Fluoride and Trifluoromethyl Hypofluorite by Electron Impact," Int. J. Mass Spectrom. Ion Phys. 5, 95 (1970).

### 70THY/MAC2

J.C.J. Thynne and K.A.G. MacNeil, "Ionisation of Tetrafluoroethylene by Electron Impact," Int. J. Mass Spectrom. Ion Phys. 5, 329 (1970).

### 70VOG/HAU

D. Vogt, B. Hauffle and H. Neuert, "Ladungsaustausch-Reaktionen Einiger Negativer Ionen mit O₂ und die Elektronenaffinitat des O₂," Z. Phys. 232, 439 (1970).

#### 71ALL/WUE

N.L. Allinger and M.T. Wuesthoff, J. Org. Chem. **36**, 2051 (1971).

#### 71ASTM

"Physical Constants of Hydrocarbons  $C_1$  to  $C_{10}$ ," ASTM Data Series for Testing and Materials, TM DS 4A (Philadelphia, 1971).

# 71BEL/PLA

T.N. Bell and A.E. Platt, "The Reactions of CF₃ and CD₃ Radicals with Boron Trimethyl," Int. J. Chem. Kinet. 3, 307 (1971).

### 71BER/CHU

J. Berkowitz, W.A. Chupka and D. Gutman, "Electron Affinities of O₂, O₃, NO, NO₂, NO₃ by Endothermic Charge Transfer," J. Chem. Phys. 55, 2733 (1971).

#### 71BOH/LEE

D.K. Bohme, E. Lee-Ruff and L.B. Young, "A Standard Acidity Scale. The pKa of Alcohols in the Gas Phase," J. Am. Chem. Soc. 93, 4608 (1971).

#### 71BOH/YOU

D.K. Bohme and L.B. Young, "Electron Affinities from Thermal Proton Transfer Reactions: C₆H₅ and C₆H₅CH₂," Can. J. Chem. **49**, 2918 (1971).

#### 71BOY/SAN

R.H. Boyd, S.N. Sanwal, S. Shary-Tehrany and D. McNally, J. Phys. Chem. 75, 1264 (1971).

#### 71BRA/BLA

J.İ. Brauman and L.K. Blair, "Gas Phase Acidities of Amines," J. Am. Chem. Soc. 93, 3911 (1971).

### 71CEL/BEN

R.J. Celotta, R.A. Bennett, J.L. Hall, J. Levine and M.W. Siegel, "Electron Affinity of O₂ by Laser Photodetachment," Bull. Am. Phys. Soc. **16**, 212 (1971).

#### 71CH

P.J. Chantry, "Doppler Broadening in Beam Experiments," J. Chem. Phys. 55, 2746 (1971).

#### 71CHU/BER

W.A. Chupka, J. Berkowitz and D. Gutman, "Electron Affinities of Halogen Diatomic Molecules as Determined by Endoergic Charge Exchange," J. Chem. Phys. 55, 2724 (1971).

#### 71DEC/BAI

J.J. DeCorpo, D.A. Bafus and J.L. Franklin, "Correlation of Excess Energies of Dissociative Electron Attachment Processes with the Translational Energies of Their Products," J. Chem. Phys. 54, 1592 (1971).

### 71DEC/FRA

J.J. DeCorpo and J.L. Franklin, "Electron Affinities of the Halogen Molecules by Dissociative Electron Attachment," J. Chem. Phys. 54, 1885 (1971).

#### 71FEH

F.C. Fehsenfeld, "Ion Chemistry of SF₆," J. Chem. Phys. **54**, 438 (1971).

#### 71 PPT

D. Feldman, "Photoablosung von Elektronen bei Si- und NH₂-," Z. Naturfor. 26A, 1100 (1971).

# 71HAR/I'HY

P.W. Harland and J.C.J. Thynne, "Autodetachment Lifetimes, Attachment Cross Sections, and Negative Ions Formed by Sulfur Hexasluoride and Sulfur Tetrasluoride," J. Phys. Chem. 75, 3517 (1971).

# 71JANAF

D.R. Stull and H. Prophet, "JANAF Thermochemical Tables," NSRDS-NBS 37, U.S. Gov't. Print. Off., Washington, DC, 1971.

#### 71KIN/GOL

K.D. King, D.M. Golden and S.W. Benson, "Thermochemistry of the Equilibrium CH₃COCH₃ + Br₂ = CH₃COCH₂Br + HBr," J. Chem. Therm. 3, 129 (1971).

71MOU/ATE

A.M.C. Moutinho, J.A. Aten and J. Los, "Temperature Dependence of the Total Cross Section for Chemi-Ionization in Alkali Halide-Halogen Collisions," Physica 53, 471 (1971).

#### 71NAL/COM

S.J. Nalley and R.N. Compton, "Collisional Ionization of Cesium by Oxygen: the Electron Affinity of O₂," Chem. Phys. Lett. 9, 529 (1971).

#### 71NUT/LAU

R.L. Nuttall, A.H. Laufer and M.V. Kilday, J. Chem. Thermodyn. 3, 107 (1971).

#### 71PAR

D.A. Parkes, "Electron Attachment and Negative Ion-Molecule Reactions in Pure O₂," Trans. Farad. Soc. 97, 711 (1971).

#### 71PAY/YAM

J.D. Payzant, R. Yamdagni and P. Kebarle, "Hydration of CN-, NO₂-, NO₃-, and HO- in the Gas Phase," Can. J. Chem. 49, 3308 (1971).

#### 71POT/PRI

A.W. Potts and W.C. Price, "Photoelectron Spectra of the Halogens and Mixed Halides, ICl and IBr," Trans. Faraday Soc. 67, 1242 (1971).

#### 71RAP/WES

N.J. Rapport, E.F. Westrum, Jr. and J.T.J. Andrews, J. Am. Chem. Soc. 93, 4363 (1971).

#### 71RHY/DIL

T.C. Rhyne and J.G. Dillard, "Reactions of Gaseous Inorganic Negative Ions: III. SF₆- with POF₃ and PSF₃," Int. J. Mass Spectrom. Ion Phys. 7, 371 (1971).

#### 71SEL

P. Sellers, Acta Chem. Scand. 25, 2194 (1971).

#### 71SMY/MCI

K.C. Smyth, R.T. McIver, J.I. Brauman and R.W. Wallace, "Photodetachment of Negative Ions Using a Continuously Tunable Laser and an ICR Spectrometer," J. Chem. Phys. 54, 2758 (1971).

### 71SRI/UY

R.D. Srivastava, O.M. Uy and M. Farber, "Effusion Mass Spectrometric Study of Thermodynamic Properties of BOand BO₂", Trans. Farad. Soc. **67**, 2941 (1971).

### 71THY/MAC

J.C.J. Thynne and K.A.G. MacNiel, "Negative Ion Formation by Ethylene and 1,1-difluoroethylene," J. Phys. Chem. 75, 2584 (1971).

### 71TIE/HUG

T.O. Tiernan, B.M. Hughes and C. Lifschitz, "Electron Affinities from Endothermic Negative Ion Charge Transfer Reactions. II. O₂," J. Chem. Phys. 55, 5692 (1971).

#### 71TSU/YOK

S. Tsuda, A. Yokohata and T. Umaba, "Measurement of Negative Ions formed by Electron Impact. VIII. Ionization Efficiency Curves of Negative Ions from Methyl and Ethyl Cyanides," Bull. Chem. Soc. Jpn. 44, 1486 (1971).

# 71WEN/CHE

W.E. Wentworth, E. Chen and R. Freeman, "Thermal Electron Attachment to N₂O," J. Chem. Phys. 55, 2075 (1971).

### 71WIL/ZWO

R.C. Wilhoit and B.J. Zwolinski, "Handbook of Vapor Pressures and Heats of Vaporization of Hydrocarbons and Related Compounds" (Thermodynamics Research Center, College Station, Texas, 1971).

### 71WON/VOR

S.F. Wong, T.V. Vorburger and S.V. Woo, "Photodetachment of O₃-," Bull. Am. Phys. Soc. **16**, 213 (1971).

#### 71YAM/KEB

R. Yamdagni and P. Kebarle, "Hydrogen Bonding Energies to Negative Ions from Gas Phase Measurements of Ionic Equilibria," J. Am. Chem. Soc. 93, 7139 (1971).

#### 72BAE

A.P.M. Baeda, "The Adiabatic Electron Affinities of Cl₂, Br₂, I₂, IBr, NO₂, and O₂," Physica 59, 541 (1972).

#### 72BOH/LEE

D.K. Bohme, E. Lee-Ruff and L.B. Young, "Acidity Order of Selected Bronsted Acids in the Gas Phase at 300K," J. Am. Chem. Soc. 94, 5153 (1972).

#### 72BRI/OLS

C.E. Brion and L.A.R. Olsen, "Negative Ion Formation in Tetracyanoethylene," Int. J. Mass Spectrom. Ion Phys. 9, 413 (1972).

#### 72BUR

J.A. Burt, "Photodetachment Cross Sections for CO₃⁻ and Its First Hydrate," J. Chem. Phys. 57, 4649 (1972).

#### 72BUR2

J.A. Burt, "Measurement of the Photodetachment Cross Section for O₄- at High Pressure," J. Geophys. Res. 77, 6280 (1972).

### 72CEL/BEN

R.J. Celotta, R.A. Bennett, J.L. Hall, M.W. Siegel and J. Levine, "Molecular Photodetachment Spectrometry. II. The Electron Affinity of O₂ and the Structure of O₂-," Phys. Rev. 6A, 631 (1972).

#### 72CEN

R.E. Center, "Ion-Molecule Experiments Involving Negative Ions of Tungsten and Rhenium Oxides," J. Chem. Phys. 56, 371 (1972).

#### 72CON/COL

G. Conde-Caprace and J.E. Collin, "Electron Impact Induced Fragmentation of 1,3,6-Dioxathiocane," Org. Mass Spectrom. 6, 341 (1972).

#### 72DID/FRA

A. DiDomenico and J.L. Franklin, "Negative Ions in the Mass Spectrum of Nitromethane," Int. J. Mass Spectrom. Ion Phys. 9, 171 (1972).

### 72DID/HAR

A. DiDomenico, P.W. Harland and J.L. Franklin, "Negative Ion Formation and Negative Ion-Molecule Reactions in Cyclopentadiene," J. Chem. Phys. 56, 5299 (1972).

### 72DIX/HOL

D.A. Dixon, D. Holtz and J.L. Beauchamp, "Acidity, Basicity, and Gas-Phase Ion Chemistry of Hydrogen Selenide by ICR Spectroscopy," Inorg. Chem. 11, 960 (1972).

### 72DOM

E.S. Domalski, J. Phys. Chem. Ref. Data 1, 221 (1972).

# 72DON/LIT

R.J. Donovan, D.J. Little, J. Konstantatos, "Vacuum Ultraviolet Spectra of Transient Molecules and Radicals," J. Chem. Soc. Farad. Trans. II 68, 1812 (1972).

# 72DUN/FEH

D.B. Dunkin, F.C. Fehsenfeld and E.E. Ferguson, "Thermal Energy Rate Constants for the Reactions  $NO_2^- + Cl_2 \rightarrow Cl_2^-$ ,  $Cl_2^- + NO_2 \rightarrow Cl^-$ , HS⁻ +  $NO_2 \rightarrow NO_2^-$ , HS⁻ +  $Cl_2 \rightarrow Cl_2^-$ , and S⁻ +  $NO_2 \rightarrow NO_2^-$ ," Chem. Phys. Lett. 15, 257 (1972).

### 72FER/DUN

E.E. Ferguson, D.B. Dunkin and F.C. Fehsenfeld, "Reactions of NO₂ and NO₃ with HCl and HBr," J. Chem. Phys. 57, 1459 (1972).

### 72GAF

"M-PYROL: N-Methylpyrrolidone" (GAF Corporation, New York, 1972).

### 72GEI/RAU

G. Geiseler and H.J. Rauh, Z. Phys. Chem. (Leipzig) 249, 376 (1972).

### 72GOR

A.S. Gordon, Int. J. Chem. Kinet. 4, 541 (1972).

#### 72GRE

A. Greenberg, J. Chem. Ed. 49, 575 (1972).

#### 72GRO

M.L. Gross, "An Ion Cyclotron Resonance Study of the Structure of C₃H₆ + and the Mechanism of Its Reaction with Ammonia," J. Am. Chem. Soc. 94, 3744 (1972).

#### 72HAR/CRA

P.W. Harland, S. Cradock and J.C.J. Thynne, "Positive- and Negative-Ion Formation Due to the Electron Bombardment of Germanium Tetrafluoride," Int. J. Mass Spectrom. Ion Phys. 10, 169 (1972).

#### 72HAR/THY

P.W. Harland and J.C.J. Thynne, "Dissociative Electron Capture in Perfluoropropylene and Perfluoropropane," Int. J. Mass Spectrom. Ion Phys. 9, 253 (1972).

### 72HAR/THY2

P.W. Harland and J.C.J. Thynne, "Ionisation of Perfluorocyclobutane by Electron Impact," Int. J. Mass Spectrom. Ion Phys. 10, 11 (1972).

### 72HEH/RAD

W.J. Hehre, L.A. Radom and J.A. Pople, J. Am. Chem. Soc. 94, 1496 (1972).

#### 72JOH/MAL

G.K. Johnson, J.G. Malm and W.N. Hubbard, J. Chem. Thermodyn. 4, 879 (1972).

### 72KOZ/TIM

M.P. Kozina, L.P. Timofeeva, S.M. Pinenova, V.A. Aleshna, N.A. Belikova, A.A. Bobyleva and A.F. Plate, Russ. J. Phys. Chem. 46, 1689 (1972).

#### 72LAU/OKA

A.H. Laufer and H. Okabe, J. Phys. Chem. 76, 3504 (1972)

#### 72LIF/GRA

C. Lifshitz and R. Grajower, "Dissociative Electron Capture and Dissociative Ionization in Perfluorocyclobutane," Int. J. Mass Spectrom. Ion Phys. 10, 25 (1972).

#### 72MAC/THY

K.A.G. MacNeil and J.C.J. Thynne, "Negative Ion Formation at Low Electron Energies by Hexafluorodimethyl Peroxide," Int. J. Mass Spectrom. Ion Phys. 9, 135 (1972).

#### 72MCF/DUN

M. McFarland, D.B. Dunkin, F.C. Fehsenfeld, A.L. Schmeltekopf and E.E. Ferguson, "Collisional Detachment Studies of NO-," J. Chem. Phys. 56, 2358 (1972).

E.S. Miller, "Electron Attachment and Compound Formation in Flames. V. Negative Ion Formation in Flames Containing Chromium and Potassium," J. Chem. Phys. 57, 2354 (1972).

Page, F.M., "Experimental Determination of the Electron Affinities of Inorganic Radicals," Adv. Chem. Ser. 36, 68 (1972)

#### 72PAR/SUG

D.A. Parkes and T.M. Sugden, "Electron Attachment and Detachment in Nitric Oxide," J. Chem. Soc. Faraday II 68, 600 (1972).

### 72PIL

G. Pilcher MTP Review of Science, Series 1, Vol. 10 (ed. H.A. Skinner, Butterworths, London, 1972).

V.K. Potapov and V.V. Sorokin, "Kinetic Energies of Products of Dissociative Photoionization of Molecules. 1. Aliphatic Ketones and Alcohols," Khim. Vys. Energ. 6, 387 (1972).

R. Shaw, Int. J. Chem. Kinet. 5, 261 (1972).

#### 72SHI/YAM

T. Shiga, H. Yamaoka, K. Arakawa and T. Suguira, "A Negative Ion-Molecule Reaction in Nitroethylene," Bull. Chem. Soc. Jpn. 45, 2065 (1972).

#### 72SIE/CEL

M.W. Siegel, R.J. Celotta, F.L. Hall, J. Levine and R.A. Bennett, "Molecular Photodetachment Spectroscopy. I. The Electron Affinity of Nitric Oxide and the Molecular Constants of NO-, Phys. Rev. A 6, 607 (1972).

# 72SMY/BRA

K.C. Smyth and J.I. Brauman, "Photodetachment of Electrons from Phosphide Ion; the Electron Affinity of PH2-," J. Chem. Phys. 56, 1132 (1972).

#### 72SMY/BRA2

K.C. Smyth and J.I. Brauman, "Photodetachment of Electrons from Amide and Arsenide Ions: the Electron Affinities of NH2. and AsH2:," J. Chem. Phys. 56, 4620 (1972).

### 72SMY/BRA3

K.C. Smyth and J.I. Brauman, "Photodetachment of an Electron from Selenide Ion; The Electron Affinity and Spin-Orbit Coupling Constant for SeH," J. Chem. Phys. 56, 5993 (1972).

R.D. Srivastava, O.M. Uy and M. Farber, "Effusion Mass Spectrometric Study of the Thermodynamic Properties of AlOand AlO2-," J. Chem. Soc. Faraday Trans. II 1, 1388 (1972).

#### 72STO/NEL

J.A.D. Stockdale, D.R. Nelson, F.J. Davis and R.N. Compton, "Studies of Electron Impact Excitation, Negative Ion Formation, and Negative Ion-Molecule Reactions in Boron Trifluoride and Boron Trichloride," J. Chem. Phys. 56, 3336 (1972).

### 72THY

J.C.J. Thynne, Dyn. Mass Spectrom. 3, 67 (1972).

#### 72TRI/ALL

M.T. Tribble and N.L. Allinger, Tetrahedron 28, 2147 (1972).

# 72WAL

L.C. Walker, J. Chem. Thermodyn. 4, 219 (1972).

#### 72YAM/KEB

R. Yamdagni and P. Kebarle, "Solvation of Negative Ions by Protic and Aprotic Solvents. Gas Phase Solvation of Halide Ions by Acetonitrile and Water Molecules," J. Am. Chem. Soc. 94, 2940 (1972).

#### 73ALF/GOL

A.B. Alfassi, D.M. Golden and S.W. Benson, J. Chem. Thermodyn. 5, 511 (1973).

### 73ARS/SHA

M.R. Arshadi and M. Shabrang, J. Chem. Soc. Perkins II, 1732 (1973)

### 73AUE/HÚB

D.J. Auerbach, M.M. Hubers, A.P.M. Baeda and J. Los, "Chemi-Ionization in Alkali-Heteronuclear Halogen Collisions: Role of Excited Molecular Ion States," Chem. Phys. 2, 107 (1973).

## 73BAE/AUE

A.P.M. Baeda, J. Auerbach, and D.J. Los, "Fragmentation of Negative Ions Formed in Collisions of Alkali Atoms and Halogen Molecules," Physica 64, 134 (1973).

P. Barbieri, Inform. Sci. Tech, Commis. Energ. At. 55, 180 (1973). CA: 79:58336m (1973).

#### 73BAT/MIL

L. Batt and R.T. Milne, Int. J. Chem. Kinet. 5, 1067 (1973).

#### 73BEN/MAR

S.L. Bennett, J.L. Margrave, J.L. Franklin and J.E. Hudson, "High Temperature Negative Ions: Electron Impact of As4 Vapor," J. Chem. Phys. 59, 5814 (1973).

#### 73BIL/CHO

W.E. Billups, W.Y. Chong, K.H. Leavell, E.S. Lewis, J.L. Margrave, R.L. Sass, J.J. Shieh, P.G. Werness and J.L. Wood, J. Am. Chem. Soc. 95, 7878 (1973).

#### 73BLA/ISO

L.K. Blair, P.C. Isolani and J.M. Riveros, "Formation, Reactivity, and Relative Stability of Clustered Alkoxide Ions by ICR Spectroscopy," J. Am. Chem. Soc. 95, 1057 (1973).

#### 73COM/COO

R.N. Compton and C.D. Cooper, "Molecular Electron Affinities from Collisional Ionization of Cesium. II. SF₆ and TeF₆," J. Chem. Phys. **59**, 4140 (1973).

#### 73COM/COO2

R.N. Compton, R.D. Cooper, W.T. Divver and P.W. Reinhardt, "Molecular Electron Affinities from Collisional Ionization of Cesium: SF₆," Bull. Am. Phys. Soc. 18, 810 (1973).

#### 73COO/CÓM

C.D. Cooper and R.N. Compton, "Electron Attachment and Cesium Collisional Ionization Studies of Tetrafluorosuccinic and Hexafluoroglutaric Anhydrides: Molecular Electron Affinities," J. Chem. Phys. 59, 3550 (1973).

#### 73COW/JOH

S.A. Cowling and R.A.W. Johnstone, J. Electron Spectrosc. Relat. Phenom. 2, 161 (1973).

### 73EGG/COC

K.W. Egger and A.T. Cocks, "The Chemistry of the Carbon-Halogen Bond," S. Patai, Ed., Wiley, NY, 1973, Ch. 10.

### 73ENG/AND

E.M. Engler, J.D. Andose and P. von R. Schleyer, J. Am. Chem. Soc. 95, 8003 (1973).

#### 73GAR/REE

W.R.S. Garton, E.M. Reeves, F.S. Tomkins and B. Ercoli, "Rydberg Series and Autoionization Resonances in the Y I Absorption Spectrum," Proc. R. Soc. Lond. A333, 17 (1973).

# 73GOL/KOR

I.V. Gol'denfel'd, I.Z. Korostyshevskii, B.G. Mischanchuk and V.A. Pokrovskii, "Determination of Ionization Potentials of Atoms and Molecules Using a Field Mass Spectrometer Equipped with an Energy Analyzer," Dokl. Akad. Nauk SSSR, 213, 626 (1973).

#### 73HAA/MCD

J.C. Haartz and D.H. McDaniel, "Fluoride Ion Affinity of Some Lewis Acids," J. Am. Chem. Soc. 95, 8562 (1973).

#### 73HAR/FRA

P.W. Harland, J.L. Franklin and D.E. Carter, "Use of Translational Energy Measurements in the Evaluation of the Energetics for Dissociative Attachment Processes," J. Chem. Phys. 58, 1430 (1973).

### 73HAR/THY

P.W. Harland and J.C.J. Thynne, "Comparision of Negative Ion Formation by the Hexafluorides of Sulphur, Selenium, Tellurium, and Tungsten," Inorg. Nucl. Chem. Lett. 9, 265 (1973).

#### 73HAR/THY2

P.W. Harland and J.C.J. Thynne, "Negative Ion Formation by Perfluoro-n-butane as the Result of Low Energy Electron Impact," Int. J. Mass Spectrom. Ion Phys. 11, 445 (1973).

### 73HUG/LIF

B.M. Hughes, C. Lifschitz and T.O. Tiernan, "Electron Affinities from Endothermic Negative-ion Charge-Transfer Reactions. III. NO, NO₂, S₂, CS₂, Cl₂, Br₂, I₂, and C₂H," J. Chem. Phys. 59, 3162 (1973).

#### 73LAR/JOH

J.W. Larson, G.K. Johnson, P.A.G. O'Hare and O. Glemser, J. Chem. Thermodyn. 5, 689 (1973).

# 73LAT/RAD

W.A. Lathan, L. Radom, P.C. Hariharan, W.J. Hehre and J.A. Pople, Top. Curr. Chem. 40, 1 (1973).

#### 73LEF/JAC

C.B. Leffert, W.M. Jackson and E.W. Rothe, "Measurement of the Electron Affinity of NO₂," J. Chem. Phys. 58, 5801 (1973).

#### 73LIF/TIE

C. Lifshitz, T.O. Tiernan and B.M. Hughes, "Electron Affinities from Endothermic Negative-Ion Charge Transfer Reactions. IV. SF₆, Selected Fluorocarbons, and other Polyatomic Molecules," J. Chem. Phys. 59, 3182 (1973).

#### 73LYO/PAL

L.E. Lyons and L.D. Palmer, "Photodetachment of Electrons from Tetracyanoethylene Negative Ions," Chem. Phys. Lett. 21, 442 (1973).

#### 73MCI/SCO

R.T. McIver, Jr., J.A. Scott and J.M. Riveros, "Effect of Solvation on the Intrinsic Relative Acidity of Methanol and Ethanol," J. Am. Chem. Soc. 95, 2706 (1973).

#### 73MCN/LAC

P.E. McNamee, K. Lacmann and D.R. Herschbach, Faraday Disc. Chem. Soc. 55, 318 (1973).

### 73NAL/COM

S.J. Nalley, R.N. Compton, H.C. Schweinler and V.E. Anderson, "Molecular Electron Affinities from Collisional Ionization of Cesium. I. NO, NO₂, and N₂O," J. Chem. Phys. **59**, 4125 (1973).

### 73ONA/HOW

T. Onak, J. Howard and C. Brown, "Negative Ion Mass Spectrometry of closo-Carboranes," J. Chem. Soc. Dalton 76, (1973).

#### 73PEP/GAF

V.I. Pepekin, R.G. Gafurov, Yu.A. Lebedev, L.T. Eremenko, E.M. Soyomonyan and A. Ya. Apin, Bull. Acad. Sci. USSR, Div. Chem. Sci. 22, 304 (1973).

#### 73RAB/KAR

J.W. Rabalais, L. Karlsson, L.O. Werme, T. Bergmark and K. Siegbahn, "Analysis of Vibrational Structure and Jahn-Teller Effects in the Electron Spectrum of Ammonia," J. Chem. Phys. 58, 3370 (1973).

#### 73RAD/LAT

L. Radom, W.A. Lathan, W.J. Hehre and J.A. Pople, J. Am. Chem. Soc. 95, 693 (1973).

#### 73RIC/STE

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Large Molecular Systems: Cyclopentadienide and Methylcyclopentadienide Ions. An Upper Limit to the Electron Affinities of C₅H₅· and CH₃C₅H₄," J. Chem. Phys. **59**, 5068 (1973).

### 73RIV/BRE

J.M. Riveros, A.C. Breda and L.K. Blair, "Formation and Relative Stability of Chloride Ion Clusters in the Gas Phase by ICR Spectroscopy," J. Am. Chem. Soc. 95, 4066 (1973).

### 73SEN/FRÅ

D.K. SenSharma and J.L. Franklin, "Heat of Formation of Free Radicals by Mass Spectrometry," J. Am. Chem. Soc. 95, 6562 (1973).

#### 73THY/HAR

T.C.J. Thynne and P.W. Harland, Int. J. Mass Spectrom. Ion Phys. 11, 399 (1973).

#### 73THY/HAR2

J.C.J. Thynne and P.W. Harland, "Negative Ion Formation by Tungsten Fluoride," Int. J. Mass Spectrom. Ion Phys. 11, 137 (1973).

# 73WAN/MAR

J.L.-F. Wang, J.L. Margrave and J.L. Franklin, "Interpretation of Dissociative Electron Attachment Processes for Carbon and Silicon Tetrafluorides," J. Chem. Phys. 58, 5417 (1973).

#### 73YAM/PAY

R. Yamdagni, J.D. Payzant and P. Kebarle, "Solvation of Cl⁻ and O₂⁻ with H₂O, CH₃OH, and CH₃CN in the Gas Phase," Can. J. Chem. 51, 2507 (1973).

#### 74BAT/CHR

L. Batt, K. Christie, R.T. Milne and A.J. Summers, Int. J. Chem. Kinet. 6, 877 (1974).

#### 74BEA

J.L. Beauchamp, "Chemical Applications of New Developments in Ion Cyclotron Resonance Spectroscopy," Adv. Mass Spectrom. 6, 717 (1974).

# 74BEA/MUE

P. Beak, D.S. Mueller and J. Lee, J. Am. Chem. Soc. 96, 3867 (1974).

#### 74BEN/MAR

S.L. Bennett, J.L. Margrave and J.L. Franklin, "High Temperature Negative Ions. Electron Impact Study of Tetratomic Phosphorous Vapor," J. Chem. Phys. 61, 1647 (1974).

#### 74BEN/PAB

S.L. Bennett, S.E. Pabst, J.L. Margrave and J.L. Franklin, "Negative Ion Electron Impact Studies of Titanium Tetrahalides," Int. J. Mass Spectrom. Ion Phys. 15, 451 (1974).

### 74BET/BAK

D. Betteridge, A.D. Baker, P. Bye, S.K. Hasannudin, N.R. Kemp and M. Thompson, "A Cheap Versatile Ultraviolet Photoelectron Spectrometer," J. Electron Spectrosc. Rel. Phenom. 4, 163 (1974).

#### 74BLI/MCM

R.J. Blint, T.B. McMahon and J.L. Beauchamp, "Gas Phase Ion Chemistry of Fluoromethanes by Ion Cyclotron Resonance Spectroscopy. New Techniques for the Determination of Carbonium Ion Stabilities," J. Am. Chem. Soc. 96, 1269 (1974).

### 74ВОН/МАС

D.K. Bohme, G.I. MacKay, H.I. Schiff and R.S. Hemsworth, "Equilibrium OH $^-$  +  $C_2H_2$  =  $C_2H^-$  +  $H_2O$  and the Determination of  $\Delta H_{f298}(C_2H^-)$ ," J. Chem. Phys. 61, 2175 (1974).

#### 74BUR

P.D. Burrow, "Temporary Negative Ion Formation in NO and O₂," Chem. Phys. Lett. 26, 265 (1974).

#### 74BUR/HAI

J. Burgess, I. Haigh and R.D. Peacock, J. Chem. Soc. Dalton Trans. 1062 (1974).

### 74CEL/BEN

R.J. Celotta, R.A. Bennett and J.L. Hall, "Laser Photodetachment Determination of the Electron Affinities of OH, NH₂, NH, SO₂, and S₂," J. Chem. Phys. **60**, 1740 (1974).

# 74CHA/PAG

A.T. Chamberlin, F.M. Page and M.R. Painter, "A Study of the Negative Ions Produced during Surface Ionization on Hot Metal Filaments," Adv. Mass Spectrom. 6, 311 (1974).

#### 74CHA/RÓD

J. Chao, A.S. Rodgers, R.C. Wilhoit and B.J. Zwolinski, J. Phys. Chem. Ref. Data 3, 141 (1974).

#### 74CHO/MEN

K.Y. Choo, G.D. Mendenhall, D.M. Golden and S.W. Benson, "The Pyrolysis of Nitrosoisobutane and the Bond Dissociation Energies of Nitroso Compounds," Int. J. Chem. Kinet. 6, 813 (1974).

#### 74COM/RE

R.N. Compton, P.W. Reinhardt and C.D. Cooper, "Mass Spectrometry Utilizing Collisional Ionization of Cesium: Maleic Anhydride and Succinic Anhydride," J. Chem. Phys. **60**, 2953 (1974).

### 74COO/COM

C.D. Cooper and R.N. Compton, "Electron Attachment and Collisional Ionization Studies of Tetrafluorosuccinic and Hexafluoroglutaric Anhydrides: Molecular Electron Affinities," J. Chem. Phys. 60, 2424 (1974).

#### 74DON/HAR

R.J. Donovan, P.W. Harland, J.H. Knox, J.A. Makowski and J.C.J. Thynne, "Electron Affinity of SF₄," Int. J. Mass Spectrom. Ion Phys. 13, 464 (1974).

#### 74DOU/DAL

R.C. Dougherty, J. Dalton and J.D. Roberts, "S_N2 Reactions in the Gas Phase: Structure of the Transition State," Org. Mass Spectrom. 8, 77 (1974).

#### 74DOU

R.C. Dougherty, "S_N2 Reactions in the Gas Phase. Alkyl Group Structural Effects," Org. Mass Spectrom. 8, 85 (1974).

#### 74DOU/ROB

R.C. Dougherty and J.D. Roberts, "S_N2 Reactions in the Gas Phase. Nucleophilicity Effects," Org. Mass Spectrom. 8, 81 (1984).

#### 74DZÌ/CAR

I. Dzidic, D.I. Carroll, R.N. Stillwell and E.C. Horning, "Gas Phase Reactions. Ionization by Proton Transfer to Superoxide Anions," J. Am. Chem. Soc. 96, 5258 (1974).

### 74EYL/ATK

J.R. Eyler and G.H. Atkinson, "Dye Laser-induced Photodetachment of Electrons from SH- Studied by ICR Spectroscopy," Chem. Phys. Lett. 28, 217 (1974).

# 74FEH/FER

F.C. Fehsenfeld and E.E. Ferguson, "Laboratory Studies of Negative Ion Reactions with Atmospheric Trace Constituents," J. Chem. Phys. 61, 3181 (1974).

#### 74FRA/WAN

J.L. Franklin, J.L.-F. Wang, S.L. Bennett, P.W. Harland and J.L. Margrave, "Studies of the Energies of Negative Ions at High Temperatures," Adv. Mass Spectrom. 6, 319 (1974).

### 74HAL/KLE

M. Halmann and Y. Klein, "Positive and Negative Ion Mass Spectra of Phosphorous Compounds," Adv. Mass Spectrom. 3, 267 (1974).

#### 74HAR/FRA

P.W. Harland and J.L. Franklin, "Partitioning of Excess Energy in Dissociative Resonance Capture Processes," J. Chem. Phys. 61, 1621 (1974).

#### 74HAR/RAN

P.W. Harland, D.W.H. Rankin and J.C.J. Thynne, "Ionisation by Electron Impact of Phosphorus Trifluoride and Difluorocyanophosphine," Int. J. Mass Spectrom. Ion Phys. 13, 395 (1974).

## 74HER/PAT

E. Herbst, T.A. Patterson and W.C. Lineberger, "Laser Photodetachment of NO₂-," J. Chem. Phys. 61, 1300 (1974).

### 74HOT/PAT

H. Hotop, T.A. Patterson and W.C. Lineberger, "High Resolution Photodetachment Study of OH- and OD- in the Threshold Region 7000-6450 Å," J. Chem. Phys. 60, 1806 (1974).

#### 74JANAF

M.W. Chase, J.L. Curnutt, A.T. Hu, H. Prophet, A.N. Syverud and L.C. Walker, "JANAF Thermochemical Tables, 1974 Supplement," J. Phys. Chem. Ref. Data 3, 311 (1974).

#### 74KIM/SET

K.C. Kim, D.W. Setser and C.M. Bogan, "HF Infrared Chemiluminescence and Energy Partioning, and D(H-GeH₃) from the Reaction of F Atoms with Germane," J. Chem. Phys. **60**, 1837 (1974).

# 74KOP/SCH

C. Koppel, H. Schwarz and F. Bohlmann,
"Elektronenstossinduzierte Fragmentierung von
Acetylenverbindungen," Org. Mass Spectrom. 9, 324 (1974).

#### 74LAT/CUR

W.A. Lathan, L.A. Curtiss, W.J. Hehre, J.B. Lisle and J.A. Pople, Prog. Phys. Org. Chem. 11, 175 (1974).

#### 74LEF/TAN

C.B. Leffert, S.Y. Tang, E.W. Rothe and T.C. Cheng, "Collisional Ionization of Cs with SF₆," J. Chem. Phys. **61**, 4929 (1974).

#### 74LIE/GRE

MCA T. McAllister, Int. J. Mass Spectrom. Ion Phys. 15, 303 (1974).

# J.F. Liebman and A. Greenberg, Biophys. Chem. 1, 222 (1974). 74MCA

I Phus Cham Det Date Val 17 Suppl 1 1000

#### 74MOU/ATE

A.M.C. Moutinho, J.A. Aten and J. Los, "Chemi-Ionization in Alkali-Methylhalogen Collisions," Chem. Phys. 5, 84 (1974).

#### 74OTH/BUN

J.F.M. Oth, J.-C. Bunzli and Y. de Julien de Zelicourt, Helv. Chim. Acta 57, 2276 (1974).

### 74PAL/KEN

M.H. Palmer and S.M.F. Kennedy, J. Chem. Soc. Perkin II 1893 (1974).

#### 74PEA/SCH

P.K. Pearson, H.F. Schaefer, III, J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Three Isomers of the NO2" Ion," J. Am. Chem. Soc. 96, 6778 (1974).

### 74PIH/TAS

K. Pihlaja and E. Taskinen, "Physical Methods in Heterocyclic Chemistry," Vol. 6 (ed. A.R. Katritzky, Academic Press, New York, 1974).

K.J. Reed and J.I. Brauman, "Photodetachment of Electrons from Group IVa Binary Hydride Anions: The Electron Affinities of the SiH3 and GeH3 Radicals," J. Chem. Phys. 61, 4830 (1974).

#### 74RIC/STE

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of NO2": Experimental Evidence for a New Isomer," Chem. Phys. Lett. 25, 318 (1974).

### 74RIC/STE2

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Phenoxides and Thiophenoxide," Chem. Phys. Lett. 25, 321 (1974).

#### 74RID/BEA

D.P. Ridge and J.L. Beauchamp, "Chemical Consequences of Strong Hydrogen Bonding in the Reactions of Organic Ions in the Gas Phase. Base Induced Elimination Reactions," J. Am. Chem. Soc. 96, 637 (1974).

#### 74ROG/KAN

D.W. Rogers and S. Kanupong, J. Phys. Chem. 78, 2569 (1974).

### 74SAB/CHA

R. Sabbah, R. Chastel and M. Laffitte, Thermochim. Acta 10, 353 (1974).

#### 74SCO

D.W. Scott, "Chemical Thermodynamic Properties of Hydrocarbons and Related Substances: Properties of Alkane Hydrocarbons C₁ through C₁₀, APIRP62 Report 39, (U.S. Dept. of Interior, Bureau of Mines, 1974).

### 74SRI/UY

R.D. Srivastava, O.M. Uy and M. Farber, "Experimental Determination of Heats of Formation of Negative Ions and Electron Affinities of Several Boron and Aluminum Fluorides," J. Chem. Soc. Faraday Trans. I 70, 1033 (1974).

# 74WAN/MAR

J.L.-F. Wang, J.L. Margrave and J.L. Franklin, "Enthalpy of Formation of Germanium Trifluoride," J. Chem. Phys. 60, 2158 (1974).

#### 74WAN/MAR2

J.L.-F. Wang, J.L. Margrave and J.L. Franklin, "Interpretation of Dissociative-Electron Attachment Processes for Silicon Tetrachloride," J. Chem. Phys. 61, 1357 (1974).

# 74WYA/HOL

R.H. Wyatt, D. Holtz, T.B. McMahon and J.L. Beauchamp, "Acidity, Basicity, and Ion-Molecule Reactions of Arsine in the Gas Phase by ICR Spectroscopy," Inorg. Chem 13, 1511 (1974).

R. Yamdagni and P. Kebarle, "The Hydrogen Bond Energies in CIHCl- and Cl-(HCl)_n," Can. J. Chem. 52, 2449 (1974).

#### 75ALF/GOL

Z. Alfassi, D.M. Golden and S.W. Benson, J. Chem. Thermodyn. **5**, 411 (1975).

#### 75ALL/MEY

N.L. Allinger and A.Y. Meyer, Tetrahedron 31, 1897 (1975).

#### 75ASU/BLA

O.I. Asubiojo, L.K. Blair and J.I. Brauman, "Tetrahedral Intermediates in Gas Phase Ionic Displacement Reactions at Carbonyl Carbons," J. Am. Chem. Soc. 97, 6685 (1975).

### 75BAR/PIL

D.S. Barnes and G. Pilcher, J. Chem. Thermodyn. 7, 377 (1975).

#### 75BEN/MAR

S.L. Bennett, J.L. Margrave and J.L. Franklin, "Negative Ion Electron Impact Studies of Inorganic Halides. Niobium and Tantalum Pentachlorides," J. Inorg. Nucl. Chem. 37, 937 (1975).

#### 75BEN/WAN

S.L. Bennett, J.L. Wang, J.L. Margrave and J.L. Franklin, "High Temperature Negative Ions. The Enthalpies of Formation of Gaseous PbF3 and SnF3 from Low-Energy Electron Impact Studies," High Temp. Sci. 7, 142 (1975).

#### 75BER/BOU

M.A. Bernardi, Y. Boukari and F. Busnot, Thermochim. Acta 16, 2677 (1975).

#### 75BRI/RIV

S.M.J. Briscese and J.M. Riveros, "Gas Phase Nucleophilic Reactions of Aromatic Systems," J. Am. Chem. Soc. 97, 230 (1975)

### 75CHE/RÓD

S.S. Chen, A.S. Rodgers, J. Chao, R.C. Wilhoit and B.J. Zwolinski, J. Phys. Chem. Ref. Data 4, 441 (1975).

#### 75CHI

J.S. Chickos, J. Chem. Ed. 52, 134 (1975).

#### 75CHO/GOL

K.Y. Choo, D.M. Golden and S.W. Benson, Int. J. Chem. Kinet. 7, 713 (1975).

### 75CLA/KNO

T. Clark, T. McO. Knox, H. Mackle, M.A. McKervey and J.J. Rooney, J. Am. Chem. Soc. 97, 3835 (1975).

### 75CLA/SCH

E. Clar and W. Schmidt, "Correlations Between Photoelectron and Ultraviolet Absorption Spectra of Polycyclic Hydrocarbons and the Number of Aromatic Sextets," Tetrahedron 31, 2263 (1975).

#### 75COM

F. Compernolle, Org. Mass. Spectrom. 10, 289 (1975).

# 75COM/DES

F. Compernolle and F. DeSchryver, J. Am. Chem. Soc. 97, 3909 (1975).

#### 75COM/REI

R.N. Compton, P.W. Reinhardt and C.D. Cooper, "Collisional Ionization of Na, K, and Cs by CO2, COS, and CS2: Molecular Electron Affinities," J. Chem. Phys. 63, 3821 (1975).

# 75COO/NAF

C.D. Cooper, W.T. Naff and R.N. Compton, "Negative Ion Properties of p-Benzoquinone: Electron Affinity and Compound States," J. Chem. Phys. 63, 2752 (1975).

# 75DER/JOC

J.-L. Derocque and M. Jochem, "Studies in Mass Spectrometry. III. Formation of a Common Intermediate in the Primary Fragmentation Process of 1-Phenylcyclobutene and of 2-Phenyl-1,3-butadiene," Org. Mass Spectrom. 10, 935 (1975).

### 75DIE/FRA

H. tom Dieck, K.-D. Franz and W. Majunke, "Darstellung und Eigenschaften von Diacetylbis(methylimin)," Z. Naturforsch. 30b, 922 (1975).

## 75FER

L.N. Ferguson, "Organic Molecular Structure," (Willard Grant Press, Boston, 1975).

### 75FLE/SVE

G.D. Flesch and H.J. Svec, "Thermochemistry Of Vanadium Oxytrichloride and Vanadium Oxytrifluoride by Mass Spectrometry," Inorg. Chem. 14, 1817 (1975).

### 75GAL/WIL

L. Galyer, G. Wilkinson and D.R. Lloyd, "The Photoelectron Spectra of Hexamethyltungsten and Pentamethyltantalum," J. Chem. Soc. Chem. Commun. 497 (1975).

#### 75GOO

W.D. Good, J. Chem. Thermodyn. 7, 49 (1975).

#### 75GOU/MIL

B.K. Gould and W.J. Miller, "Electron Attachment and Compound Formation in Flames. VI. Negative Ion and Compound Formation in Flames Containing Rhenium and Potassium," J. Chem. Phys. 62, 644 (1975).

#### 75HAR/THY

P.W. Harland and J.C.J. Thynne, "Dissociative Electron Capture in Trifluoroacetaldehyde,

Pentafluoropropionaldehyde, and Heptafluorobutyraldehyde," Int. J. Mass Spectrom. Ion Phys. 18, 73 (1975).

#### 75HEH/POP

W.J. Hehre and J.A. Pople, J. Am. Chem. Soc. 97, 6941 (1975).

#### 75HOT/LIN

H. Hotop and W.C. Lineberger, "Binding Energies of Atomic Negative Ions," J. Phys. Chem. Ref. Data 4, 539 (1975).

#### 75HUB/LOS

M.M. Hubers and J. Los, "Ion Pair Formation in Alkali-SF₆ Collisions: Dependence on Collisional and Vibrational Energy," Chem. Phys. 10, 235 (1975).

### 75JANAF

M.W. Chase, J.L. Curnutt, H. Prophet, R.A. McDonald and A.N. Syverud, "JANAF Thermochemical Tables, 1975 Supplement," J. Phys. Chem. Ref. Data 4, 1 (1975).

#### 75KAR/KLE

Z. Karpas and F.S. Klein, "Negative Ion-Molecule Reactions in a Mixture of Ammonia-Formaldehyde - An ICR Mass Spectrometry Study," Int. J. Mass Spectrom. Ion Phys. 18, 65 (1975).

#### 75KAS/HER

A. Kasdan, E. Herbst and W.C. Lineberger, "Laser Photoelectron Spectrometry of the Negative Ions of Silicon and its Hydrides," J. Chem. Phys. 62, 541 (1975).

### 75KAS/HER2

A. Kasdan, E. Herbst and W.C. Lineberger, "Laser Photoelectron Spectrometry of CH₂-," Chem. Phys. Lett. 31, 78 (1975).

### 75KAS/HER2

A. Kasdan, E. Herbst and W.C. Lineberger, "Laser Photoelectron Spectrometry of the Negative Ions of Silicon and Its Hydrides," J. Chem. Phys. 62, 541 (1975).

# 75KIN/GOD

K.D. King and R.D. Goddard, "Very-Low-Pressure Pyrolysis of Alkyl Cyanides. II. n-Propyl Cyanide and n-Butyl Cyanide. The Heat of Formation of the Cyanomethyl Radical," Int. J. Chem. Kinet. 7, 837 (1975).

#### 75KOL/MCK

P. Koliman, J. McKelvey, A. Johansson and S. Rothenberg, J. Am. Chem. Soc. 97, 855 (1975).

### 75LEB/MIR

V.P. Lebedev, E. Miroshnickenko, Y.N. Matyushin, V.P. Larionov, V.S. Romanov, V.E. Bukolov, G.M. Denisov, A.A. Balepin and Y.A. Lebedev, Russ. J. Phys. Chem. 49, 1133 (1975).

#### 75LIN/ALB

W. Lindinger, A.L. Albritton, F.C. Fehsenfeld and E.E. Ferguson, "Reactions of O with N₂, N₂O, SO₂, NH₃, CH₄, C₂H₄, and C₂H₂ with O₂ from 300K to Relative Kinetic Energies of 2 eV," J. Chem. Phys. 63, 3238 (1975).

### 75LLO/ROB

D.R. Lloyd and P.J. Roberts, "Photoelectron Spectra of Halides. VII. Variable Temperature He(I) and He(II) Studies of CF₄, SiF₄, and GeF₄," J. Electron Spectrosc. Rel. Phenom. 7, 325 (1975).

#### 75LYO/PAL

L.E. Lyons and L.D. Palmer, "A Surface Ionization Source and Quadrupole Mass Filter for Photodetachment Studies," Int. J. Mass Spectrom. Ion Phys. 16, 431 (1975).

#### 75MCE/SAN

D.M. McEachern, O. Sandoval and J.C. Iniguez, J. Chem. Thermodyn. 7, 299 (1975).

#### 75MOS/PRI

G.M. Moselby and H.O. Pritchard, J. Chem. Thermodyn. 7, 977 (1975).

#### 75NEN/SCH

I. Nenner and G.J. Schultz, "Temporary Negative Ions and Electron Affinities of Benzene and N-Heterocyclic Molecules: Pyridine, Pyridazine, Pyrimidine, Pyrazine, and s-Triazine," J. Chem. Phys. 62, 1747 (1975).

#### **750KA**

H. Okabe, J. Chem. Phys. 62, 2782 (1975).

#### 750KA/WHI

E.N. Okafo and E. Whittle, Int. J. Chem. Kinet. 7, 213 (1975).

### 75REE/BRA

K.J. Reed and J.I. Brauman, "Electron Affinities of Alkoxy Radicals and the Bond Dissociation Energies in Aliphatic Alcohols," J. Am. Chem. Soc. 97, 1625 (1975).

#### 75RIC/STE

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Large Molecular Systems: Benzyl Anion. An Upper Limit to the Electron Affinity of C₆H₅CH₂," J. Chem. Phys. 63, 74 (1975).

#### 75RIC/STE2

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Phenoxides and Thiophenoxide," J. Am. Chem. Soc. 97, 2967 (1975).

#### 75RIC/STE3

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Large Molecular Systems. Pyrrolate Ion. Electron Affinity of C₄H₄N," J. Am. Chem. Soc. 97, 1160 (1975).

### 75RIC/STE4

J.H. Richardson, L.M. Stephenson and J.I. Brauman, "Photodetachment of Electrons from Trifluoromethyl and Trifluorosilyl Ions; The Electron Affinities of CF₃ and SiF₃," Chem. Phys. Lett. 30, 17 (1975).

### 75ROT/TAN

E.W. Rothe, S.Y. Tang and G.P. Reck, "Measurement of Electron Affinities of O₃, SO₂, and SO₃ by Collisional Ionization," J. Chem. Phys. 62, 3829 (1975).

### 75SCH/BOH

H.I. Schiff and D.K. Bohme, "Flowing Afterglow Studies at York University," Int. J. Mass Spectrom. Ion Phys. 16, 167 (1975).

### 75SOL/FIE

J.J. Solomon and F.H. Field, "Reversible Reactions of Gaseous Ions. IX. The Stability of C4-C7 Tertiary Alkyl Carbonium Ions," J. Am. Chem. Soc. 97, 2625 (1975).

### 75SUB/ZWO

D.J. Subach and B.J. Zwolinski, J. Chem. Eng. Data 20, 232 (1975).

# 75TOR/WES

D.F. Torgerson and J.B. Westmore, "Energetics of the Ionization and Fragmentation of Phosphorus Trifluoride by Electron Impact," Can. J. Chem. 53, 933 (1975).

#### 75TR0

Selected Values of Properties of Chemical Compounds. Thermodynamic Research Center, Texas A & M (Table compiled 1975).

#### 75VAN/RIN

A.J. Vanderwielen, M.A. Ring and H.E. O'Neal, J. Am. Chem. Soc. 97, 993 (1975).

### 75WAN/MAR

J.L.-F. Wang, J.L. Margrave and J.L. Franklin, "Low Energy Electron Attachment to Gaseous Chromium Oxides," J. Inorg. Nucl. Chem. 37, 1107 (1975).

#### 75WEN/KAO

W.E. Wentworth, L.W. Kao and R.S. Becker, "Electron Affinities of Substituted Aromatic Compounds," J. Phys. Chem. 79, 1161 (1975).

#### 76ALI

N.L. Allinger, Advan. Phys. Org. Chem. 13, 1 (1976).

#### 76ANT/CAR

M.E. Anthoney, A.S. Carson, P.G. Carson, P.G. Laye and M. Yurckli, J. Chem. Thermodyn. 8, 1009 (1976).

#### 76ASH

S.J. Ashcroft, J. Chem. Eng. Data 21, 397 (1976).

#### 76ASH/BUR

A.J. Ashe III, F. Burger, M.Y. El-Sheik, E. Heilbronner, J.P. Maier and J.-F. Muller, "202. Angular- and Energy-Dependence of Band Intensities in the Photoelectron Spectra of Phosphabenzene and Arsabenzene," Helv. Chim. Acta 59, 1944 (1976).

#### 76AUD/FET

H.E. Audiek, M. Fetizon, Y. Henry and T. Prange, Org. Mass Spectrom. 11, 1047 (1976).

#### 76BAE/TSA

T. Baer, B.P. Tsai, D. Smith and P.T. Murray, "Absolute Unimolecular Decay Rates of Energy Selected Metastable Halobenzene Ions," J. Chem. Phys. 64, 2460 (1976).

#### 76BEA

J.L. Beauchamp, "Ion Cyclotron Resonance Studies of Endothermic Reactions of UF₆- Generated by Surface Ionization," J. Chem. Phys. **64**, 929 (1976).

### 76BEN

S.W. Benson, "Thermochemical Kinetics," 2nd Ed., Wiley, NY, 1976.

#### 76BOB/BAR

M.V. Bobetic and J.A. Barker, J. Chem. Phys. **64**, 2367 (1976).

#### 76BOW/STA

J.H. Bowie and B.J. Stapleton, "Electron Impact Studies. C. Doubly Charged Negative Ions," J. Am. Chem. Soc. 98, 6480 (1976).

#### 76CAR/PET

J.L. Carlstein, J.R. Peterson and W.C. Lineberger, "Binding of an Electron by the Field of a Molecular Dipole - LiCl-," Chem. Phys. Lett. 37, 5 (1976).

#### 76CHA

P.J. Chantry, "Negative Ion Formation in Cerium Triiodide," J. Chem. Phys. 65, 4412 (1976).

# 76CHA/ZWO

J. Chao and B.J. Zwolinski, J. Phys. Chem. Ref. Data 5, 319 (1976).

#### 76COLJIM

M. Colomina, P. Jimenez, R. Perez-Ossario and C. Turrion, J. Chem. Thermodyn. 8, 439 (1976).

### 76COM/STO

R.N. Compton and J.A.D. Stockdale, "Formation of Gas Phase Negative Ions in Fe(CO)₅ and Ni(CO)₄," Int. J. Mass Spectrom. Ion Phys. 22, 47 (1976).

#### 76COS/LIN

P.C. Cosby, J.H. Ling, J.R. Peterson and J.T. Moseley, "Photodissociation and Photodetachment of Molecular Negative Ions. III. Ions Formed in CO₂.O₂.H₂O Mixtures," J. Chem. Phys. 65, 5267 (1976).

### 76DAW/JEN

J.H.J. Dawson and K.R. Jennings, "Production of Gas Phase Radical Anions by Reaction of O- Ions with Organic Substrates," J. Chem. Soc. Faraday Trans. II 72, 700 (1976).

### 76DEL/HÁL

I. Dellienl, F.M. Hall and L.G. Hepler, Chem. Rev. 76, 283 (1976).

#### 76ENG/LIN

P.C. Engleking and W.C. Lineberger, "Laser Photoelectron Spectrometry of NH": Electron Affinity and Intercombination Energy Difference in NH," J. Chem. Phys. 65, 4323 (1976).

# 76FAL/JOY

R.L. Failes, J.T. Joyce and E.C. Walton, "The Behaviour of Some Dimethyl and Trimethyl Substituted Pyridines in the Magnetron," J. Phys., D 9, 1543 (1976).

#### 76FER/PIA

D. Ferro, V. Piacente, R. Gigli and G. D'Ascenzo, J. Chem. Thermodyn. 8, 1137 (1976).

#### 76GOR/MUN

A. Goren and B. Munson, "Thermochemistry of Alkyl Ions," J. Phys. Chem. 80, 2848 (1976).

#### 76GUY/CHU

P.M. Guyon, W.A. Chupka and J. Berkowitz, "Photoionization Mass Spectrometric Study of Formaldehyde H₂CO, HDCO, and D₂CO," J. Chem. Phys. 65 1419 (1976).

#### 76HAM/THO

W.S. Hamilton, P. Thompson and S. Pustejovsky, J. Chem. Eng. Data 21, 428 (1976).

### 76HOP/BOS

H.P. Hopkins, Jr., D. Bostwick and C.J. Alexander, J. Am. Chem. Soc. 98, 1355 (1976).

#### 76HOP/WAH

D.G. Hopper, A.C. Wahl, R.L.C. Wu and T.O. Tiernan, "Theoretical and Experimental Studies of the  $N_2O^-$  and  $N_2O$  Ground State Potential Energy Surface. Implications for the  $O^- + N_2 + N_2O + e^-$  and Other Processes," J. Chem. Phys. 65, 5474 (1976).

#### 76HUB/KLE

M.M. Hubers, A.W. Kleyn and J. Los, "Ion Pair Formation in Alkali-Halogen Collisions at High Velocities," Chem. Phys. 17, 303 (1976).

#### 76JEN

J.L. Jensen, Prog. Phys. Org. Chem. 12, 189 (1976).

### 76KAR/KLE

Z. Karpas and F.S. Klein, "ICR Study of the Gas Phase Ion Chemistry of the Carbonyl Halides: Cl₂CO, F₂CO and ClFCO," Int. J. Mass Spectrom. Ion Phys. 22, 189 (1976).

#### 76KEE

P. Kebarle, "Ion Thermochemistry and Solvation from Gas Phase Ion Equilibria," Ann. Rev. Phys. Chem. 28, 445 (1977).

#### 76LIA/AUS

S.G. Lias, P. Ausloos and Z. Horvath, "Charge Transfer Reactions in Alkane and Cycloalkane Systems. Estimated Ionization Potentials," Int. J. Chem. Kinet. 8, 725 (1976).

#### 76LIN

H.J. Lindner, Tetrahedron 32, 753 (1976).

#### 76LOS/TRA

F.P. Lossing and J.C. Traeger, Int. J. Mass Spectrom. Ion Phys. 19, 9 (1976).

### 76LYO/PAL

L.E. Lyons and L.D. Palmer, "The Electron Affinity of Tetracyanoethylene and Other Organic Electron Acceptors," Aust. J. Chem. 29, 1919 (1976).

#### 76MAC/HEM

G.J. MacKay, R.S. Hemsworth and D.K. Bohme, "Absolute Gas-Phase Acidities of CH₃NH₂, C₂H₅NH₂, (CH₃)₂NH, and (CH₃)₃N," Can. J. Chem. 54, 1624 (1976).

### 76MAS

H. Massey, "Negative Ions," 3rd. Ed., Cambridge Univ. Press, 1976.

# 76MAT/ROT

B.P. Mathur, E.W. Rothe, S.Y. Tang and G.P Reck, "Negative Ions from Phosphorus Halides Due to Cesium Charge Exchange," J. Chem. Phys. 64, 565 (1976).

#### 76MAT/ROT2

B.P. Mathur, E.W. Rothe, S.Y. Tang, K. Mahajan and G.P. Reck, "Negative Gaseous Ions from Nitric Acid," J. Chem. Phys. 64, 1247 (1976).

#### 76MAU/SOL

M. Mautner (Meot-Ner), J.J. Solomon and F.H. Field, "Stability of Some C7 Tertiary Carbonium Ions," J. Am. Chem. Soc. 98, 1025 (1976).

#### 76MEG/MOO

W.F. Meggers and C.E. Moore, "The First Spectrum of Hafnium (Hf I)," Nat. Bur. Stand. (U.S) Monogr. 153 (1976).

#### 76MEY/HOT

E.F. Meyer and C.A. Hotz, J. Chem. Eng. Data 21, 274 (1976).

#### 76MOS/COS

J.T. Moseley, P.C. Cosby and J.R. Peterson, "Photodissociation Spectroscopy of CO₃-," J. Chem. Phys. 65, 2512 (1976).

#### 76MUR/BEA

M.K. Murphy and J.L. Beauchamp, "Acid-Base Properties and Gas-Phase Ion Chemistry of (CH₃)₃B," J. Am. Chem. Soc. 98, 1433 (1976).

#### 76NUG/WU

W.A. Nugent, M.M.-H. Wu, T.P. Fehlner and J.K. Kochi, "Enhanced Reactivity of exo-Norbornyl Derivatives. Evidence for  $\sigma$ -Participation in the Absence of Steric Effects," J. Chem. Soc. Chem. Commun. 456 (1976).

#### 76PAB/BEN

R.E. Pabst, S.L. Bennett, J.L. Franklin and J.L. Margrave, "Negative Ion Electron Impact Studies of Arsenic Trihalides: AsF₃, AsCl₃, and AsBr₃," J. Chem. Phys. **64**, 1550 (1976).

#### 76PAL/KEN

M.H. Palmer and S.M.F. Kennedy, J. Chem. Soc. Perkin II 81 (1976).

#### 76PAY/TAN

J.D. Payzant, K. Tanaka, K.D. Betowski and D.K. Bohme, "Gas Phase S_N2 Reactions at Silicon and Carbon Centers. An Experimental Appraisal of Theory," J. Am. Chem. Soc. 98, 894 (1976).

#### 76POP

D. Poppinger, Aust. J. Chem. 29, 465 (1976).

#### 76REF

K.M.A. Refaey, "Endoergic Ion-Molecule-Collision Processes of Negative Ions. II. Collisions of I on H₂S, CS₂, and COS," J. Chem. Phys. **65**, 2002 (1976).

# 76REF2

K.M.A. Refaey, "Endoergic Ion-Molecule-Collision Processes of Negative Ions. IV. Collisions of I* on NO₂, N₂O and NO," Int. J. Mass Spectrom. Ion Phys. 21, 21 (1976).

# 76REF/FRA

K.M.A. Refaey and J.L. Franklin, "Endoergic Ion-Molecule-Collision Processes of Negative Ions. V. Collision of Ion HNO₃. The Electron Affinity of NO₃," J. Chem. Phys. 64, 4810 (1976).

### 76REF/FRA2

K.M.A. Refaey and J.L. Franklin, "Endoergic Ion-Molecule-Collision Processes of Negative Ions. I. Collision of Ion SO₂," J. Chem. Phys. 65, 1994 (1976).

### 76REF/FRA3

K.M.A. Refaey and J.L. Franklin, "Endoergic Ion-Molecule-Collision Processes of Negative Ions, III. Collisions of Ion O2, CO and CO2," Int. J. Mass Spectrom. Ion Phys. 20, 19 (1976).

#### 76ROD/CHA

H.J. Rodriguez, J.-C. Chang and T.F. Thomas, J. Am. Chem. Soc. 98, 2027 (1976).

#### 76ROS

F.D. Rossini, J. Chem. Thermodyn. 87, 651 (1976).

### 76SHE/ILJ

V.E. Shevchenko, M.K. Iljin, O.K. Nikitin and L.N. Sidorov, "Mass Spectrometric Study of Mixed Dimers M₂BO₂F," Int. J. Mass Spectrom. Ion Phys. 21, 279 (1976).

#### 76SOL/FIE

J.J. Solomon and F.H. Field, "Reversible Reactions of Gaseous Ions. X. The Intrinsic Stability of the Norbornyl Cation," J. Am. Chem. Soc. 98, 1567 (1976).

#### 76SOL/MAY

R.W. Solarz, C.A. May, L.R. Carlson, E.F. Worden, S.A. Johnson, J.A. Paisner and L.J. Radziemski, Jr., Phys. Ref. A14, 1129 (1976).

#### 76SUL/BEA

S.A. Sullivan and J.L. Beauchamp, "Competition Between Proton Transfer and Elimination in the Reactions of Strong Bases with Fluoroethanes in the Gas Phase. Influence of Base Strength on Reactivity," J. Am. Chem. Soc. 98, 1160 (1976).

#### 76TAN/MAT

S.Y. Tang, B.P. Mathur, E.W. Roth and G.P. Reck, "Negative Ion Formation in Halocarbons by Charge Exchange with Cesium," J. Chem. Phys. 64, 1270 (1976).

### 76WHA/WEI

D.L. Whalen, J.F. Weimaster, A.M. Ross and R. Radhe, J. Am. Chem. Soc. 98, 7319 (1976).

#### 76WIL/LEB

A.D. Williamson, P.R. LeBreton and J.L. Beauchamp, J. Am. Chem. Soc. 98, 2705 (1976).

#### 76ZIT/ELL

P.F. Zittel, G.B. Ellison, S.V. O'Neil, E. Herbst, W.C. Lineberger and W.P. Reinhardt, "Laser Photoelectron Spectrometry of CH₂-Singlet-Triplet Splitting and Electron Affinity of CH₂¹," J. Am. Chem. Soc. 98, 3731 (1976).

#### 76ZIT/LIN

P.F. Zittel and W.C. Lineberger, "Laser Photoelectron Spectrometry of PO⁻, PH⁻, and PH₂⁻," J. Chem. Phys. 65, 1236 (1976).

#### 77ALL/KLO

M. Allan, E. Kloster-Jensen and J.P. Maier, "Emission Spectra of Cl-C=C-H+, Br-C=C-H+ and I-C=C-H+ Radical Cations:  $A^2\Pi \rightarrow X^2\Pi$  Band Systems and the Decay of the  $A^2\Pi$  States," J. Chem. Soc., Faraday Trans. II 73, 1406 (1977).

#### 77ARM/HOD

P. Armentrout, R. Hodges and J.L. Beauchamp, "Metal Atoms as Superbases: The Gas Phase Proton Affinity of Uranium," J. Am. Chem. Soc. 99, 3162 (1977).

#### 77ARN/CHA

E.M. Arnett, B. Chawla, L. Bell, M. Taagepera, W.J. Hehre and R.W. Taft, "Solvation and Hydrogen Bonding of Pyridinium Ions," J. Am. Chem. Soc. 99, 5729 (1977).

# 77ASH/BUR

F.S. Ashmore and A.R. Burgess, "Study of Some Medium Size Alcohols and Hydroperoxides by Photoelectron Spectroscopy," J. Chem. Soc., Faraday Trans. II 73, 1247 (1977).

# 77BAG/COL

M.H. Baghal-Vayjooee, J.L. Collister and H.O. Pritchard, Can. J. Chem. 55, 2634 (1977).

#### 77BEC/LIP

K.H. Becker, H. Lippmann and U. Schurath, Ber. Bunsenges. Phys. Chem. 81, 567 (1977).

#### 77BIE/BUR

G. Bieri, F. Burger, E. Heilbronner and J.P. Maier, "Valence Ionization Energies of Hydrocarbons," Helv. Chim. Acta 60, 2213 (1977).

### 77BIE/DEP

V.M. Bierbaum, C.H. DePuy and R.J. Shapiro, "Gas Phase Reactions of Anions with Nitrous Oxide and Carbon Dioxide," J. Am. Chem. Soc. 99, 5800 (1977).

### 77CAR/LAY

J.A.S. Carson, P.G. Laye and M. Yureali, J. Chem. Thermodyn. 9, 827 (1977).

### 77CIM/PER

R. Cimiraglia, M. Persico and J. Tomasi, J. Phys. Chem. 81, 1876 (1977).

#### 77COM

R.N. Compton, "On the Formation of Positive and Negative Ions in Gaseous UF₆," J. Chem. Phys. 66, 4478 (1977).

#### 77COM/COO

R.N. Compton and C.D. Cooper, "Negative Ion Properties of Tetracyanoquinodimethane: Electron Affinity and Compound States," J. Chem. Phys. 66, 4325 (1977).

#### 77COW/GOO

A.H. Cowley, D.W. Goodman, N.A. Kuebler, M. Sanchez and J.G. Verkade, "Molecular Photoelectron Spectroscopic Investigation of Some Caged Phosphorus Compounds and Related Acyclic Species," Inorg. Chem. 16, 854 (1977).

#### 77CUM/FRE

J.B. Cummings, M.A. French and P. Kebarle, "Effect of Charge Delocalization on Hydrogen Bonding to Negative Ions and Solvation of Negative Ions. Substituted Phenois and Phenoxide Ions," J. Am. Chem. Soc. 99, 6999 (1977).

#### 77DAV/FEH

J.A. Davidson, F.C. Fehsenfeld and C.J. Howard, "The Heats of Formation of NO₃⁻ and NO₃⁻ Association Complexes with HNO₃ and HBr," Int. J. Chem. Kinet. 9, 17 (1977).

#### 77DAW/JEN

J.H.J. Dawson and K.R. Jennings, "Relative Gas Phase Acidities of Some Fluoroalcohols," Int. J. Mass Spectrom. Ion Phys. 25, 47 (1977).

#### 77DEW/NEU

R. De Wall and H. Neuert, "Die Bildung Negativer Ionen bei Elektronenstoss auf WF₆," Z. Naturfor. 32A, 1968 (1977).

#### 77DIS/LAC

H. Dispert and K. Lacmann, "Formation of WF6" and Its Dissociative Products by Collisional Ionization," Chem Phys. Lett. **45**, 311 (1977).

#### 77DIS/LAC2

H. Dispert and K. Lacmann, "Chemiionization in Alkali-Halogen Reactions: Evidence for Ion Formation By Alkali Dimers," Chem. Phys. Lett. 47, 533 (1977).

### 77DON/WAL

A.M. Doncaster and R. Walsh, "Kinetic Determination of the BDE D(Me₃Ge-H) and Its Implication for Bond Strengths in Germanes," J. Chem. Soc. Chem. Comm. 446 (1977).

#### 77DOT/DÁV

I. Dotan, J.A. Davidson, G.E. Streit, D.L. Albritton and F.C. Fehsenfeld, "A Study of the Reaction  $O_3^+ + CO_2 = CO_3^- + O_2$  and Its Implication on the Thermochemistry of  $CO_3$  and  $O_3$  and Their Negative Ions," J. Chem. Phys. 67, 2874 (1977).

### 77DUR/PAR

M. Durup, G. Parlant, J. Appell, J. Durup and J.-B. Ozenne, "Translational Spectroscopy of Neutralization-Reionization Double Collision Processes of Ar⁺ Ions at keV Energies," Chem. Phys. 25, 245 (1977).

### 77EFR/HUA

A. Efraty, M.H.A. Huang and C.A. Weston, "Mass Spectra of Organometallic Compounds. 4. Electron-Impact Study of Some Cyclopentadienylmetal Carbonyl Dimers," Inorg. Chem. 16, 79 (1977).

#### 77EHL/WAN

T.C. Ehlert and J.S. Wang, "Thermochemistry of the Copper Fluorides," J. Phys. Chem. 81, 2069 (1977).

# 77ENG/LIN

P.C. Engelking and W.C. Lineberger, "Laser Photoelecton Spectrometry of FeO: Electron Affinity, Electronic State Separations, and Ground State Vibrations of Iron Oxide, and a New Ground State Assignment," J. Chem. Phys. 66, 5054 (1977).

### 77ENG/LIN2

P.C. Engelking and W.C. Lineberger, "Laser Photoelectron Spectrometry of C₅H₅": A Determination of the Electron Affinity and Jahn-Teller Coupling in Cyclopentadienyl," J. Chem. Phys. 67, 1412 (1977).

#### 77FEL/RAC

D. Feldman, R. Rackwitz, H.J. Kaiser and E. Heincke, "Photodetachment bei einigen Neagtiven Molekulionen: P₂, As₂, CH₂, CH₃, S₃," Z. Naturfor. 32A, 600 (1977).

#### 77FIN/GAT

A. Finch, P.N. Gates and S.J. Peake, "Thermochemistry of Polyhalides. III. Cesium and Rubidium Tetrachloroiodates," J. Inorg. Nucl. Chem. 39, 2135 (1977).

# 77FRO/MCD

D.C. Frost, C.A. McDowell and N.P.C. Westwood, "The Photoelectron Spectrum of Formyl Chloride," Chem. Phys. Lett. 51, 607 (1977).

### 77HAR

P.W. Harland, "Electron Attachment to the Stable Free Radical Bis-trifluoromethylnitroxide in the Gas Phase," Int. J. Mass Spectrom. Ion Phys. 25, 61 (1977).

#### 77HIL

D.L. Hildebrand, "Studies of Some Negative Ion Processes Involving the Tungsten Fluorides," Int. J. Mass Spectrom. Ion Phys. 25, 121 (1977).

#### 77HIR/KEB

K. Hiraoka and P. Kebarle, "Condensation Reactions Involving Carbonium Ions in the Gas Phase Synthesis of Protonated Acids in Gaseous Methane Containing Carbon Monoxide and Water Vapor," J. Am. Chem. Soc. 99, 366 (1977).

#### 77HON/WOO

S.P. Hong, S.B. Woo and E.M. Helmy, "Photodetachment of Thermally Relaxed  $\rm CO_3$ -," Phys. Rev. A 15, 1563 (1977).

#### 77KAN/MOR

A.S. Kana'an and T.I. Morrison, J. Chem. Thermodyn. 9, 423 (1977).

#### 77KAR/JAD

L. Karlsson, R. Jadrny, L. Mattsson, F.T. Chau and K. Siegbahn, Phys. Scr. 16, 225 (1977).

#### 77KAR/KLE

Z. Karpas and F.S. Klein, "The Gas Phase Ion Chemistry of Carbonyl Compounds: Formyl Fluoride and a Binary Mixture of H₂CO-F₂CO or H₂CO-Cl₂CO," Int. J. Mass Spectrom. Ion Phys. 24, 137 (1977).

### 77KOZ/BYC

M.P. Kozina, L.V. Bychikhina and G.L. Gal'chenko, Russ. J. Phys. Chem. 51, 1258 (1977).

#### 77KRE/PRI

M.J. Krech, S.J.W. Price and H.P. Sapiano, Can. J. Chem. 55, 4222 (1977).

# 77KRI/ITT

N.V. Krivtsov, K.V. Titova, V.Ya. Rosolovskii, "Thermochemical Study of Complex Borates," Russ. J. Inorg. Chem. 22, 374 (1977).

### 77KUP/SHI

A.I. Kupreev and G.S. Shimonaev, Russ. J. Phys. Chem. 49, 1133 (1977).

#### 77LEB/RYA

N.D. Lebedeva, V.L. Ryadnenko, N.N. Kiseleva and L.F. Nazarova, Vses. Konf. Kalorim. (Rasshir. Tezisy Dokl.) 7th, 1, 91 (1977) (CA 93:75617q (1980).)

#### 77LIA/AUS

S.G. Lias and P. Ausloos, "Ion-Molecule Reactions Involving Halomethyl Ions; Heats of Formation of Halomethyl Ions," Int. J. Mass Spectrom. Ion Phys. 23, 273 (1977).

### 77LIU/LOU

M.T.H. Liu, L.F. Loucks and D.G. Hooper, "Pyrolysis of Trifluoroacetaldehyde," Int. J. Chem. Kinet. 9, 589 (1977).

### 77MAT/ROT

B.P. Mathur, R.W. Rothe and G.P. Reck, "Ionization Reactions of Metal Hexafluorides with Alkali Atoms and Dimers," J. Chem. Phys. 67, 377 (1977).

### 77MCM/KEB

T.B. McMahon and P. Kebarle, "Intrinsic Acidities of Substituted Phenols and Benzoic Acids Determined by Gas Phase Proton Transfer Equilibria," J. Am. Chem. Soc. 99, 2222 (1977).

#### 77MOF

J.B. Moffat, J. Mol. Struct. 42, 251 (1977).

#### 77MUR/BEA

M.K. Murphy and J.L. Beauchamp, J. Am. Chem. Soc. 99, 2085 (1977).

#### 77MUR/BEA2

M.K. Murphy and J.L. Beauchamp, "Fluorine and Alkyl Substituent Effects on Gas-Phase Lewis Acidities of Boranes by ICR Spectroscopy," Inorg. Chem. 16, 2437 (1977).

#### 77MUR/BEA3

M.K. Murphy and J.L. Beauchamp, "Methyl and Fluorine Substituent Effects on the Gas-Phase Lewis Acidities of Silanes by ICR Spectroscopy," J. Am. Chem. Soc. 99, 4992 (1977).

#### 77NAB/SAB

M. Nabavian, R. Sabbah, R. Chastel and M. Laffitte, J. Chim. Phys. 74, 115 (1977).

#### 77NGA/SAB

S.N. Ngauv, R. Sabbah and M. Laffitte, Thermochim. Acta 20, 371 (1977).

### 77NUY/MES

O. Nuyken and K. Messmer, "Massenspektrometrische Untersuchungen an Azoverbindungen. II- Ermittlung thermodynamischer Grossen," Org. Mass Spectrom. 12, 106 (1977).

#### 770TH/OLS

J.F.M. Oth, J. Olsen and J.P. Snyder, J. Am. Chem. Soc. 99, 8504 (1977).

#### 77PAB/MAR

R.E. Pabst, J.L. Margrave and J.L. Franklin, "Electron Impact Studies of the Tetrachlorides and Tetrabromides of Silicon and Germanium," Int. J. Mass Spectrom. Ion Phys. 25, 361 (1977).

### 77PAB/PER

R.E. Pabst, D.L. Perry, J.L. Margrave and J.L. Franklin, "Electron Impact Studies of Tin Tetrahalides SnCl₄, SnBr₄ and SnI₄," Int. J. Mass Spectrom. Ion Phys. 24, 323 (1977).

### 77PAR/STÉ

W. Parker, W.V. Steele and I. Watt, J. Chem. Thermodyn. 9, 307 (1977).

## 77PED/RYL

J.B. Pedley and J. Rylance, "Sussex-N.P.L. Computer Analysed Thermochemical Data: Organic and Organometallic Compounds," University of Sussex (1977).

# P.A. Pella, J. Chem. Thermodyn. 9, 301 (1977).

### 77PIC/ROD

J.M. Pickard and A.S. Rodgers, Int. J. Chem. Kinet. 9, 759 (1977).

### 77POL/HEH

S.K. Pollack and W.J. Hehre, J. Am. Chem. Soc. 99, 4845 (1977).

#### 77POP/RAD

D. Poppinger, L. Radom and J.A. Pople, J. Am. Chem. Soc. 99, 7806 (1977).

# 77PRA/HUB

M.-T. Praet, M.-J. Hubin-Franskin, J.P. Delwiche and R. Schoos, Org. Mass Spectrom. 12, 297 (1977).

#### 77RAC/FEL

R. Rackwitz, D. Feldman, H.J. Kaiser and E. Heincke, "Photodetachment bei einigen Zweiatomigen Negativen Hydridionen: BeH-, MgH-, CaH-, ZnH-, PH-, AsH-," Z. Naturfor. 32A, 594 (1977).

#### 77REF/FRA

K.M.A. Refaey and J.L. Franklin, "Endoergic Ion-Molecule Collision Processes of Negative Ions. VI. Collisions of Ion (CN)₂ and NOCl," Int. J. Mass Spectrom. Ion Phys. 23, 13 (1977).

#### 77REI/PRA

R.C. Reid, J.M. Prausnitz and T.K. Sherwood "The Properties of Gases and Liquids" 3rd Edition, McGraw Hill, New York, (1977).

#### 77ROS/DRA

H.M. Rosenstock, K. Draxl, B.W. Steiner and J.T. Herron, "Energetics of Gaseous Ions," J. Phys. Chem. Ref. Data 6, Supp. 1 (1977).

#### 77ROS/SOL

P. Rosmus, B. Solouki and H. Bock, "Ground and Excited States of Thioketene Radical Cation, H₂CCS⁺," Chem. Phys. 22, 453 (1977).

#### 77SAB/LAF

R. Sabbah and M. Laffitte, J. Chem. Thermo. 9, 1107 (1977).

#### 77SAL/YOU

P.P.S. Saluga, T.M. Young, R.F. Rodewald, F.H. Fuchs, D. Kohli and R. Fuchs, J. Am. Chem. Soc. 99, 2949 (1977).

#### 77SCH/PET

F.W. Schulte, H.-J. Petrick, H.K. Cammenga and H. Klinge, Z. Phys. Chem. (Frankfurt) 107, 1 (1977).

#### 77SCH/SCH

H. Schmidt, A. Schweig, W. Thiel and M. Jones, Jr., Chem. Ber. 111, 1958 (1977).

#### 77SHA/GOL

R. Shaw, D.M. Golden and S.W. Benson, J. Phys. Chem. 81, 1716 (1977).

### 77SLA/LIŃ

J. Slater and W.C. Linberger, "High Resolution Photodetachment Study of P- and Te-," Phys. Rev. A 15, 2277 (1977).

#### 77STA/WIE

R.H. Staley, R.D. Wieting and J.L. Beauchamp, "Carbenium Ion Stabilities in the Gas Phase and Solution. An Ion Cyclotron Resonance Study of Bromide Transfer Reactions Involving Alkali Ions, Alkyl Carbenium Ions, Acyl Cations and Cyclic Halonium Ions," J. Am. Chem. Soc. 99, 5964 (1977).

#### 77STE

W.V. Steele, J. Chem. Thermodyn. 9, 311 (1977).

### 77STE/GOL

S.E. Stein, D.M. Golden and S.W. Benson, J. Phys. Chem. 81, 314 (1977).

#### 77STE/WAT

W.V. Steele and I. Watt, J. Chem. Thermodyn. 9, 843 (1977).

#### 77SUI

S.A. Sullivan California Institute of Technology Phd. thesis, 1977.

### 77FEL/RAB

V.I. Tel'noi and I.B. Rabinovich, Russ. Chem. Rev. 46, 689 (1977).

### 77VES/MAU

M.L. Vestal and G.H. Mauclaire, "Photodissociaton of Negative Ions Formed in CO₂ and CO₂/O₂ Mixtures," J. Chem. Phys. 67, 3758 (1977).

### 77VOG/DRE

D. Vogt, W. Dreves and J. Mischke, "Energy Dependence of Differential Cross Sections in Endoergic Ion-Molecule Collision Processes of Negative Ions," Int. J. Mass Spectrom. Ion Phys. 24, 285 (1977).

### 77VOG/MIS

D. Vogt and J. Mischke, "Endoergic Ion-Molecule Collision Processes of Negative Ions in Collisions of I on CO," Phys. Lett. 60A, 19 (1977).

### 77WU/TIE

R.L.C. Wu, T.O. Tiernan and C. Lifschitz, "A Long-Lived Excited State of O₃": Evidence From Collision Induced Dissociation," Chem Phys. Lett. 51, 211 (1977).

#### 77ZIM/BRA

A.H. Zimmerman and J.I. Brauman, "Electron Photodetachment from Negative Ions of C₂v Symmetry. Electron Affinities of Allyl and Cyanomethyl Radicals," J. Am. Chem. Soc. **99**, 3565 (1977).

#### 77ZIM/REE

A.H. Zimmerman, K.J. Reed and J.I. Brauman, "Photodetachment of Electrons from Enolate Anions. Gas Phase Electron Affinities of Enolate Radicals," J. Am. Chem. Soc. 99, 7203 (1977).

#### 78ADA/VOG

A.W. Adamson, A. Vogler, H. Kunkely and R. Wachter, J. Am. Chem. Soc. 100, 1298 (1978).

#### 78ARO/STE

M. Arova and W.V. Steele, J. Chem. Thermodyn. 10, 403 (1978).

#### 78AUS/LIA

P. Ausloos and S.G. Lias, "Reactions of  $NO_2$ ⁺ and Solvated  $NO_2$ ⁺ Ions with Aromatic Compounds and Alkanes," Int. J. Chem. Kinetics 10, 657 (1978).

#### 78BEA/LEE

P. Beak, J.K. Lee and J.M. Ziegler, J. Org. Chem. 43, 1536 (1978).

#### 78BEN

S.W. Benson, Chem. Rev. 78, 23 (1978).

#### 78BIE/JON

G. Bieri and B.-O. Jonsson, "HNC+ Radical Cation Studied by Charge-Exchange Mass Spectrometry," Chem. Phys. Lett. 56, 446 (1978).

# 78BRU/FER

A.P. Bruins, A.J. Ferrer-Correia, A.G. Harrison, K.R. Jennings and R.K. Mithcum, "Negative Ion Chemical Ionization Mass Spectrometry of Some Aromatic Compounds Using O- as the Reagent Ion," Adv. Mass Spectrom. 7A, 355 (1978).

#### 78CAC/LIS

T. Caceres, E.A. Lissi and E. Sanhueza, "Autooxidation of Diethylhydroxylamine," Int. J. Chem. Kinet. 10, 1167 (1978).

#### 78CEN/FRA

G. Centineo, I. Fragala, G. Bruno and S. Spampinato, "Photoelectron Spectroscopy of Benzophenone, Acetophenone and Their ortho-Alkyl Derivatives," J. Molec. Struct. 44, 203 (1978).

#### 78CHA/ZWO

J. Chao and B.J. Zwolinski, J. Phys. Chem. Ref. Data 7, 363 (1978).

#### 78COL/BEN

A.J. Colussi and S.W. Benson, Int. J. Chem. Kinet. 10, 1139 (1978).

### 78COL/JIM

M. Colomina, P. Jimenez, M.V. Roux and C. Turrion, J. Chem. Thermodyn. 10, 661 (1978).

### 78COM/REI

R.N. Compton, P.W. Reinhardt and C.D. Cooper, "Collisional Ionization between Fast Alkali Atoms and Selected Hexafluoride Molecules," J. Chem. Phys. 68, 2023 (1978).

### 78COM/REI2

R.N. Compton, P.W. Reinhardt and C.D. Cooper, "Collisional Ionization Between Alkali Atoms and Some Methane Derivatives: Electron Affinities for CH₃NO₂, CF₃I, and CF₃Br," J. Chem. Phys. 68, 4360 (1978).

### 78COO/FRE

C.D. Cooper, W.F. Frey and R.N. Compton, "Negative Ion Properties of Fluoranil, Chloranil, and Bromanil: Electron Affinities," J. Chem. Phys. 69, 2367 (1978).

### 78COS/MOS

P.C. Cosby, J.T. Moseley, J.R. Peterson and J.H. Ling, "Photodissociation Spectroscopy of O₃," J. Chem. Phys. 69, 2771 (1978).

#### 78CUM/KEB

J.B. Cumming and P. Kebarle, "Summary of Gas Phase Measurements involving Acids AH. Entropy Changes in Proton Transfer Reactions involving Negative Ions. Bond Dissociation Energies D(A-H) and Electron Affinities EA(A)," Can. J. Chem. 56, 1 (1978).

#### 78DAB/HER

I. Dabrowski and G. Herzberg, "The Spectrum of HeNe +," J. Molec. Spectrosc. 73, 183 (1978).

#### 78DAW/NIB

J.H.J. Dawson and N.M.M. Nibbering, "Concerning  $CH_2 = C^{-1}$  and Its Reaction with ¹⁴N ¹⁵NO," J. Am. Chem. Soc. 100, 1928 (1978).

### 78DEF/HÉH

D.J. DeFrees and W.J. Hehre, J. Phys. Chem. 82, 391 (1978). 78DEP/BIE

# C.H. DePuy, V.M. Bierbaum, R.J. Schmitt and R.H. Shapiro, "Gas

Phase Oxidation and Reduction Reactions with C₆H₇, HNO, and HO₂-," J. Am. Chem. Soc. **100**, 2970 (1978).

# 78DIS/LAC

H. Dispert and K. Lacmann, "Negative Ion Formation in Collisions between Potassium and Fluoro- and Chloromethanes: Electron Affinities and Bond Dissociation Energies," Int. J. Mass Spectrom. Ion Phys. 28, 49 (1978).

# 78DOT/ALB

I. Dotan, D.L. Albritton, F.C. Fehsenfeld, G.E. Streit and E.E. Ferguson, "Rate Constants for the Reactions of O⁻, O₂⁻, NO₂⁻, CO₃⁻, and CO₄⁻ with HCl and ClO⁻ with NO, NO₂, SO₂, and CO₂ at 300K," J. Chem. Phys. **68**, 5414 (1978).

### 78DUD/BAL

A.V. Dudin, A.V. Balaev and L.N. Gorokhov, "Mass Spectrometric Study of Tetrafluorohydrazine and the Products Resulting from Its Breakdown Under Electron Impact," Izv. Akad. Nauk SSSR, Ser. Khim. 1306 (1978).

### 78ELL/ENG

G.B. Ellison, P.C. Engelking and W.C. Lineberger, "An Experimental Determination of the Geometry and Electron Affinity of CH₃," J. Am. Chem. Soc. 100, 2556 (1978).

### 78ENG/ELL

P.C. Engleking, G.B. Ellison and W.C. Lineberger, "Laser Photodetachment Electron Spectrometry of Methoxide, Deuteromethoxide, and Thiomethoxide: Electron Affinities and Vibrational Structure of CH₃O, and CH₃S," J. Chem. Phys. 69, 1826 (1978).

# 78FU/DUN

E.W. Fu and R.C. Dunbar, "Photodissociation Spectroscopy and Structural Rearrangements in Ions of Cyclooctatetraene, Styrene and Related Molecules," J. Am. Chem. Soc. 100, 2283 (1978).

#### 78GAL/FAI

S.E. Galembeck, J.F.G. Faigle and J.M. Riveros, An. Acad. Brasil Cienc. 50, 1 (1978).

### 78GAN/PEE

T.H. Gan, J.B. Peel and G.D. Willett, "Photoelectron Spectra of the Gauche and Trans Conformers of 1,2-Dibromoethane," J. Molec. Struct. 44, 211 (1978).

## 78GRE/LIE

A. Greenberg and J.F. Liebman, "Strained Organic Molecules" (Academic Press, New York, 1978).

### 78GÙN/HEA

H.A. Gundry and A.J. Head, J. Chem. Thermodyn. 10, 195 (1978).

# 78HAR/HEA

D. Harrop and A.J. Head, J. Chem. Thermodyn. 10, 705 (1978).

# 78HAV/MON

J.J. Havel, R.L. Montgomery, C.-C. Lau and M. Grissom, J. Chem. Eng. Data 23, 132 (1978).

#### 78HEA/HEF

G.A. Heath, G.T. Hefter and W.V. Steele, J. Chem. Thermodyn. 10, 395 (1978).

#### 78HER/SCH

A. Herrmann, E. Schumacher and L. Woste, "Preparation and Photoionization Potentials of Molecules of Sodium, Potassium and Mixed Atoms," J. Chem. Phys. 68, 2327 (1978).

# 78JANAF

M.W. Chase, J.L. Curnutt, R.A. McDonald and A.N. Syverud, "JANAF Thermochemical Tables, 1978 Supplement," J. Phys. Chem. Ref. Data 7, 793 (1978).

#### 78JAN/ZIM

B.K. Janousek, A.H. Zimmerman, K.J. Reed and J.I. Brauman, "Electron Detachment from Aliphatic Molecular Anions. Gas Phase Electron Affinites of Methoxyl, tert-Butoxyl, and Neopentoxyl Radicals," J. Am. Chem. Soc. 100, 6142 (1978).

# 78JOH/RAD

I.G. John and L. Radom, J. Am. Chem. Soc. 100, 3981 (1978).

#### 78JOR/BUR

K.D. Jordan and P.D. Burrow, "Studies of the Temporary Anion States of Unsaturated Hydrocarbons by Electron Transmission Spectroscopy," Acc. Chem. Res. 11, 341 (1978).

#### 78KAO/RAD

J. Kao and L. Radom, J. Am. Chem. Soc. 100, 760 (1978).

#### 78KIM/WIN

K.Y. Kim, R.E. Winans, W.N. Hubbard and C.E. Johnson, J. Phys. Chem. **82**, 402 (1978).

#### 78KUD/KUD

S.A. Kudchadker, A.P. Kudchadker, R.C. Wilhoit and B.J. Zwolinski, J. Phys. Chem. Ref. Data 7, 417 (1978).

#### 78KUD/KUD2

S.A. Kudchadker and A.P. Kudchadker, J. Phys. Chem. Ref. Data 7, 1285 (1978).

#### 78LEB/TSV

B.V. Lebedev, L.Y. Tsvetkova and I.B. Rabinovich, J. Chem. Thermodyn. 10, 809 (1978).

#### 78LEU/WIR

W. Leupin and J. Wirz, Helv. Chim. Acta 61, 1663 (1978). 78LIA/AUS

S.G. Lias and P. Ausloos, "Ionization Energies of Organic Compounds by Equilibrium Measurements," J. Am. Chem. Soc. 100, 6027 (1978).

#### 78LIF/WU

C. Lifshitz, R.L.C. Wu, T.O. Tiernan and T.E. Terwilliger, "Negative Ion-Molecule Reactions of Ozone and Their Implications on the Thermochemistry of O₂-," J. Chem. Phys. 68, 247 (1978).

#### 78LUC/WLO

Z. Luczynski, S. Wlodek and H. Wincel, "Stabilities of HCOO-(HCOOH)_n and Cl-(HCOOH)_n Clusters," Int. J. Mass Spectrom. Ion Phys. 26, 103 (1978).

### 78MAC/BOH

G.I. MacKay and D.K. Bohme, "Proton-Transfer Reactions in Nitromethane at 297K," Int. J. Mass Spectrom. Ion Phys. 26, 327 (1978).

### 78MAC/BOH2

G.I. Mackay and D.K. Bohme, "Bridging the Gap Between the Gas Phase and Solution: Transition in the Relative Acidity of Water and Methanol at 296±2 K," J. Am. Chem. Soc. 100, 327 (1978).

#### 78MAC/LIE

G.I. Mackay, M.H. Lien, A.C. Hopkinson and D.K. Bohme, "Experimental and Theoretical Studies of Proton Removal from Propene," Can. J. Chem. 56, 131 (1978).

#### 78MAR/SCH

H.-D. Martin, H.-J. Schiwek, J. Spanget-Larsen and R. Gleiter, "Synthese, spektroskopische Eigenschaften und transannulare Wechselwirkungen tricyclischer 1,2-Cyclobutandione," Chem. Ber. 111, 2557 (1978).

#### 78MCC/FRE

D.A. McCrery and B.S. Freiser, "Gas Phase Photodissociation of C₇H₇ +," J. Am. Chem. Soc. **100**, 2902 (1978).

### 78MCC/HAM

D.G. McCormick and W.S. Hamilton, J. Chem. Thermodyn. 10, 275 (1978).

#### 78MCM/NOR

T.B. McMahon and C.J. Northcott, "The Fluoroformate Ion FCO₂": An ICR Study of the Gas Phase Lewis Acidity of Carbon Dioxide and Related Isoelectronic Species," Can. J. Chem. 56, 1068 (1978).

#### 78MOF

J.B. Moffat, J. Mol. Struct. 44, 637 (1978).

#### 78MON/ROS

R.L. Montgomery and F.D. Rossini, J. Chem. Eng. Data 23, 125 (1978).

#### 78OLS/HOW

J.F. Olsen and J.M. Howell, Theor. Chim. Acta 47, 39 (1978).

#### 78OSB/SCO

A.G. Osborn and D.W. Scott, J. Chem. Thermodyn. 10, 619 (1978).

#### 78PAB/MÁR

R.E. Pabst, J.L. Margrave and J.L. Franklin, "Energy Distribution in the Products of Ionic Decomposition," Adv. Mass Spectrom. 7B, 1217 (1978).

#### 78PAL/KEN

M.H. Palmer and S.M.F. Kennedy, J. Mol. Struct. 43, 203 (1978).
78PAP/KOL

T.S. Papina and V.P Kolesov, Vestn. Mosk. Univ. Ser. 2 Khim. 19, 500 (1978).

# 78PAU/KIM

J.K. Pau, J.K. Kim and M.C. Caserio, "Mechanisms of Ionic Reactions in the Gas Phase. Displacement Reactions at Carbonyl Carbon," J. Am. Chem. Soc. 100, 3831 (1978).

#### 78POP/RAD

D. Poppinger and L. Radom, J. Am. Chem. Soc. 100, 3674 (1978). 78RAI/MOO

L.J. Rains, H.E. Moore and R.T. McIver, Jr., "Equilibrium Electron-Transfer Reactions in the Gas Phase Involving Long-Lived Negative Ion Radicals," J. Chem. Phys. 68, 3309 (1978).

# 78REF/FRA

K.M.A. Refaey and J.L. Franklin, "Collisonal Decomposition of SF₆-," Int. J. Mass Spectrom. Ion Phys. 26, 125 (1978).

#### 78ROB/WIN

B.P. Roberts and J.N. Winter, "Generation and Some Reactions of the Bis(trimethylsilyl)aminyl Radical," Chem. Comm. 545 (1978).

#### 78ROG/VON

D.W. Rogers, H. von Voithenberg and N.L. Allinger, J. Org. Chem. 43, 360 (1978) and personal communication from D.W. Rogers to the authors.

#### 78ROT/BIE

W.R. Roth, M. Biermann, H. Dekker, R. Jochem, C. Mosselman and H. Hermann, Chem. Ber. 111, 3872 (1978).

### 78SAB/LAF

R. Sabbah and M. Laffitte, J. Chem. Thermodyn. 10, 101 (1978). 78SAB/LAF2

R. Sabbah and M. Laffitte, Bull. Soc. Chim. Fr. 1, 50 (1978). 78SAB/LAF3

# R. Sabbah and M. Laffitte, Thermochim. Acta 23, 196 (1978). 78SEL/STR

P. Sellers, G. Stridh and S. Sunner, J. Chem. Eng. Data 23, 3 (1978).

# 78SEL/STR2

P. Sellers, G. Stridh and S. Sunner, J. Chem. Eng. Data 23, 250 (1978).

#### 78SHA

R. Shaw, "The Chemistry of the Carbon-Carbon Triple Bond" Part 1 (ed. S. Patai, John Wiley & Sons, New York, 1978).

#### 78SMI/LEE

G.P. Smith, L.C. Lee, P.C. Cosby, J.R. Peterson and J.T. Moseley, "Photodissociation and Photodetachment of Molecular Negative Ions. V. Atmospheric Ions from 7000 to 8400 A^a)," J. Chem. Phys. **68**, 3818 (1978).

#### 78STE

W.V. Steele, J. Chem. Thermodyn. 10, 441 (1978).

#### **78STE2**

W.V. Steele, J. Chem. Thermodyn. 10, 445 (1978).

#### 78STE3

W.V. Steele, J. Chem. Thermodyn. 10, 585 (1978).

#### 78SUL/BEA

S.A. Sullivan and J.L. Beauchamp, "Nucleophilic Reactions of Anions with PF₃ and OPF₃ in the Gas Phase by ICR Spectroscopy," Inorg. Chem 17, 1589 (1978).

#### 78SUL/BEA2

S.A. Sullivan and J.L. Beauchamp, "Positive and Negative Ion Chemistry of Sulfuryl Halides," Int. J. Mass Spectrom. Ion Phys. 28, 69 (1978).

#### 78TAF/TAA

R.W. Taft, M. Taagepera, J.L.M. Abboud, J.F. Wolf, D.J. DeFrees, W.J. Hehre, J.E. Bartmess and R.T. McIver, Jr., "Regarding the Separation of Polarizability and Inductive Effects in Gas- and Solution-Phase Proton Transfer Equilibria," J. Am. Chem. Soc. 100, 7765 (1978).

#### 78TTF/WU

T.O. Tiernan and R.L.C. Wu, "Thermochemical Data for Molecular Negative Ions from Collisional Dissociation Thresholds," Adv. Mass Spectrom. 7A, 136 (1978).

#### 78TPIS

L.V. Gurvich, I.V. Veits, V.A. Medvedev, G.A. Khachkuruzov, V.S. Yungman and G.A. Bergman, et. al., "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); Glushko, V.P., gen. ed., Vol. 1, parts 1 and 2 (1978).

#### 78TRA/MCL

J.C. Traeger and R.G. McLoughlin, "A Photoionization Study of the Energetics of C₇H₇+ Ion Formed from C₇H₈ Precursors," Int. J. Mass Spectrom. Ion Phys. 27, 319 (1978).

#### 78TRC

Selected Values of Properties of Chemical Compounds. Thermodynamic Research Center, Texas A & M (Table compiled 1978).

#### 78VAN/OSK

H. Van Dam and A. Oskam, "He(I) and He(II) Photoelectron Spectra of Some Substituted Ethylenes," J. Electron Spectrosc. Rel. Phenom. 13, 273 (1978).

### 78VOG/WIL

J. Vogt, A.D. Williamson and J.L. Beauchamp, J. Am. Chem. Soc. 100, 3478 (1978).

#### 78ZAB/BEN

F. Zabel, S.W. Benson and D.M. Golden, Int. J. Chem. Kinet. 10, 295 (1978).

### 78ZIM/GYG

A.H. Zimmerman, R. Gygax and J.I. Brauman, "Electron Photodetachment Spectroscopy of Polyene Anions. Electron Affinities of Pentadienyl and Heptatrienyl Radicals," J. Am. Chem. Soc. 100, 5595 (1978).

## 78ZIM/JAC

A.H. Zimmerman, R.L. Jackson, B.K. Janousek and J.J. Brauman, "Electron Photodetachment from Cyclic Enolate Anions in the Gas Phase: Electron Affinities of Cyclic Enolate Radicals," J. Am. Chem. Soc. 100, 4674 (1978).

#### 79ADE/CAV

F.A. Adedeji, K.J. Cavell, S. Cavell, J.A. Connor, H.A. Skinner and M.T. Zafarani-Moattar, J. Chem. Soc. Faraday Trans. I 75, 603 (1979).

#### 79AND/KOL

G.M. Anderson, III, P.A. Kollman, L.N. Domelsmith and K.N. Houk, J. Am. Chem. Soc. 101, 2344 (1979).

# 79AUE/BOW

D.H. Aue and M.T. Bowers, "Stabilities of Positive Ions from Equilibrium Gas-Phase Basicity Measurements," in "Gas Phase Ion Chemistry," M.T. Bowers Editor, Vol. 2, pp. 1-51 Academic Press, New York (1979).

#### 79BAG/NIK

N.V. Bagarat'yan and O.T. Nikitin, "Electron Ionization of Vapor over Boron Oxide," Vest. Mosk. Univ. Khim. 34, 539 (1979).

#### 79BAR/MCI

J.E. Bartmess and R.T. McIver, Jr., "The Gas Phase Acidity Scale," in "Gas Phase Ion Chemistry," V. 2, M.T. Bowers, Ed., Academic Press, NY, 1979, Ch. 11.

### 79BAR/SCO

J.E. Bartmess, J.A. Scott and R.T. McIver, Jr., "The Gas Phase Acidity Scale from Methanol to Phenol," J. Am. Chem. Soc. 101, 6047 (1979).

#### 79BRE/ENG

E.J. Bredford and F. Engelke, J. Chem. Phys. 71, 1994 (1979).

#### 79BUC/VOG

U. Buchler and J. Vogt, Org. Mass Spectrom. 14, 503 (1979).

#### 79BYK/ELI

H.J. Byker, I. Eliezer, R.C. Howard and T.C. Ehlert, High Temp. Sci. 11, 153 (1979).

#### 79CAR/MOU

P. Carlier and G. Mouvier, "Etude par Spectrometrie de Photoelectrons de la Structure Electronique des Ynals et des Ynones Conjugues," J. Electron Spectrosc. Rel. Phenom. 17, 169 (1979).

### 79CLA/KNO

T. Clark, T. McO. Knox, M.A. McKervey, H. Mackle, J.J. Rooney, J. Am. Chem. Soc. **101**, 2404 (1979).

#### 79CLA/SCH

E. Clar and W. Schmidt, "Correlations between Photoelectron and UV Absorption Spectra of Polycyclic Hydrocarbons. The Pyrene Series," Tetrahedron 35, 1027 (1979).

#### 79COR

M. Corval, "Elimination sous Impact Electronique de HCN et H a partir de l'Indole. Comparaison avec l'Indolizine," Org. Mass Spectrom. 14, 213 (1979).

# 79COR/ENG

R.R. Corderman, P.C. Engelking and W.C. Lineberger, "Laser Photoelectron Spectrometry of Co⁻ and Ni⁻," J. Chem. Phys. 70, 4474 (1979).

### 79DAW/NOE

J.H.J. Dawson, A.J. Noest and N.M.M. Nibbering, "The Gas Phase Allyl Anion," Int. J. Mass Spectrom. Ion Phys. 29, 205 (1979).

# 79DAW/NOE2

J.H.J. Dawson, A.J. Noest and N.M.M. Nibbering, "1,1 and 1,3 Eliminations of Water from the Reaction Complex of O⁻ with 1,1,1,-Trideuterioacetone," Int. J. Mass Spectrom. Ion Phys. 30, 189 (1979).

# 79DEK/OON

C.G. DeKruif and H.A.J. Oonk, J. Chem. Thermodyn. 11, 2877 (1979).

#### 79DEK/VOO

C.G. DeKruif, J. Voogd and J.C.A. Offringa, J. Chem. Thermodyn. 11, 651 (1979).

#### 79DEL

J.E. Del Bene, J. Am. Chem. Soc. 101, 6184 (1979) and personal communication of the results of unpublished ab-initio calculations.

### 79DEN/VAN

R.J. Dendramas, R.J. Van Zee, W. Weltner, J. Astrophys. 231, 632 (1979).

### 79DEV/WU

C. De Vrengd, R.W. Wijnaendts van Resandt, J. Los and B. Smith, "Differential Cross Sections for Collisions of Negative Halogen Ions and Alkali Atoms," Chem. Phys. 42, 305 (1979).

# 79DEV/WIJ2

C. De Vrengd, R.W. Wijnaendts van Resandt and J. Los, "The Well Depths of XeF and XeCl from Differential Scattering Measurements," Chem. Phys. Lett. 65, 93 (1979).

#### 79DIL/GRE

J.D. Dill, A. Greenberg and J.F. Liebman, J. Am. Chem. Soc. 101, 6814 (1979).

#### 79DIL/MCL

J.D. Dill and F.W. McLafferty, "Collisional Activation and Theoretical Studies of Gaseous CSH₃ + Ions," J. Am. Chem. Soc. **101**, 6526 (1979).

#### 79DRA/GLA

J.E. Drake, B.M. Glavincevski and K. Gorzelska, "The Photoelectron Spectra of Methylgermane, Trifluoro- and Trichloro-methylgermane," J. Electron Spectrosc. Rel. Phenom. 17, 73 (1979).

#### 79DRA/GLA2

J.E. Drake, B.M. Glavincevski and K. Gorzelska, "The Photoelectron Spectra of Trimethylgermane, Chloro- and Fluoro-Trimethylgermane," J. Electron Spectrosc. Rel. Phenom. 16, 331 (1979).

#### 79DUD/BAL

A.V. Dudin, A.V. Baluev and L.N. Gorokhov, "A Mass Spectrometric Investigation of Nitrogen Trifluoride by the Electron Shock Method," Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Trans.) 28, 1996 (1979).

#### 79DUD/GOR

A.V. Dudin, L.N. Gorokhov and A.V. Balaev, "A Study of the Electron Impact Ionization of Chlorine Trifluoride and Its Decomposition Products by Mass Spectrometry," Izv. Akad. Nauk SSSR, Ser. Khim., 2408 (1979).

#### 79DUN/DYK

S. Dunlavey, J. Dyke, N. Fayad, N. Jonathan and A. Morris, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. Part 10. The  $SH(X_{2\Pi i})$  Radical and the  $S(^3P)$  Atom," Mol. Phys. 38, 729 (1979).

#### 79ELL/EAD

M.R. Ellenberger, R.A. Eades, M.W. Thomsen, W.E. Farneth and D.A. Dixon, J. Am. Chem. Soc. 101, 7151 (1979).

### 79ENG/LIN

P.C. Engelking and W.C. Lineberger, Phys. Rev. A 19, 149 (1979).

### 79ENG/LIN2

P.C. Engelking and W.C. Lineberger, "Laser Photoelectron Spectrometry of the Negative Ions of Iron and Iron Carbonyls. Electron Affinity Determination for the Series Fe(CO)_n, n=0,1,2,3,4," J. Am. Chem. Soc. 101, 5569 (1979). 79ERA/KOL

P.A. Erastov and V.P. Kolesov, Russ. J. Gen. Chem. 49, 1186 (1979).

#### 79FUC/PEA

R. Fuchs and L.A. Peacock, Can. J. Chem. 57, 2302 (1979).

# 79FUC/PEA2

R. Fuchs and L.A. Peacock, J. Phys. Chem. 83, 1975 (1979).

### 79GEO/BÉA

P.M. George and J.L. Beauchamp, "The Electron and Fluoride Affinites of Tungsten Hexafluoride by ICR Spectroscopy," Chem. Phys. 36, 345 (1979).

# 79GOL/KUL

A.E. Golubitskii, N.S. Kulikov, A.M. Zyakun, V.A. Valovoi, A.M. Alekseev and V.N. Volkov, "Photoionization Mass Spectra of Alicyclic Compounds with Various Substituents, and Their Ionization Energies and Appearance Energies," Izvest. Akad. Nauk SSSR, Seriya Khimicheskaya 11, 2602 (1979).

### 79GUS/GÓR

A.V. Gusarov, L.N. Gorokhov, A.T. Pyatenko and I.V. Sidorova, "Negative Ions in the Vapors of Inorganic Compounds," Adv. Mass Spectrom. 8A, 262 (1979).

#### 79GYG/PET

R. Gygax, H.L. Peters and J.I. Brauman, "Photodetachment of Electrons from Anions of High Symmetry. Electron Photodetachment Spectra of the Cycloctatetraenyl and Perinaphthenyl Anions," J. Am. Chem. Soc. 101, 2567 (1979).

#### 79HA

T.-K. Ha, J. Mol. Struct. 51, 87 (1979).

### 79HAC/PIL

J.M. Hacking and G. Pilcher, J. Chem. Thermodyn. 11, 1015 (1979).

#### 79HOL/LOS

J.L. Holmes and F.P. Lossing, Org. Mass Spectrom. 14, 572 (1979).

#### 79HOL/TER

J.L. Holmes and J.K. Terlouw, "Structures of [C₄H₄O] + Ions Produced from 2- and 4-Pyrone," J. Am. Chem. Soc. **101**, 4973 (1979).

#### **79HOU**

F.A. Houle Ph. D. Thesis, California Institute of Technology (1979).

### 79HUB/HER

K.P. Huber and G. Herzberg, "Molecular Spectra and Molecular Structure. IV. Constants of Diatomic Molecules," Van Nostrand Reinhold Co. (1979).

#### 79ILL/SCH

T. Illenberger, H. Scheunemann and H. Baumgartel, "Negative Ion Formation in CF₂Cl₂, CF₃Cl, and CFCl₃ Following Low Energy (0-10eV) Impact with Near Monoenergetic Electrons," Chem. Phys. 37, 21 (1979).

#### 79JAN/BRA

B.K. Janousek, J.I.Brauman and J. Simons, "An Experimental and Theoretical Determination of the Electron Affinity of the Ethynyl Radical HC₂," J. Chem. Phys. 71, 2057 (1979).

# 79JAN/BRA2

B. Janousek and J.I. Brauman, "Electron Affinities," in "Gas Phase Ion Chemistry," V. 2, M.T. Bowers, Ed., Academic Press, NY, 1979, Chapter 10.

#### 79JOC/LOH

H.W. Jochims, W. Lohr and H. Baumgartel, "Photoreactions of Small Organic Molecules. VI. Photoionization Processes of Difluoroethylenes," Nouv. J. Chim. 3, 109 (1979).

### 79JOS

R.M. Joshi, J. Macromol. Sci. Chem. A13, 1015 (1979).

#### 79KAO/RAD

J. Kao and L. Radom, J. Am. Chem. Soc. 101, 311 (1979).

#### **79KLO/SEP**

G. Kloter and K. Sepplet, "Trifluoromethanol (CF₃OH) and Trifluoromethylamine (CF₃NH₂)," J. Am. Chem. Soc. 101, 347 (1979).

#### 79KUD/KÚD

S.A. Kudchadker, A.P. Kudchadker, R.C. Wilhoit and B.J. Zwolinski, Thermochim. Acta 30, 319 (1979).

#### 79KUD/KUD2

A.P. Kudchadker, S.A. Kudchadker and R.C. Wilhoit, "Four-Ring Condensed Aromatic Compounds," API Monograph 709-79, American Petroleum Institute, Washington, D.C. (1979).

# 79KUD/KUD3

A.P. Kudchadker and S.A. Kudchadker, "Pyridine and Phenylpyridines," API Monograph 710-79, American Petroleum Institute, Washington, D.C. (1979).

## 79KUD/KUD4

S.A. Kudchadker, A.P. Kudchadker and B.J. Zwolinski, J. Chem. Thermodyn. 11, 1051 (1979).

#### 79LEE/POT

E.P.F. Lee and A. W., Potts, "The HeII α Photoelectron Spectra of the Barium Halides," Chem. Phys. Lett. 63, 61 (1979).

#### 79LEE/POT2

E.P.F. Lee and A.W. Potts, "An Investigation of the Valence Shell Electronic Structure of Alkaline Earth Halides by Using Ab Initio S. C. F. Calculations and Photoelectron Spectroscopy," Proc. Roy. Soc. Lond. A 365, 395 (1979).

## 79LEE/SMI

L.C. Lee, G.P. Smith, J.T. Moseley, P.C. Cosby and J.A. Guest, "Photodissociation and Photodetachment of Cl₂-, ClO-, Cl₃-, and BrCl₂-," J. Chem. Phys. 70, 3237 (1979).

#### 79LEI

J. Leitch, Int. J. Chem. Kinet. 11, 1249 (1979).

#### 79MAJ/SVO

V. Majer, V. Svoboda, J. Koubeck and J. Pick, Collect. Czech. Chem. Commun. 44, 3521 (1979).

#### 79MAR/KUN

H.-D. Martin, M. Kunze and J.D. Beckhaus, Tetrahedron Lett. 3069 (1979).

#### 79MAT/ROT

E.P. Mathur, E.W. Rothe and G.P. Reck, "Negative Ions from the Reactions of Alkalis with SnCl4, GeCl4, and TiCl4," Int. J. Mass Spectrom. Ion Phys. 31, 77 (1979).

#### 79MCL/TRA

R.G. McLoughlin and J.C. Traeger, "A Photoionization Study of Some Benzoyl Compounds - Thermochemistry of [C7H5O] + Formation," Org. Mass Spectrom. 14, 434 (1979).

#### 79MIL

W.J. Miller, "The Use of Flames as Media for the Study of Ion-Molecule Thermochemistry," in, "Characterization of High Temperature Vapors and Gases," NBS Spec. Pub. 561/1, 443 (1979).

#### 79NAZ/POK

V.A. Nazarenko and V.D. Pokhodenko, "The Formation of Negative Ions in High Electric Fields," Int. J. Mass Spectrom. Ion Phys. 31, 381 (1979).

#### 79NEL/KES

S.F. Nelsen, C.R. Kessel and H.N. Brace, "Twisted and Bent Hydrazine Radical Cations," J. Am. Chem. Soc. 101, 1874 (1979).

#### 79NIK/SKO

M.I. Nikitin, E.V. Skokan, I.D. Sorokin and L.N. Sidirov, Dokl. Akad. Nauk SSSR 247, 151 (1979).

#### 79NOV/ENG

S.E. Novich, P.C. Engelking, P.L. Jones, J.H. Futrell and W.C. Lineberger, "Laser Photoelectron, Photodetachment, and Photodestruction Spectra of O₃-," J. Chem. Phys. 70, 2652 (1979).

#### 790LS

J.F. Olsen, J. Mol. Struct. 57, 245 (1979).

### 790SA

E. Osawa, J. Am. Chem. Soc. 101, 5523 (1979).

#### 79PET/MAJ

L. Petros, V. Majer, J. Koubeck, V. Svoboda and J. Pick, Collect. Czech. Chem. Commun. 44, 3533 (1979).

### 79PRI/SAP

S.J.W. Price and H.J. Sapiano, Can. J. Chem. 57, 685 (1979).

# 79PRI/SAP2

S.J.W. Price and H.J. Sapiano, Can. J. Chem. 57, 1468 (1979).

### 79RAU/ACK

E.G. Rauh and R.J. Ackermann, "The First Ionization Potentials of the Transition Metals," J. Chem. Phys. 70, 1004 (1979).

#### 79ROB/FRA

R. Robbiani and J.L. Franklin, "Formation of the Trihalide Ion Cl₃⁻ in the Gas Phase," J. Am. Chem. Soc. 101, 764 (1979).

# 79ROB/FRA2

R. Robbiani and J.L. Franklin, "Negative Ion-Molecule Reaction in Sulfuryl Halides," J. Am. Chem. Soc. 101, 3709 (1979).

### 79ROG/DAG

D.W. Rogers, O.A. Dagdagan and N.L. Allinger, J. Am. Chem. Soc. **101**, 671 (1979).

#### 79ROS/GOL

M. Rossi and D.M. Golden, "Absolute Rate Constants for the Metathesis Reactions of Allyl and Benzyl Radicals with HI(DI). Heat of Formation of Allyl and Benzyl Radicals," J. Am. Chem. Soc. 101, 1230 (1979).

### 79SAB

R. Sabbah, Bull. Soc. Chim. Fr. I-434 (1979).

#### 79SAL/PEA

P.P.S. Saluja, L.A. Peacock and R. Fuchs, J. Am. Chem. Soc. 101, 1958 (1979).

#### 79SAN/EPS

D.J. Sandman, A.J. Epstein, J.S. Chickos, J. Ketchum and H.A. Scheraga, J. Chem. Phys. 70, 305 (1979).

#### 79SAU/CHR

I. Sauers, J.G. Christophorou and J.G. Carter, "Electron Attachment to Perfluorocarbon Compounds. III. Fragmentation of Aliphatic Perfluorocarbons of Interest to Gaseous Dielectrics," J. Chem. Phys. 71, 3016 (1979).

### 79SCH/BIE

R.J. Schmitt, V.M. Bierbaum and C.H. DePuy, "Gas Phase Reactions of Carbanions with Triplet and Singlet Molecular Oxygen," J. Am. Chem. Soc. 101, 6443 (1979).

#### 79SCH/GRU

B. Schaldach and H.F. Grutzmacher, "Kinetics Energy Release and Position of the Transition State during the Intramolecular Substitution of Ionized Benzalacetones," Int. J. Mass Spectrom. Ion Phys. 31, 271 (1979).

#### 79SCH/SCH

R. Schulz and A. Schweig, "Elucidation of Thermal Reactions by Variable Temperature Photoelectron Spectral Detection of Reactive Intermediates. The UV Photoelectron Spectra of Transient Fulveneketene, Fulvenethioketene, a Ketoketene, and Thiobenzpropiolactone," Tetrahedron Lett. 59 (1979).

### 79SCH/THI

A. Schweig and W. Thiel, J. Am. Chem. Soc. 101, 4742 (1979).

# 79SCH/THO

A. Schweig, N. Thon and H. Vermeer, "On the Use of Photoelectron Spectroscopy in Studying Rotational Isomerism in Tetramethyldiphosphine," J. Am. Chem. Soc. 101, 80 (1979).

#### 79SID/NIK

L.N. Sidirov, M.I. Nikitin and V.M. Korobov, "Determination of the Electron Affinity of Platinum Fluorides and Manganese Tetrafluoride by an Effusion Method," Dokl. Akad. Nauk SSSR, Ser. Khim. 248, 1387 (1979).

#### 79SMI/LEE

G.P. Smith, L.C. Lee and P.C. Cosby, "Photodissociation and Photodetachment of Molecular Negative Ions. VII. Ions Formed in CO₂/O₂/H₂O Mixtures, 3500-5300 Å," J. Chem. Phys. 71, 4464 (1979).

### 79SMI/LEE2

G.P. Smith, L.C. Lee and J.T. Moseley, "Photodissociation and Photodetachment of Molecular Negative Ions. VIII. Nitrogen Oxides and Hydrates, 3500-8250 Å," J. Chem. Phys. 71, 4034 (1979).

### 79STÈ

W.V. Steele, J. Chem. Thermodyn. 11, 1185 (1979).

# 79SUN/SVE

S. Sunner, C. Svenson and A.S. Zelepuga, J. Chem. Thermodyn. 11, 491 (1979).

#### 79TER/BUR

J.K. Terlouw, P.C. Burgers and J.L. Holmes, "Thermochemistry and Generation of Vinylketene," J. Am. Chem. Soc. 101, 225 (1979).

# 79TPIS

L.V. Gurvich, I.V. Veits, V.A. Medvedev, G.A. Khachkuruzov, V.S. Yungman and G.A. Bergman, et. al., "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); Glushko, V.P., gen. ed., Vol. 2, parts 1 and 2(1979). Izdatel'stvo"Nauka"Moscow.

# 79VAJ/HAR

J.H. Vajda and A.G. Harrison, Int. J. Mass Spectrom. Ion Phys. 30, 293 (1979).

#### 201/19

D.S. Viswanath, "Quinoline," API Monograph 711-79, American Petroleum Institute, Washington, D.C. (1979).

#### 79VIS/WIL

D.S. Viswanath and R.C. Wilhoit, "Isoquinoline," API Monograph 712-79, American Petroleum Institute, Washington, D.C. (1970)

#### 79WIB/SQU

K.B. Wiberg and R.R. Squires, J. Chem. Thermodyn. 11, 773 (1979).

#### 79WIB/SQU2

K.B. Wiberg and R.R. Squires, J. Am. Chem. Soc. 101, 5512 (1979).

#### 79WIL/WAT

S.R. Wilson and I.D. Watson, J. Chem. Thermodyn. 11, 911 (1979).

#### 79WOL/HOL

P. Wolkoff and J.L. Holmes, "Isomeric Cyclic  $[C_6H_{10}]^+$  Ions. The Energy Barrier to Ring Opening," Can. J. Chem. 57, 348 (1979).

#### 79WOR/KOB

J.C. Wormhoudt and C.E. Kobb, "MS Determination of Negative and Positive Ion Concentrations in Coal Fired MHD Plasmas," in Proc. 10th Materials Res. Symp. on Characterization of High Temp. Vapors," NBS Spec. Pub. No. 561/1, 457 (1979).

# 79WU/KUD

C.H. Wu, H. Kudo and H.R. Ihle, "Thermochemical Properties of Gaseous Li₃O and Li₂O₂," J. Chem. Phys. **70**, 1815 (1979).

#### 80ADE/BOU

P. Adeney, W.J. Bouma, L. Radom and W.R. Rodwell, J. Am. Chem. Soc. **102**, 4069 (1980).

#### 80ALI/STE

A.S. Alikhanyan, A.V. Steblevskii, V.B. Lazarev, V.T. Kalinnikov, Y.K. Grinberg, E.G. Zhukov, L.M. Agamirova and V.I. Gorgoraki, "Thermodynamic Properties of Gaseous Arsenic Iodides," Izv. Akad. Nauk SSSR, Neorganisch. Mat. 16, 73 (1980).

#### 80ALL/YUH

N.L. Allinger, Y. Yuh and J.T. Sprague, J. Comput. Chem. 1, 30 (1980).

### 80AND/BAL

G.D. Andrews, J.E. Baldwin and K.E. Gilbert, J. Org. Chem. 45, 1523 (1980).

# 80AND/BIC

M.V. Andreocci, P. Bicev, C. Cauletti and M.N. Piancastelli, "The Electronic Structure of the II-Systems of Acetylenic Oligomers and Related Substances: An UPS Study of Diphenylbutadiyne and Diphenylbutenyne," Gazz. Chim. Ital. 110, 31 (1980).

#### 80AND/BOS

M.V. Andreocci, M. Bossa, V. di Castro, C. Furlani, G. Mattogno and H. W. Roesky, "Electronic Structure of S₃N₂ Ring Derivatives: A Photoelectron Spectroscopy Study," Gazz. Chim. Ital. 110, 1 (1980).

#### 80AND/DEV

M.V. Andreocci, F.A. Devillanova, C. Furlani, G. Mattogno, G. Verani and R. Zanoni, "Structural Characterization of Some Substituted Azolidine Molecules: UPS Photoelectron Spectroscopic Studies," J. Molec. Str. 69, 151 (1980).

#### 80ANN/STO

B.K. Annis and J.A.D. Stockdale, "Internal Excitation of UF6" Ions in Collisions with Argon Atoms," Chem. Phys. Lett. 74, 365 (1980).

#### 80ARM/BEA

P.B. Armentrout and J.L. Beauchamp, "Endothermic Reactions of Ni  $^+$  with H₂, HD and D₂," Chem. Phys. 50, 37 (1980).

### 80ARN/PIE

E.M. Arnett and N.J. Pienta, J. Am. Chem. Soc. 102, 3239 (1980).

#### 80ARS

M.R. Arshadi, J. Chem. Thermodyn. 12, 903 (1980).

#### 80BAC/MOU

M. Bachiri, G. Mouvier, P. Carlier and J.E. Dubois, "Evaluation Quantitative des Effets de Substituants sur les Premiers Potentiels d'Ionisation de Composes Monofonctionnels Aliphatiques," J. Chim. Phys. 77, 899 (1980).

#### 80BAE

T. Baer, "Gas Phase Heats of Formation of  $C_2H_5$  + and  $C_3H_7$ +," J. Am. Chem. Soc. 102, 2482 (1980).

#### 80BAL/LEB

A.A. Balepin, V.P. Lebedev, A.A. Kuzsnetsova, K. Venters, M. Trusule, D. Lola and Y.A. Lebedev, Izv. Akad. Nauk. SSSR, Ser. Khim. 848 (1980).

#### 80BAL/NIK

A.V. Baluev, I.M. Nikitin, L.I. Fedorova and V.Ya. Rossolovskii, "Mass Spectrometric Study of Chlorine Pentafluoride Ionization by Electron Impact," Izv. Akad. Nauk SSSR, Ser. Khim., 497 (1980).

#### 80BAL/NIK2

A.V. Baluev, Z.K. Nikitina, L.I. Fedorova and V.Ya. Rosolovskii, "Mass Spectrometric Investigation of Electron-Impact Induced Ionization of Chlorine Dioxide and Chloryl Fluoride Molecules," Izv. Akad. Nauk. SSSR, Ser. Khim. 1963 (1980).

#### 80BAT/PI

G. Balducci and V. Piacente, "Dissociation Energy of the Tl₂(g) Molecule," J. Chem. Soc. Chem. Comm. 1287 (1980).

#### 80BAR

J.E. Bartmess, "Solvent Effects on Ion-Molecule Reactions. Vinyl Anions vs. Conjugate Addition," J. Am. Chem. Soc. 102, 2483 (1980).

#### 80BAR/STR

A. Barkovich, E.S. Strauss and K.P.C. Vollhardt, Isr. J. Chem. 20, 225 (1980).

### 80BEN/NAN

S.W. Benson and P.S. Nangia, "Electron Affinity of  $HO_2$  and  $HO_X$  Radicals," J. Am. Chem. Soc. 102, 2843 (1980).

#### 80BOC/AYG

H. Bock, S. Aygen, P. Rosmus and B. Solouki, "Analyse und Optimierung von Gasphasen-Reaktionen. XVII. Selenoketen," Chem. Ber. 113, 3187 (1980).

# 80BOC/KAI

H. Bock, W. Kaim, P.L. Timms and P. Hawker, "Durosemiquinone and its BF Analogue - Detection of 1,4-Diborine as an Unexpected Elimination Product," Chem. Ber. 113, 3196 (1980).

#### 80BOC/STE

 H. Bock, U. Stein and A. Semkov, "1,2-Dithiolan -Bindungsmodell fur α-Liponsaure," Chem. Ber. 113, 3208 (1980).
 80BOH/CAR

M.C. Bohm, R.V.C. Carr, R. Gleiter and L.A. Paquette,
"Electronic Control of Stereoselectivity. 4. Effects of
Neighboring Fused Bicyclic Frameworks on the Stereochemical
Outcome of Diels-Alder Cycloadditions to Cyclopentadiene

Rings," J. Am. Chem. Soc. 102, 7218 (1980).

## 80BOH/DAU

M.C. Bohm, J. Daub, R. Gleiter, P. Hofmann, M.F. Lappert and K. Ofele, "Die He(I) Photoelektronenspektren von Tetracarbonyleisen(O)-Komplexen mit Carbenen," Chem. Ber. 113, 3629 (1980).

#### 80BOH/GLE

M.C. Bohm and R. Gleiter, "The Electronic Structure and the He(I) Photoelectron Spectrum of Tricarbonylcyclooctatetraene-iron," Z. Naturforsch. 35b, 1028 (1980).

#### 80BOU/RAD

W.J. Bouma, L. Radom and W.R. Rodwell, Theor. Chim. Acta 56, 149 (1980).

# 80BRU/COT

A. Brunot, M. Cottin, M.H. Donnart and J.C. Muller, "Mesure de L'electroaffinite du Thallium et de l'Indium par Attachement Electronique Dissociatif sur les Bromures et les Iodures de Thallium et d'Indium," Int. J. Mass Spectrom. Ion Phys. 33, 417 (1980).

#### 80CAR/COP

T.A. Carslon, J. Copley, N. Duric, N. Elander, Perman, M. Larsson and M. Lyyra, "The Oscillator Strengths and the Dissociation Energy of SiH + as Determined From Time Resolved Precision Spectroscopy," Astron. Astrophys. 83, 238 (1980).

# 80CLA/MCM

R.L. Clair and T.B. McMahon, "An Ion Cyclotron Resonance Study of Base-Induced Elimination Reactions of Fluorinated Alcohols and Unimolecular Loss of HF from Chemically Activated Fluoroalkoxide Ions," Int. J. Mass Spectrom. Ion Phys. 33, 21 (1980).

#### 80COM/REI

R.W. Compton and P.W. Reinhardt, "Reactions of Fast Cesium Atoms with Polymers of Antimony Pentafluoride and Gold Pentafluoride," J. Chem. Phys. 72, 4655 (1980).

#### 80CON

J.A. Connor, "Transition Metal Clusters" (ed. B.F.G. Johnson, John Wiley & Sons, New York, 1980).

### 80CRA/SNY

D.C. Crans and J.P. Snyder, Chem. Ber. 113, 1201 (1980). 80DAV/FIN

R.H. Davies, A. Finch and P.J. Gardner, J. Chem. Thermodyn. 12, 291 (1980).

### 80DAW/NIB

J.H.J. Dawson and N.M.M. Nibbering, "The Gas Phase Anionic Chemistry of Saturated and Unsaturated Aliphatic Nitriles," Int. J. Mass Spectrom. Ion Phys. 33, 3 (1980).

### 80DEF/MCI

D.J. DeFrees, R.T. McIver, Jr. and W.J. Hehre, "Heats of Formation of Gaseous Free Radicals via Ion Cyclotron Double Resonance Spectroscopy," J. Am. Chem. Soc. 102, 3334 (1980).

#### 80DEL/HÙB

J. Delwiche, M.-J. Hubin-Franskin, G. Caprace, P. Natalis and D. Roy, "On the He(I) and Ne(I) Photoelectron Spectra of OCS," J. Electron Spectrosc. Rel. Phenom. 21, 205 (1980).

### 80DEM/WUL

R.L. Deming and C.A. Wulff The Chemistry of Ketenes, Allenes and Related Compounds, S. Patai, Editor, part 1, pp. 155-164 J. Wiley and Sons, New York (1980).

#### 80DEP/BIE

C.H. DePuy, V.M. Bierbaum, L.A. Flippin, J.J. Brabowski, G.K. King, R.J. Schmidt and S.A. Sullivan, "Gas Phase Reactions of Anions with Substituted Silanes," J. Am. Chem. Soc. 102, 5012 (1980).

### 80DEW/DAV

M.J.S. Dewar and D.E. David, "Ultraviolet Photoelectron Spectrum of the Phenoxy Radical," J. Am. Chem. Soc. 102, 7387 (1980).

#### 80DUP/ROI

P. Dupuis, R. Roberge and C. Sandorfy, "The Very Low Ionization Potentials of Porphyrins and the Possible Role of Rydberg States in Photosynthesis," Chem. Phys. Lett. 75, 434 (1980).

### 80DYK/FAY

J.M. Dyke, N.K. Fayad, G.D. Josland and A. Morris, "Study by High-temperature Photoelectron Spectroscopy of the Electronic Structure of the Transition Metal Difluorides, CuF₂ and ZnF₂," J. Chem. Soc. Faraday Trans. II 76, 1672 (1980).

#### 80DYK/JON

J.M. Dyke, N. Jonathan, A. Morris and M.J. Winter, "The First Ionization Potential of the Formyl Radical, HCO (X²A), Studied Using Photoelectron Spectroscopy," Molec. Phys. **39**, 629 (1980).

#### 80EME/KOM

D.P. Emerick, L. Komorowski, J. Lipinski, F.C. Nahm and K. Niedenzu, "Experimental and Theoretical Studies on Monomeric Iminoboranes," Z. Anorg. Allg. Chem. 468, 44 (1980).

### 80ENG

P.S. Engel, Chem. Rev. 80, 99 (1980).

#### 80FAR/MCM

R. Farid and T.B. McMahon, "The Gas Phase Acidities of Fluorinated Acetones. An ICR Investigation of the Role of Fluorine Substituents in the Stabilization of Planar Carbanions," Can. J. Chem. 58, 2307 (1980).

# 80FRO/WES

D.C. Frost, N.P.C. Westwood and N.H. Werstiuk, "Ultraviolet Photoelectron Spectra of 2-Norbornanone, 2,5-Norbornanedione, Their Alkyl Derivatives and Thio-Analogues. An Investigation of Transannular Interactions by Photoelectron Spectroscopy," Can. J. Chem. 58, 1659 (1980).

# 80FUC/PEA

R. Fuchs and L.A. Peacock, Can. J. Chem. 58, 2796 (1980).

### 80GAJ

J.J. Gajewski, "Hydrocarbon Thermal Rearrangements" (Academic Press, New York, 1980).

#### 80GLE/HOP

R. Gleiter, H. Hopf, M. Eckert-Maksic and K.-L. Noble, "Photoelektronenspektren von [8]Paracyclophan und [8]Paracyclophan-4-en. Eine Ermittlung des induktiven und hyperkonjugativen Effekts für [n]Paracyclophane," Chem. Ber. 113, 3401 (1980).

#### 80GOF/YAR

M.M. Gofman, V.G. Yarzhemsky and V.I. Nefedov, "Relative Intensities in the He(I) and He(II) Photoelectron Spectra of Benzoyl Chloride," J. Electron Spectrosc. Rel. Phenom. 21, 171 (1980).

### 80GOM/HAA

W. Gombler, A. Haas and H. Willner, "Chalkogenfluoride in niedrigen Oxydationsstufen. V. Die ungewohnlichen chemischen Gleichgewichte F₃S-SF = 2 SF₂ und CF₃SF₂-SCF₃ = 2 CF₃SF," Z. Anorg. Allg. Chem. 469, 135 (1980).

#### 80GOR

M.S. Gordon, J. Am. Chem. Soc. 102, 7419 (1980).

#### 80GRE

D.W. Green, Int. J. Thermophys. 1, 61 (1980).

# 80GRE/SED

J.C. Green and E.A. Seddon, "UV Photoelectron Studies of  $Cr(\eta-C_3H_5)_3$ ,  $Cr_2(\eta-C_3H_5)_4$  and  $Mo_2(\eta-C_3H_5)_4$ ," J. Organometall. Chem. 198, C61 (1980).

#### 80GRU/SCH

H.-F. Grutzmacher, B. Schaldach, R. Schubert and D.V. Ramana, "Ion Kinetic Energy Release as a Transition State Probe in Intramolecular Aromatic Substitutions," Adv. Mass Spectrom. 8A, 795 (1980).

## 80GUS/PYA

A.V. Gusarov, A.T. Pyatenko and L.N. Gorokhov, "Tetrafluoroaluminate (Al₂F₇-) Ions in Aluminum Fluoride Vapors," Teplofiz. Vys. Temperatiur. 18, 961. CA: 94, 10584y (1980).

### 80HIL/VES

J.F. Hiller and M.L. Vestal, "Tandem Quadrupole Study of Laser Photodissociation of CO₃", J. Chem. Phys. 72, 4713 (1980).

#### 80HOD/SUL

R.V. Hodges, S.A. Sullivan and J.L. Beauchamp, "Nucleophilic Reactions of Anions with Trimethyl Phosphate in the Gas Phase by ICR Spectroscopy," J. Am. Chem. Soc. 102, 935 (1980).

### 80HOL/LOS

J.L. Holmes and F.P. Lossing, J. Am. Chem. Soc. 102, 1591 (1980).

# 80HOL/LOS2

J.L. Holmes and F.P. Lossing, J. Am. Chem. Soc. 102, 3732 (1980).

## 80HOL/TER

J.L. Holmes, J.K. Terlouw and P.C. Burgers, Org. Mass Spectrom. 15, 140 (1980).

### 80HOT/NEI

A. Hotzel, R. Neidlein, R. Schulz and A. Schweig, "Direct Detection of Dicyanoketene in the Gas Phase," Angew. Chem. Int. Ed. 19, 739 (1980).

### 80HOU/SCH

R. Houriet, H. Schwarz and W. Zummack, "Proton and Hydrogen Affinity of Furan and the Site of Protonation in the Gas Phase," Angew. Chem. Int. Ed. 19, 905 (1980).

#### 80HUN/SET

D.F. Hunt and S.K. Sethi, "Gas Phase Ion/Molecule Isotope Exchange Reactions: Methodology for Counting Hydrogen Atoms in Specific Organic Structural Environments by Chemical Ionization Mass Spectrometry," J. Am. Chem. Soc. 102, 6953 (1980).

#### 80ING/HAN

M.G. Inghram, G.R. Hanson and R. Stockbauer, "The Fragmentation of  $C_2F_6$ ," Int. J. Mass Spectrom. Ion Phys. 33, 253 (1980).

#### 80JAN/BRA

B.K. Janousek and J.I. Brauman, "Electron Photodetachment of Thiomethoxyl and Deuterothiomethoxyl Anions: Electron Affinities, Vibrational Frequencies, and Spin-Orbit Splitting in CH₃S⁻ and CD₃S⁻," J. Chem. Phys. 72, 694 (1980).

#### 80JAN/REE

B.K. Janousek, K.J. Reed and J.I. Brauman, "Electron Photodetachment from Mercaptyl Anions (RS-). Electron Affinities of Mercaptyl Radicals and the S-H Bond Strength in Mercaptans," J. Am. Chem. Soc. 102, 3125 (1980).

#### 80JON/MÉA

P.L. Jones, R.D. Mead, B.E. Kohler, S.D. Rosner and W.C. Lineberger, "Photodetachment Spectroscopy of C₂⁻ Autodetaching Resonances," J. Chem. Phys. **73**, 4419 (1980).

#### 80JOR/CAR

F.S. Jorgensen, L. Carlsen and F. Duus, "The Electronic Structure of Propyl 3-Mercaptocrotonate Studied by Photoelectron Spectroscopy," Acta Chem. Scand. **B34**, 695 (1980).

### 80KAÌ/TEŚ

W. Kaim, H. Tesmann and H. Bock, "Me₃C-, Me₃Si-, Me₃Ge-, Me₃Sn- und Me₃Pb-substituierte Benzol- und Naphthalin-Derivate und ihre Radikalanionen," Chem. Ber. 113, 3221 (1980).

### 80KEE/CAS

R.G. Keesee and A.W. Castleman, Jr., "Heats of Formation of SO₂Cl⁻ and (SO₂)₂Cl⁻," J. Am. Chem. Soc. 102, 1446 (1980).

### 80KEE/CAS2

R.G. Keesee and A.W. Castleman, Jr., "Gas Phase Studies of Hydration Complexes of Cl⁻ and I⁻ and Comparison to Electrostatic Calculations in the Gas Phase," Chem. Phys. Lett. 74, 139 (1980).

### 80KEE/LEE

R.G. Keesee, N. Lee and A.W. Castleman, Jr., "Properties of Clusters in the Gas Phase: V. Complexes of Neutral Molecules onto Negative Ions," J. Chem. Phys. 73, 2195 (1980).

### 80KLA/BÚT

L. Klasinc, V. Butkovic, I. Novak, M. Mihalic, R. Toso and V. Sunjic, "Application of Photoelectron Spectroscopy to Biologically Active Molecules and Their Constituent Parts. VII. N-Cyanoazomethines," Gazz. Chim. Ital. 110, 287 (1980).

### 80KOL

H. Kollmar, J. Am. Chem. Soc. 102, 2617 (1980).

# 80KOP/COM

I. Koppel and M.B. Comisarow, "Ab Initio SCF LCAO MO Calculations of Molecules. I. Calculation of Proton Affinities. General Comparison with Experiment," Organic Reactivity (Tartu State University), Engl. Ed. XVII, 495 (1980).

# 80KRA

M.O. Krause, "Photoionization of Atomic Silver between 17 and 41 eV," J. Chem. Phys. 72, 6474 (1980).

#### 80KUD/KUD

A.P. Kudchadker and S.A. Kudchadker, "Indan and Indenes" API Monograph 714-80 (American Petroleum Institute, Washington, DC, 1980).

#### 80LEB/MAS

N.D. Lebedeva, T.N. Masalitinova, V.L. Ryadnenko and O.N. Mon'yakova, Zh. Prikl. Khim. 53, 2444 (1980).

#### 80LEE/KEE

N. Lee, R.G. Keesee and A.W. Castleman, Jr., "The Properties of Clusters in the Gas Phase. IV. Complexes of H₂O and HNO_X Clustering on NO_X-," J. Chem. Phys. 72, 1089 (1980).

#### 80LEU/HEI

W. Leupin, E. Heitbronner and J. Wirz, "The Photoelectron Spectrum of 2-Methylbenzotriazole," J. Molec. Str. 68, 329 (1980).

#### 80LLÒ/AGO

J.R. Lloyd, W.C. Agosta and F.H. Field, "Gaseous Anion Chemistry. Hydrogen-Deuterium Exchange in Mono- and Dialcohol Alkoxide Ions: Ionization Reactions in Dialcohols," J. Org. Chem. 45, 3483 (1980).

#### 80MAI/THO

J.P. Maier and F. Thommen, "Radiative and Nonradiative Decay Rates of State Selected H-(C=C)- $_2$ H +, D-(C=C)- $_2$ D +,  $_4$ R Determined by a Photoelectron-Photoion Coincidence Technique," J. Chem. Phys. 73, 5616 (1980).

### 80MAJ/SVA

V. Majer, L. Svab and V. Svoboda, J. Chem. Thermodyn. 12, 843 (1980).

#### 80MAJ/WAG

V. Majer, Z. Wagner, V. Svoboda and V. Cadek, J. Chem. Thermodyn. 12, 387 (1980).

#### 80MAL/ALI

I.P. Malkerova, A.S. Alikhanyan and V.I. Gorgoraki, "Heats of Formation of Molybdenum Sulphide Fluorides MoSF₃ and MoSF₄," Zh. Neorganich. Khim. 25, 3181 (1980); Engl. Trans., Russ. J. Inorg. Chem. 25, 1742 (1980).

#### 80MAL/ALI2

I.P. Malkerova, A.S. Alikhanyan, V.S. Pervov, V.D. Butskii and V.I. Gorgoraki, "Composition of the Gas Phase over Molybdenum Thiofluoride MoSF₃ [Molybdenum Sulphide Trifluoride]," Zh. Neorgranich. Khim. 25, 2067 (1980); Engl. Trans., Russ. J. Inorg. Chem. 25, 1145 (1980).

### 80MAR/HEL

H.-D. Martin, G. Heller, B. Mayer and H.-D. Beckhaus, Chem. Ber. 113, 258 (1980).

# 80MAU

M. Meot-Ner (Mautner), "Ion Thermochemistry of Low Volatility Compounds in the Gas Phase. 3. Polycyclic Aromatics: Ionization Energies, Proton, and Hydrogen Affinities. Extrapolations to Graphite," J. Phys. Chem. 84, 2716 (1980).

#### 80MCD/CHO

R.N. McDonald, A.K. Chowdhury and D.W. Setser, "Gas Phase Generation of Phenylnitrene Anion Radical: Proton Affinity and Heat of Formation of PhN- and Its Clustering with ROH Molecules," J. Am. Chem. Soc. 103, 6599 (1981).

#### 80MCD/CHO2

R.N. McDonald, A.K. Chowdhury and D.W. Setser, "Hypovalent Radicals. 4. Gas Phase Studies of the Ion-Molecule Reactions of Cyclopentadienylidene Anion Radical in a Flowing Afterglow," J. Am. Chem. Soc. 102, 6491 (1980).

### 80MCL/MCG

F.W. McLafferty and D.C. McGilvery, "Gaseous HCN+, HNC+ and HCNH+ Ions," J. Am. Chem. Soc. 102, 6189 (1980).

### 80MEI/HSI

G.G. Meisels, T. Hsieh, and J.P. Gilman, "Ion Fragmentation from Noninterconverting Electronic States," J. Chem. Phys. 73, 4126 (1980).

#### 80MIK/ZAI

A.I. Mikaya and V.G. Zaikin, "Determination of the Difference in Enthalpies of Formation of the cis- and trans-Isomers of Bicyclo[4.3.0]Nonane and Bicyclo[4.4.0]Decane Using Appearance Potentials," Izvest. Akad. Nauk SSSR, Ser. Khim. 6, 1286 (1980).

#### 80MOF

J.B. Moffat, J. Mol. Struct. 62, 213 (1980).

#### 80MUR

E. Murad, "Thermochemical Properties of Gaseous FeO and FeOH," J. Chem. Phys. 73, 1381 (1980).

#### 80MUR/HIL

E. Murad and D.L. Hildenbrand, "Dissociation Energies of GdO, HoO, ErO, TmO, and LuO. Correlation of Results for the Lanthanide Monoxide Series," J. Chem. Phys. 73, 4005 (1980).

#### 80NAN/BEN

P.S. Nangia and S.W. Benson, J. Am. Chem. Soc. 102, 3105 (1980).

#### 80NEL/KÉS

S.F. Nelsen, C.R. Kessel, L.A. Grezzo and D.J. Steffek, "Thermodynamic Destabilization of N-Centered Radical Cations by a  $\gamma$ -Keto Group," J. Am. Chem. Soc. 102, 5482 (1980).

#### 80NIK/SOR

M.I. Nikitin, I.D. Sorokin, E.V. Skokan and L.N. Sidirov, "Negative Ions in the Saturated Vapors of the Potassium Fluoride - Hafnium Tetrafluoride and Potassium Fluoride - Beryllium Difluoride Systems," Russ. J. Phys. Chem. 54, Russ:1337 (1980).

#### 80NIS/SAK

K. Nishiyama, M. Sakiyama, S. Seki, H. Horita, T. Otsubo and S. Misumi, Bull. Chem. Soc. Jpn. 53, 869 (1980).

#### 80NOE/NIB

A.J. Noest and N.M.M. Nibbering, "Homoconjugation vs. Charge Dipole Stabilization Interaction Effects in the Stabilization of Carbanions in the Gas Phase," J. Am. Chem. Soc. 102, 6427 (1980).

### 80PAL/NIS

M.H. Palmer and J.D. Nisbet, "The Molecular and Electronic Structure of Homoaromatic Compounds: cis,cis,cis-Cyclonona-1,4,7-triene and 1,4,7-Trioxonin; A Study by Photoelectron Spectroscopy and Ab Initio Molecular Orbital Methods," J. Molec. Str. 67, 65 (1980).

### 80POL/HEH

S.K. Pollack and W.J. Hehre, Tetrahedron Lett. 21, 2483 (1980).

### 80PRY

W.A. Pryor, "Frontiers of Free Radical Chemistry," Academic Press, NY, 1980.

### 80PYA/GUS

A.T. Pyatenko, A.V. Gusarov and L.N. Gorokhov, "Thermochemical Properties of Negative Ions in Vapor over UF4," Teplofiz. Vys. Temperatur. 18, 1154. CA: 92, 7246p (1980).

# 80RED/FRE

V.V. Redchenko, Y.F. Freimanis and Y.Y. Dregeris, "Photoelectron Spectroscopy of 2,3-Disubstituted Naphthoquinones," Zh. Obsh. Khim. 50, 1847 (1980); English trans.: J. Gen. Chem. USSR 50, 1507 (1980).

### 80ROG/CHO

D.W. Rogers, L.S. Choi, R.S. Girellini, T.J. Holmes and N.L. Allinger, J. Phys. Chem. 84, 1810 (1980).

#### 80ROS/STC

H.M. Rosenstock, R. Stockbauer and A.C. Parr, "Photoelectron-photoion Coincidence Study of the Bromobenzene Ion," J. Chem. Phys. 73, 773 (1980).

# 80ROS/STO2

H.M. Rosenstock, R. Stockbauer and A.C. Parr, "Photoelectron-photoion Coincidence Study of Benzonitrile," J. Chim. Phys. 77, 745 (1980).

#### 80ROT/KLA

W.R. Roth, F.-G. Klarner and H.W. Lennart, Chem. Ber. 113, 1818 (1980).

# 80ROT/MAT

E.W. Rothe, B.P. Mathur and G.P. Reck, "Measurement of Boron Trihalide Electron Affinites: Correlation with Boron-Nitrogen Adduct Strengths," Inorg. Chem. 19, 829 (1980).

#### 80SAB

R. Sabbah, Thermochim. Acta 41, 33 (1980).

#### 80SAB2

R. Sabbah, Thermochim. Acta 35, 73 (1980).

#### 80SAB/SKO

R. Sabbah and S. Skoulika, Thermochim. Acta 36, 179 (1980).

#### 80SAR/WOR

R. Sarneel, C.W. Worrell, P. Pasman, J.W. Verhoeven and G.F. Mes, "The Photoelectron Spectra of 4-Methylene Thiacyclohexane Derivatives Through-Bond Interaction," Tetrahedron 36, 3241 (1980).

#### 80SAT/SAK

T. Sato-Toshima, M. Sakiyama and S. Seki, Bull. Chem. Soc. Jpn. 53, 2462 (1980).

#### 80SCH/ILL

H.U. Scheunemann, E. Illenberger and H. Baumgartel, "Dissociative Electron Attachment to CCl₄, CHCl₃, CH₂Cl₂, and CH₃Cl," Ber. Bunsenges Phys. Chem. **84**, 580 (1980).

### 80SCH/RAM

R. Schubert, D.V. Ramana and H.-F. Grutzmacher, "Freisetzung kinetischer Energie und Hammond-Postulat bei der intramolekularen aromatischen Substitution in 2-Stilbazol-Ionen," Chem. Ber. 113, 3758 (1980).

#### 80SCH/SCH

R. Schulz, A. Schweig, C. Wentrup and H.-W. Winter, "2-Vinylidene-2H-indene," Angew. Chem. Int. Ed. 19, 821 (1980).

# 80SCH/SCH2

R. Schulz and A. Schweig, "Direct Detection of Dicyanothioketene in the Gas Phase," Angew. Chem. Int. Ed. 19, 740 (1980).

# 80SCH/THI

A. Schweig and W. Thiel, J. Comput. Chem. 1, 129 (1980).

### 80SCH/THO

A. Schweig, N. Thon, S.F. Nelsen and L.A. Grezzo, "Conformational Study of 1,2-Dimethylhexahydropyridazine by Variable-Temperature Photoelectron Spectroscopy," J. Am. Chem. Soc. 102, 7438 (1980).

# 80SEN/ABE

S.N. Senzer, R.N. Abernathy and F.W. Lampe, "GeH₅⁺ and the Proton Affinity of Monogermane," J. Phys. Chem. **84**, 3066 (1980).

#### 80SHU/BOY

B. Shushan and R.K. Boyd, "Unimolecular and Collision Induced Fragmentations of Molecular Ions of Polycyclic Aromatic Hydrocarbons," Org. Mass Spectrom. 15, 445 (1980).

## 80SID/NIK

L.N. Sidorov, M.I. Nikitin, E.V. Skokan and I.D. Sorokin, "Mass-Spectrometric Determination of Enthalpies of Dissociation of Gaseous Complex Fluorides into Neutral and Charged Particles. II. Heats of Formation of AIF4⁻ and KF2⁻," Int. J. Mass Spectrom. Ion Phys. 35, 203 (1980).

#### 80SID/SKO

L.N. Sidorov, E.V. Skokan, M.I. Nitikin and I.D. Sorokin, "Mass Spectrometric Determination of Enthalpies of Dissociation of Gaseous Complex Fluorides into Neutral and Charged Particles. III. Heat of Formation of UF₅⁻ and Electron Affinity of UF₅," Int. J. Mass Spectrom. Ion Phys. 35, 215 (1980).

#### 80STA/VOG

J.P. Stadelmann and J. Vogt, Int. J. Mass Spectrom. Ion Phys. 35, 83 (1980).

### 80STR/NEW

G.E. Streit and T.W. Newton, "Negative Ion-Uranium Hexafluoride Charge Transfer Reactions," J. Chem. Phys. 73, 3178 (1980).

#### 80SVO/UCH

V. Svoboda, V. Uchytilova, V. Majer and J. Pick, Collect. Czech. Chem. Commun. 45, 3233 (1980).

#### 80TED/VID

J.M. Tedder and P.H. Vidaud, "Charge Exchange Mass Spectra of Thiophene, Pyrrole and Furan," J. Chem. Soc. Faraday Trans. II 76, 1516 (1980).

#### 80TEL/RAB

V.I. Tel'noi and I.B. Rabinovich, Russ. Chem. Rev. 49, 603 (1980).

#### 80TEP/YAN

A.B. Teplitsky, I.K. Yanson, O.T. Glukhova, A. Zielenkiewicz, W. Zielenkiewicz and K.L. Wierzchowski, Biophys. Chem. 11, 17 (1980).

### 80TER/HEE

J.K. Terlouw, W. Heerma, J.L. Holmes and P.C. Burgers, "Structure and Formation of Gaseous  $[C_4H_6O]$  + Ions. 1-The Enolic Ions  $[CH_2 = C(OH) - CH = CH_2]$  + and  $[CH_2 = CH - CH = CH(OH)]$  + and Their Relationship with Their Keto Counterparts," Org. Mass Spectrom. 15, 582 (1980).

# 80THA/EIS

M.G. Thackston, F.L. Eisele, W.M. Pope, H.W. Ellis, E.W. McDaniel and I.R. Gatland, "Mobility of Cl⁻ Ions in Xe Gas and the Cl⁻-Xe Interaction Potential," J. Chem. Phys. 73, 3183 (1980).

#### 80TRA

J.C. Traeger, Int. J. Mass Spectrom. Ion Phys. 32, 309 (1980).

#### SOURE

A.B. Trentwith, J. Chem. Soc. Trans. Farad. I 76, 166 (1980).

#### 80TSV/ALE

V.G. Tsvetkov, V.A. Aleksandrov, V.N. Glushakova, N.A. Skorodumora and G.M. Kol'yakova, Russ. J. Gen. Chem. 50, 198 (1980).

#### 80VAN

J. Van der Greef Ph. D. Thesis, Univ. Amsterdam (1980). 80VAN/TER

H. Van Dam, A. Terpstra, D.J. Stufkens and A. Oskam, "UV Photoelectron Spectroscopic Studies of the Metal-Olefin Bond. 2. Bonding in (β-Diketonato)rhodium(I) and -iridium(I) Carbonyl and Olefin Complexes," Inorg. Chem. 19, 3448 (1980).

#### 80VER/SAT

A.N. Vereshchagin, A.M. Salikhova, V.V. Zverev, F.G. Saitkulova and Y.Y. Villem, "Physical Properties, Conformations and Intramolecular Interactions of α,α-Dichlorodimethyl Ether," Izv. Akad. Nauk SSSR, Ser. Khim. 997 (1980); Engl. trans., Bull. Acad. Sci. USSR, Div. Chem. Sci. 29, 706 (1980).

#### 80VIG/PER

A.A. Vigiano, R.A. Perry, D.L. Albritton, E.E. Ferguson and F.C. Fehsenfeld, "The Role of H₂SO₄ in Stratospheric Negative Ion Chemistry," J. Geophys. Res. 85, 4551 (1980).

#### 80VIL/PER

R. Vilcu and S. Perisanu, Rev. Roum. Chim. 25, 619 (1980).

# 80VON/BIE

W. Von Niessen, G. Bieri and L. Asbrink, "30.4 nm He(II) Photoelectron Spectra of Organic Molecules. Part III. Oxo-compounds (C, H, O)," J. Electron Spectrosc. Rel. Phenom. 21, 175 (1980).

### 80VOV/DUD

V.I. Vovna, A.S. Dudin, S.N. Lopatin and E.G. Rakov, "Photoelectronic Spectra of Hexafluorides of Transition Metals with Open Shells (ReF₆ and OsF₆)," Koord. Khim. 6, 1580 (1980).

#### 80WAN/FRA

J.-S.Wang and J.L. Franklin, "Reactions and Energy Distributions in Dissociative Electron Capture Processes in Sulfuryl Halides," Int. J. Mass Spectrom. Ion Phys. 36, 233 (1980).

#### 80WIG/BÉA

C.A. Wight and J.L. Beauchamp, "Acidity, Basicity, and Ion/Molecule Reactions of Isocyanic Acid in the Gas Phase by ICR Spectroscopy," J. Phys. Chem. 84, 2503 (1980).

#### 80WIL/BAE

G.D. Willett and T. Baer, J. Am. Chem. Soc. 102, 6774 (1980). 80WLO/LUC

S. Wlodek, Z. Luczynski and H. Wincel, "Stabilities of Gas-Phase  $NO_3$ -.(HNO₃)_n,  $n \le 6$ , Clusters," Int. J. Mass Spectrom. Ion Phys. 35, 39 (1980).

#### 80WOL/HOL

P. Wolkoff, J.L. Holmes and F.P. Lossing, "Ubiquitous [Cyclopentenium] + Formation from C₆H₁₀ Molecular Ions by Methyl Loss, and from Higher Homologues," Adv. Mass Spectrom. 8A, 743 (1980).

### 80ZVÉ/VIL

V.V. Zverev and Y.Y. Villem, "Ionization Potentials of Phosphoryl Compounds," Zh. Strukt. Khim. 21, 30 (1980); English trans., J. Struct. Chem. (USSR), 21, 22 (1980).

### 81AJO/CAS

Flexibility of the Dehydroalanine Derivatives: Molecular and Electronic Structure of (Z)-N-Acetyldehydrophenylalanine," Tetrahedron 37, 3507 (1981).

#### 81AJO/CAS2

D. Ajo, M. Casarin, G. Granozzi and I. Fragala, "UV Photoelectron Spectra of 5- and 6-Azauracil," Chem. Phys. Lett. 80, 188 (1981).

#### 81AKI/HAR

I. Akiyama, R.G. Harvey and P.R. LeBreton, "Ultraviolet Photoelectron Studies of Methyl-Substituted Benz[a]anthracenes," J. Am. Chem. Soc. 103, 6330 (1981).

# 81ALD/ARR

R.W. Alder, R.J. Arrowsmith, A. Casson, R.B. Sessions, E. Heilbronner, B. Kovac, H. Huber and M. Taagepera, J. Am. Chem. Soc. 103, 6137 (1981).

### 81ALL/GLA

N.L. Allinger, J.A. Glaser, H.E. Davis and D.W. Rogers, J. Org. Chem. 46, 658 (1981).

#### 81ALL/MIG

S.H. Allam, M.D. Migahed and A. El Khodary, "Electron Impact Study of Nitrobenzene and Nitromethane," Int. J. Mass Spectrom. Ion Phys. 39, 117 (1981).

### 81AND/DEK

E.L. Andersen, R.L. DeKock and T.P. Fehlner, "Electronic Structure of Diiron Ferraboranes," Inorg. Chem. 20, 3291 (1981).

### 81ARÌ/ARM

N. Aristov and P. Armentrout, "Bond Energy-Bond Order Relations in Transition-Metal Bonds: Vanadium," J. Am. Chem. Soc. 106, 4065 (1984).

#### 81ARM/BEA

P.B. Armentrout and J.L. Beauchamp, "Ion Beam Studies of the Reactions of Atomic Cobalt Ions with Alkanes: Determination of Metal-Hydrogen and Metal-Carbon Bond Energies and an Examination of the Mechanism by which Transition Metals Cleave Carbon-Carbon Bonds," J. Am. Chem. Soc. 103, 784 (1981).

### 81ARM/BEA2

P. Armentrout and J. Beauchamp, "Cobalt Carbene Ion: Reactions of  $Co^+$  with  $C_2H_4$ , cyclo- $C_3H_6$ , and cyclo- $C_2H_4O$ ," J. Chem. Phys. 74, 2819 (1981).

#### 81ARM/HAL

P. B. Armentrout, L. F. Halle and J. L. Beauchamp, "Periodic Trends in Transition Metal-Hydrogen, Metal-Carbon, and Metal-Oxygen Bond Dissociation Energies. Correlation with Reactivity and Electronic Structure," J. Am. Chem. Soc. 103, 6501 (1981).

#### 81ARM/TAR

P. B. Armentrout, S. M. Tarr, A. Dori and R. S. Freund, "Electron Impact Ionization Cross Section of Metastable N₂ ( $A^2\Sigma_u^+$ )," J. Chem. Phys. 75, 2788 (1981).

#### 81ARS/ZVE

R. P. Arshinova, V. V. Zverev, Y. Y. Villem and N. V. Villem, "Ionization of Potentials, Electron Structures, and Steric Structures of Tervalent-Phosphorus Di- and Tri-Esters," Zh. Obs. Khim. 51, 1757 (1980); English translation, J. Gen. Chem. (USSR) 51, 1503 (1982).

#### 81ASB/SVE

L. Asbrink, A. Svensson, W. Von Niessen and G. Bieri, "30.4 nm He(II) Photoelectron Spectra of Organic Molecules," J. Electron Spectrosc. Rel. Phenom. 24, 293 (1981).

#### 81AUE/PÉD

D. Aue, M. Pedley, and M.T. Bowers, unpublished result cited in: A. J. Illies, S. Liu and M. T. Bowers, "Formation and Structure of C₂H₄N⁺. Effect of Pressure and Reaction Exothermicity on Collision-Induced Dissociation Spectra," J. Am. Chem. Soc. 103, 5674 (1981).

### 81AUS

P. Ausloos, J. Am. Chem. Soc. 103, 3931 (1981).

#### 81AYA/WEN

J.A. Ayala, W.E. Wentworth and E.C.M. Chen, "Electron Attachment to Halogens," J. Phys. Chem. 85, 768 (1981).

### 81BAB/STR

L.M. Babcock and G.E. Streit, "Ion-Molecule Reactions of SF₆: Determination of I. P. (SF₆), A. P. (SF₅ +/SF₆), and D(SF₅-F)," J. Chem. Phys. 74, 5700 (1981).

#### 81BAB/STR2

L.M. Babcock and G.E. Streit, "Negative Ion-Molecule Reactions of SF₄," J. Chem. Phys. 75, 3864 (1981).

#### 81BAI/CHI

V.N. Baidin, Y.V. Chizhov, M.M. Timoshenko, Y.A. Ustynyuk and I.I. Kritskaya, "He(I) Photoelectronic Spectra of Organic Compounds with a Mercury Atom Attached to an sp² Hybridized Carbon," Izv. Akad. Nauk SSSR, Ser. Khim. 12, 2831 (1981).

### 81BAI/CHI2

V.N. Baidin, Y.V. Chizhov, M.M. Timoshenko, O.K. Sokolikova, Y.K. Grishin and Y.A. Ustynyuk, "The Photoelectron Spectra of Alkylmercury Chlorides," Zh. Strukt. Khim. 22, 164 (1981).

# 81BAK/ARM

A.D. Baker, G.H. Armen and Y. Guang-di, "Photoelectron Spectra of Alkyl Aryl Selenides. Electronic and Steric Factors in the Observation of Rotamers," J. Org. Chem. 46, 4127 (1981).

#### 81BAL/GIG

G. Balducci, G. Gigli and M. Guido, "Dissociation Energies of the Molecules CrPO₂(g) and CoO(g) by High-temperature Mass Spectrometry," J. Chem. Soc. Faraday Trans. II 77, 1107 (1981).

#### 81BAL/GIG2

G. Balducci, G. Gigli and M. Guido, "Thermodynamic Study of Gaseous Ternary Oxide Molecules. The Europium-Vanadium-Oxygen System," J. Chem. Phys. 79, 5623 (1981).

### 81BAR/HAY

J.E. Bartmess, R.L. Hays, H.N. Khatri, R.N. Misra and S.W. Wilson, "Elimination, Fragmentation and Proton Transfer in 1,3-Dithianes and 1,3-Dithiolanes in the Gas Phase," J. Am. Chem. Soc. 103, 4746 (1981).

# 81BEC/HOF

E. Beck, P. Hofmann and A. Sieber, "Zur Elektronenstruktur Vicinaler Triketone: Bicyclo[3.1.0]hexan-2,3,4-trione," Tetrahedron Lett. 22, 4683 (1981).

#### 81BEL/PER

T.N. Bell, K.A. Perkins and P.G. Perkins, J. Chem. Soc. Faraday Trans. I 77, 1779 (1981).

#### 81BER/BEA

D.W. Berman, J.L. Beauchamp and L.R. Thorne, "Ion Cyclotron Resonance and Photoionization Investigations of the Thermochemistry and Reactions of Ions Derived from CF₃I," Int. J. Mass Spectrom. Ion Phys. 39, 47 (1981).

#### 81BER/BOM

D.W. Berman, D.S. Bomse and J.L. Beauchamp, "Photoionization Threshold Measurements for CF₂ Loss from Perfluoropropylene, Perfluorocyclopropane, and Trifluoromethylbenzene. The Heat of Formation of CF₂ and the Potential Energy Surface for  $C_3F_6$  Neutrals and Ions," Int. J. Mass Spectrom. Ion Phys. 39, 263 (1981).

# 81BER/GAR

M. Berry, C.D. Garner, I.H. Hillier and A.A. MacDowell, "Electronic Structure and Photoelectron Spectrum of Tris(π-allyl)chromium, Cr(η3-C₃H₅)₃," Inorg. Chem. 20, 1962 (1981).

### 81BEV/SAN

J.W. Bevan, C. Sandorfy, F. Pang and J.E. Bogg, "The Photoelectron Spectrum of Methylisocyanide-borane," Spectrochimica Acta 37A, 601 (1981).

#### BIBIA/LIF

S.E. Biali, C. Lifshitz and Z. Rappoport, "Thermochemistry and Unimolecular Reactions of Ionized 1,2-Dimesityl-2-phenylethanone and 2,2-Dimesityl-1-phenylethanone and Their Enols and Enol Acetates in the Gas Phase," J. Am. Chem. Soc. 103, 2896 (1981).

#### 81BIE/ASB

G. Bieri, L. Asbrink and W. Von Niessen, "30.4 nm He(II) Photoelectron Spectra of Organic Molecules. Part IV. Fluoro-compounds (C, H, F)," J. Electron Spectrosc. Rel. Phenom. 23, 281 (1981).

#### 81BIE/SCH

V.M. Bierbaum, R.J. Schmidt, C.H. DePuy, R.H. Mead, P.A. Schulz and W.C. Lineberger, "Reactions of Carbanions with Triplet and Singlet Molecular Oxygen," J. Am. Chem. Soc. 103, 6262 (1981).

### 81BIE/VON

G. Bieri, W. Von Niessen, L. Asbrink and A. Svensson, "The He(II) Photoelectron Spectra of the Fluorosubstituted Ethylenes and Their Analysis by the Green's Function Method," Chem. Phys. 60, 61 (1981).

#### 81BIS/COL

P. Biscarini, F.P. Colonna, M. Guerra and G. Distefano, "Mercury-Sulphur Bonding in Some Di(alkylthio)mercury(II) Compounds Studied by Means of Ultraviolet Photoelectron Spectroscopy," Inorg. Chim. Acta 50, 243 (1981).

### 81BIS/GLE

P. Bischof, R. Gleiter, K. Gubernator, R. Haider, H. Musso, W. Schwarz, W. Trautmann and H. Hopf,
"Photoelectronen-spektroskopische Untersuchungen an Divinylcyclobutanen," Chem. Ber. 114, 994 (1981).

## 81BOC/BRA

H. Bock, G. Brahler, D. Dauplaise and J. Meinwald, "One-Electron Oxidation of 1,8-Chalcogen-Bridged Naphthalenes," Chem. Ber. 114, 2622 (1981).

### 81BOC/DAM

H. Bock, R. Dammel and L. Horner, "Die Pyrolyse von Methylazid," Chem. Ber. 114, 220 (1981).

#### 81BOC/ECK

M.C. Bohm, M. Eckert-Maksic, R. Gleiter, J. Grobe and D. Le Van, "Die He(I)-Photoelektronenspektren von (CH₃)₂PSCH₃, (CH₃)₂AsSCH₃, (CH₃)₂AsSeCH₃ und (CH₃)₂PSeCH₃," Chem. Ber. 114, 2300 (1981).

#### 81BOC/HIR

H. Bock, T. Hirabayashi and S. Mohmand, "Thermische Erzeugung von Alkyl- und Halogenketenen," Chem. Ber. 114, 2595 (1981).

#### 81BOC/RIE

H. Bock, W. Ried and U. Stein, "Analyse und Optimierung von Gasphasen-Reaktionen, 19. Pyrolyse von Cyclobuten-1,2-dionen zu Acetylenen," Chem. Ber. 114, 673 (1981).

#### 81BOC/SCH

H. Bock, W. Schulz and M. Schmidt, "P. E. Spektren und Molekuleigenschaften. 89. Ionissationsmuster und Konformation von Cyclo-Polythianen (H₂CS)_n," Z. Anorg. Allg. Chem. 474, 199 (1981).

#### 81BOC/SCH2

H. Bock, W. Schulz and U. Stein, "Radikalionen, 47. Notiz: Die Strukturanderung wahrend der Einelektronen-Oxidation von Bis(dimethylamino)disulfid," Chem. Ber. 114, 2632 (1981).

#### 81BOH/ECK

M.C. Bohm, M. Eckert-Maksic, R. Gleiter, J. Grobe and D. Le Van, "Die He(I)-Photoelektronenspektren von (CH3)2PSCH3, (CH3)2AsSCH3, (CH3)2AsSCH3 und (CH3)2PScCH3," Chem. Ber. 114, 2300 (1981).

# 81BOM/BER

D.S. Bomse, D.W. Berman and J.L. Beauchamp, J. Am. Chem. Soc. 103, 3967 (1981).

### 81BOM/DAN

R. Bombach, J. Dannacher, J.-P. Stadelmann and J. Vogt, "The Fragmentation of Formaldehyde Molecular Cations: The Lifetime of  ${\rm CD_2O^+}$  ( ${\rm A^2B_1}$ )," Chem. Phys. Lett.  $\mathcal{T}$ , 399 (1981).

#### 81BOU/DAG

G. Bouchoux and J. Dagaut, "Mechanisms of Formation of [M-HCO]⁺ and [M-C₆H₅CO]⁺ Ions from Isomers of 1,4-Benzodioxin Derivatives," Org. Mass Spectrom. 16, 246 (1981).

### 81BOU/HOP

G. Bouchoux and Y. Hoppilliard, "Fragmentation Mechanisms of Isoxazole," Org. Mass Spectrom. 16, 459 (1981).

#### 81BRÙ/CIL

G. Bruno, E. Ciliberto, I. Fragala and G. Granozzi, "The Electronic Structure of Hydrotris(1-pyrazolyl)borate Ligand by He-I and He-II Photoelectron Spectroscopy," Inorg. Chim. Acta 48, 61 (1981).

### 81BUC/FOR

G. Buckley, W.G.F. Ford and A.S. Rodgers, Thermochim. Acta 49, 199 (1981).

# 81BUF/PAR

R.D. Buff, A.C. Parr and A.J. Jason, "The Photoionization of Allyl Chloride from Onset to 20 eV," Int. J. Mass Spectrom. Ion Phys. 40, 31 (1981).

#### 81BUŔ/JEN

B.E. Bursten, J.R. Jensen, D.J. Gordon, P.M. Treichel and R.F. Fenske, "Electronic Structure of Transition-Metal Nitrosyls.  $X(\alpha)$ -SW and Configuration Interaction Calculations of the Valence Ionization Potentials of Co(CO)₃NO and Mn(CO)₄NO," J. Am. Chem. Soc. 103, 5226 (1981).

### 81CAB/COW

D.E. Cabelli, A.H. Cowley and M.J.S. Dewar, "UPE Studies of Conjugation Involving Group 5A Elements. 2. Substituted tert-Butylacetylenes," J. Am. Chem. Soc. 103, 3290 (1981).

### 81CAB/COW2

D.E. Cabelli, A.H. Cowley and M.J.S. Dewar, "UPE Studies of Conjugation Involving Group 5A Elements. 1. Phenylphosphines," J. Am. Chem. Soc. 103, 3286 (1981).

# 81CAL/HÚB

D.C. Calabro, J.L. Hubbard, C.H. Blevins II, A.C. Campbell and D.L. Lichtenberger, "The Effects of Methyl Group Substitution on Metal-Coordinated Cyclopentadienyl Rings. The Core and Valence Ionizations of Methylated Tricarbonyl (n5-cyclopentadienyl) metal Complexes," J. Am. Chem. Soc. 103, 6839 (1981).

#### 81CAL/LIC

D.C. Calabro and D.L. Lichtenberger, "Valence Ionizations of Olefins Coordinated to Metals. Olefin Dicarbonyl( $\eta$ 5-(methyl and pentamethyl)cyclopentadienyl)manganese Complexes," J. Am. Chem. Soc. 103, 6846 (1981).

#### 81CAR/GAN

F. Carnovale, R.-H. Gan, J.B. Peel and A.B. Holmes, "Photoelectron Spectroscopic Studies of Some 2-Azabicyclo[2.2.2]octan-5-one and Bicyclo[2.2.2]octanone Derivatives," J. Chem. Soc. Perkin Trans. II 7, 991 (1981).

#### 81CAU/GIA

C. Cauletti, C. Giancaspro, A. Monaci, M.N. Piancastelli, "Free Energy Relationships of Ionization Energies Measured by Ultraviolet Photoelectron Spectroscopy in Substituted Pyrroles," J. Chem. Soc. Perkin Trans. II 7, 656 (1981).

#### 81CAV/CON

K.J. Cavell, J.A. Connor, G. Pilcher, M.A.V. Ribeiro da Silva, D.M.C. Ribeiro da Silva, Y. Vipmani and M.T. Zafarani-Moattar, J. Chem. Soc. Faraday Trans. I 77, 1585 (1981).

#### 81CAV/GAR

K.J. Cavell, C.D. Garner, J.A. Martinho-Simoes, G. Pilcher, H. Al-Samman, H.A. Skinner, G. Al-Tekhin, I.B. Walton and M.T. Zafarani-Moattar, J. Chem. Soc. Faraday Trans. I 77, 2927 (1981).

#### 81CHA/FIN

S. Chattorpadhyay, G.L. Findley and S.P. McGlynn, "Photoelectron Spectroscopy of Phosphites and Phosphates," J. Electron Spectrosc. Rel. Phenom. 24, 27 (1981).

#### 81CHE/GAB

A.P. Chetverikov, V.Y. Gabeskiriya and V.V. Puchkov, "Ionization of Uranium, Plutonium, Americium, Rhenium, Curium, and Californium on a Rhenium Surface," Sov. Phys. Tech. Phys. 26, 73 (1981).

#### 81CHE/HAL

P.T. Chesky and M.B. Hall, "Electronic Structure of Metal Clusters. 1. Photoelectron Spectra and Molecular Orbital Calculations on (Alkylidyne)tricobalt Nonacarbonyl Clusters," Inorg. Chem. 20, 4419 (1981).

### 81CHI/HYM

J.S. Chickos, A.S. Hyman, L.H. Ladon and J.F. Liebman, J. Org. Chem. 46, 4294 (1981).

# 81CHO/KIR

D.P. Chong, C. Kirby, W.M. Lau, T. Minato and N.P.C. Westwood, "Difluoroborane, HBF₂. A Study by HeI Photoelectron Spectroscopy, and Ab Initio Methods Including Perturbation Corrections to Koopmans' Theorem," Chem. Phys. 59, 75 (1981).

## 81CIL/CON

E. Ciliberto, G. Condorelli, P.J. Fagan, J.M. Manriquez, I. Fragala and T. J. Marks, "Photoelectron Spectroscopy of f-Element Organometallic Complexes. 4. Comparative Studies of Bis(pentamethylcyclopentadienyl)Dichloride and Dimethyl Complexes of Uranium(IV), Thorium(IV), and Zirconium(IV)," J. Am. Chem. Soc. 103, 4755 (1981).

### 81CLA/ROB

E. Clar, J.M. Robertson, R. Schlogl and W. Schmidt, "Photoelectron Spectra of Polynuclear Aromatics. 6. Application to Structural Elucidation: 'Circumanthracene'," J. Am. Chem. Soc. 103, 1320 (1981).

#### 81CLA/SOW

P. Clare and D.B. Sowerby, "Electron Impact Ionisation Energies of Some Halo-cyclotriphosphazenes," J. Inorg. Nucl. Chem. 43, 477 (1981).

### 81COL/FRO

D. Colbourne, D.C. Frost, C.A. McDowell and N.P.C. Westwood, "The He(I) Photoelectron Spectra of the Alkyl Hypochlorites, ROCl (R = Me, Et and t-Bu)," J. Electron Spectrosc. Rel. Phenom. 23, 109 (1981).

#### 81COS/LLO

N.C.V. Costa, D.R. Lloyd, P.J. Roberts, D.W.J. Cruickshank, E. Avramides, A. Chablo, G.A.D. Collins, B. Dobson and I.H. Hillier, "Experimental and Theoretical Study of the Electronic Structures of Thionyl Fluoride, Sulphur Tetrafluoride and Sulphur Tetrafluoride Oxide," J. Chem. Soc. Faraday Trans. II 77, 899 (1981).

## 81DAB/HER

I. Dabrowski and G. Herzberg, "The Spectrum of HeAr+," J. Molec. Spectrosc. 89, 491 (1981).

#### 81DAL/NIB

J.W. Dallinga, N.M.M. Nibbering and G.J. Louter, "Formation and Structure of [CgHgO] + Ions, Generated from Gas Phase Ions of Phenylcyclopropylcarbinol and 1-Phenyl-1-(hydroxymethyl)cyclopropane," Org. Mass Spectrom. 16, 4 (1981).

## 81DEH/POL

P.M. Dehmer and E.D. Poliakoff, "Photoionization of the Ar₂ Dimer," Chem. Phys. Lett. 77, 326 (1981).

#### 81DEP/BIE

C.H. DePuy and V.M. Bierbaum, "Gas Phase Sulfur Anions: Synthesis and Reactions of  $H_2NS^-$  and Related Ions," Tetrahedron Lett. 22, 5129 (1981).

#### 81DOM/EAT

L.N. Domelsmith, T.A. Eaton, K.N. Houk, G.M. Anderson III, R.A. Glennon, A.T. Shulgin, N. Castagnoli, Jr. and P.A. Kollman, "Photoelectron Spectra of Psychotropic Drugs. 6. Relationships between Physical Properties and Pharmacological Actions of Amphetamine Analogues," J. Med. Chem. 24, 1414 (1981).

## 81DON/WAL

A.M. Doncaster and R. Walsh, "Kinetics of the Gas Phase Reaction between Iodine and Monosilane and the Bond Dissociation Energy D(H₃Si-H)," Int. J. Chem. Kinet. 13, 503 (1981).

#### 81DRA/GOR

J. E. Drake and K. Gorzelska, "The Photoelectron Spectra of Methyl(bromo)germanes," J. Electron Spectrosc. Rel. Phenom. 21, 365 (1981).

## 81DRE/BEC

C. Dreier, J. Becher, E. G. Frandsen and L. Henriksen, "Pyridinethiones - V. Spectroscopic Investigation and Electronic Structure of 3-Formyl-2(1H)-pyridones, -thiones and -selones," Tetrahedron 37, 2663 (1981).

### 81DUM/DUF

J.-M. Dumas, P. Dupuis, G. Pfister-Guillouzo and C. Sandorfy, "Ionization Potentials and Ultraviolet Absorption Spectra of Fluorocarbon Anesthetics," Can. J. Spectrosc. 26, 102 (1981).

## 81DYK/JON

J. M. Dyke, N. B. H. Jonathan, A. Morris and M. J. Winters, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. Part 13. Observation of the X³A" State of HO₂," Molec. Phys. 44, 1059 (1981).

## 81DYK/JON2

J. Dyke, N. Jonathan, A. Morris and M. Winter, "First Ionization Potential of the FCO (X²A') Radical Studied Using Photoelectron Spectroscopy," J. Chem. Soc. Faraday Trans. II 77, 667 (1981).

## 81EAD/WEI

R.A. Eades, D.A. Weil, M.R. Ellenberger, D.A. Dixon and C.H. Douglass, Jr., J. Am. Chem. Soc. 103, 5372 (1981).

# 81EIC/HEY

K. Eichler and H. Heydtmann, Int. J. Chem. Kinet. 13, 1107 (1981).

## 81ELB/DIE

S. Elbel and H. tom Dieck, "Die Stiborane Me₃SbX₂ (X = Me, Cl, Br, I) und SbCl₅ - im Vergleich mit Nebengruppenanaloga TaMe₅, TaCl₅ und NbCl₅," Z. Anorg. Allg. Chem. 483, 33 (1981).

#### 81ELB/LIE

S. Elbel, K. Lienert, A. Krebs and H. tom Dieck, "Phenylethin-Mustersonde fur Substituenteneffekte," Liebigs Ann. Chem. 1785 (1981).

## 81ELL/DIX

M.R. Ellenberger, D.A. Dixon and W.E. Farneth, J. Am. Chem. Soc. 103 5377 (1981).

## 81ELS/ALL

T. M. El-Sherbini, S. H. Allam, M. D. Migahed and A. M. Dawoud, "Mass Spectrometric Investigation of Aliphatic Aldehydes," Z. Naturforsch. 36a, 1334 (1981).

## 81ENG/COR

P.E. Engelking, R.R. Corderman, J.J. Wenddoski, G.B. Ellison, V.S. O'Niel and W.C. Lineberger, "Laser Photoelectron Spectroscopy of CH₂-, and the Singlet-Triplet Splitting in Methylene," J. Chem. Phys. **74**, 5460 (1981).

#### 81ERA/KOL

P.A. Erastov, V.P. Kolesov, L.N. Dityat'eva and Y.G. Golovanova, J. Chem. Thermodyn. 13, 663 (1981).

#### 81FAR/SRI

M. Farber and R. D. Srivastava, "Electron Impact Ionization of Ba(OH)₂ (g)," J. Chem. Phys. **74**, 2160 (1981).

#### 81FEI/COR

C.S. Feigerle, R.R. Corderman, S.V. Bobashev and W.C. Lineberger, "Binding Energies and Structure of Transition Metal Negative Ions," J. Chem. Phys. 74, 1580 (1981). [Superceded: 85HOT/LIN].

### 81FER/RIB

M.L.C.C.H. Ferrao, M.A.V. Ribeiro de Silva, S. Suradi, G. Pilcher and H.A. Skinner, J. Chem. Thermodyn. 13, 567 (1981).

#### 81FOR/MAI

P. Forster, J. P. Maier and F. Thommen, "Radiative and Non-Radiative Decay Rates of Alkyl Substituted Diacetylene Cations at Selected Energies within their 2A States Determined via Photoelectron-Photoion Coincidence Measurements," Chem. Phys. 59, 85 (1981).

## 81FRO/KIR

D.C. Frost, C. Kirby, C.A. McDowell and N.P.C. Westwood, "Preparation and HeI Photoelectron Spectra of the Dihaloboranes,  $HBX_2$  (X = Cl and Br)," J. Am. Chem. Soc. 103, 4428 (1981).

## 81FRO/MAC

D.C. Frost, C.B. MacDonald, C.A. McDowell and N.P.C. Westwood, "Preparation and HeI Photoelectron Spectra of the Halogen Thiocyanates, XSCN (X = Cl and Br)," J. Am. Chem. Soc. 103, 4423 (1981).

## 81FUJ/MCI

M. Fujio, R.T. McIver, Jr. and R.W. Taft, "Effects on the Acidities of Phenols from Specific Substituent-Solvent Interactions. Inherent Substituent Parameters from Gas Phase Acidities," J. Am. Chem. Soc. 103, 4017 (1981).

# 81FUR/PIA

C. Furlani, M.N. Piancastelli, C. Cauletti, F. Faticanti and G. Ortaggi, "He(I) and He(II) Photoelectron Spectra of Some Organomercury Compounds with Carbon  $\pi$ -Systems," J. Electron Spectrosc. Rel. Phenom. 22, 309 (1981).

## 81FUS/NOT

H. Fussstetter and H. Noth, "Zur Darstellung von 1,1-Bis(diorganylboryl)-2,2-dimethylhydrazinen," Liebigs Ann. Chem. 633 (1981).

### 81GAL/KLA

V. Galasso, L. Klasinc, A. Sabluic, N. Trinajstic, G. C. Pappalardo and W. Steglich, "Conformation and Photoelectron Spectra of 2-(2-Furyl)pyrrole and 2-(2-Thienyl)pyrrole," J. Chem. Soc. Perkins II, 127 (1981).

## 81GIN/PEL

K.A. Gingerich, M. Pelino and R. Haque, High Temp. Sci. 14, 137 (1981).

## 81GLE/BAR

R. Gleiter and R. Bartetzko, "The Structures of  $S_4N$ ,  $S_3N_2O_2$ , and  $S_4N_3$ ," Z. Naturforsch. **36b**, 492 (1981).

#### 81GLE/BOH

R. Gleiter, M. C. Bohm and M. Baudler, "Photoelektronenspektroskopische Untersuchungen an Phosphor-Drei- und -Vierring-Systemen," Chem. Ber. 114, 1004 (1981).

#### 81GLE/GUB

R. Gleiter, K. Gubernator, M. Eckert-Maksic, J. Spanget-Larsen, B. Bianco, G. Gandillon and U. Berger, "120. The Electronic Structure of Phenylene and Naphthylene Bicyclobutanes. Photoelectron Spectroscopy and Model Calculations," Helv. Chim. Acta 64, 1312 (1981).

## 81GLE/GUB2

R. Gleiter, K. Gubernator and W. Grimme, "Evidence for a Strong Through-Bond Interaction in anti-Tricyclo[6.4.0.0^{2,7}]dodecatetraene," J. Org. Chem. 46, 1247 (1981).

## 81GLE/SCH

R. Gleiter, W. Schafer and M. Eckert-Maksic,
"Transannulare Wechselwirkungen zwischen Acetylenen Photoelektronenspektroskopische Untersuchungen an
1,8-Diethinylnaphthalin und cyclischen Derivaten von
2,2'-Diethinylbiphenyl," Chem. Ber. 114, 2309 (1981).

#### 81GOD/SCH

S.A. Godleski, P. von R. Schleyer, E. Osawa and W.T. Wipke, Prog. Phys. Org. Chem. 13, 67 (1981).

## 81GRA/TON

G. Granozzi, E. Tondello, M. Casarin and D. Ajo, "Electronic Structure of  $\mu$ -Methylene-Bis-[Dicarbonyl ( $\eta$ 5-Cyclopentadienyl)- Manganese] by UV Photoelectron Spectroscopy," Inorg. Chim. Acta 48, 73 (1981).

## 81GRE/MIN

J. C. Green, D. M. P. Mingos and E. A. Seddon, "Ultraviolet Photoelectron Studies on Bonding in Some Metal Carbonyl and Metal Hydrido Carbonyl Clusters," Inorg. Chem. 20, 2595 (1981).

# 81GRI/LOS

D. Griller and F. P. Lossing, "On the Thermochemistry of α-Aminoalkyl Radicals," J. Am. Chem. Soc. 103, 1586 (1981).

## 81GRO/SCH

G. Gross, R. Schulz, A. Schweig and C. Wentrup, "Isobenzofulvene," Angew. Chem. Int. Ed. 20, 1021 (1981).

## 81GRU

H.-F. Grutzmacher, "The Loss of ortho Halogeno Substituents from Substituted Thiobenzamide Ions," Org. Mass Spectrom. 16, 448 (1981).

## 81GUP/NAP

S. K. Gupta, B. M. Nappi and K. A. Gingerich, "Mass Spectrometric Study of the Stabilities of the Gaseous Molecules Pt₂ and PtY," Inorg. Chem. 20, 966 (1981).

## 81GUS/VOL

L. E. Gusel'nikov, V. V. Volkova, V. G. Zaikin, N. A. Tarasenko, A. A. Tishenkov, N. S. Nametkin, M. G. Voronkov and S. V. Kirpichenko, "Mass Spectra of 3,3-Dimethyl-3-silathietane and

3,3-Diethyl-2,4-dimethyl-3-silathietane. First Observation of Silathione Ions and Calculation of Their Heats of Formation," J. Organometall. Chem. 215, 9 (1981).

## 81GUS/VOL2

L. E. Gusel'nikov, V. V. Volkova, N. A. Tarasenko, A. A. Tishenkov, V. G. Zaikin, E. I. Eremina and N. S. Nametkin, "Deuterium Labelling and Thermochemical Studies of Dissociative Ionization of Methyl Substituted Monosilacyclobutanes. Ring Expansion in the Molecular Ion of 1,1,3-Trimethyl-1-silacyclobutane," Org. Mass Spectrom. 16, 242 (1981).

#### 81GUT/BES

H. G. Guttenberger, H. J. Bestmann, F. L. Dickert, F. S. Jorgensen and J. P. Snyder, "Sulfur-Bridged peri-Naphthalenes: Synthesis, Conformational Analysis, and Photoelectron Spectroscopy of the Mono-, Di-, and Trisulfides of 1,8-Dimethylnaphthalene," J. Am. Chem. Soc. 103, 159 (1981).

#### 81HAL/ARM

L. F. Halle, P. B. Armentrout and J. L. Beauchamp, "Formation of Chromium Carbene Ions by Reaction of Electronically Excited Chromium Ions with Methane in the Gas Phase," J. Am. Chem. Soc. 103, 962 (1981).

#### 81HAQ/GIN

R. Haque and K. A. Gingerich, "Identification and Atomization Energies of Gaseous Molecules ScC₂, ScC₃, ScC₄, ScC₅, and ScC₆ by High Temperature Mass Spectrometry," J. Chem. Phys. 74, 6407 (1981).

## 81HEI/KOV

E. Heilbronner, B. Kovac, W. Nutakul, A. D. Taggart and R. P. Thummel, "Trisannelated Benzenes. Preparation, Properties, and Photoelectron Spectra," J. Org. Chem. 46, 5279 (1981).

#### 81HEN/ISA

L. Henriksen, R. Isaksson, T. Liljefors and J. Sandstrom, "Ultraviolet Absorption and Photoelectron Spectra of Some Cyclic and Open-Chain Mono- and Dithiooxamides," Acta Chem. Scand. B 35, 489 (1981).

## 81HEN/KNO

S.P. Henegan, P.A. Knoot and S.W. Benson, Int. J. Chem. Kinet. 13, 677 (1981).

#### 81HER/SIC

R. Herzschuh and A. Sicker, "Stereochemische Einflusse auf die Ionisations- und Auftrittsenergien cis/trans-isomerer Dimethylcycloalkane," Z. Chem. 21, 409 (1981).

## 81HOA/CAB

A. Hoareau, B. Cabaud and P. Melinon, "Time-of-Flight Mass Spectroscopy of Supersonic Beam of Metallic Vapours: Intensities and Appearance Potentials of M_X Aggregates," Surface Sci. **106**, 195 (1981).

# 81HOL/BUR

J.L. Holmes, P.C. Burgers and J.K. Terlouw, "Water Elimination from the Keto and Enol Tautomers of Ionised Ethylacetate," Can. J. Chem. 59, 1805 (1981).

### B1HOL/FIN

J.L. Holmes, M. Fingas and F.P. Lossing, "Towards a General Scheme for Estimating the Heats of Formation of Organic Ions in the Gas Phase. Part I. Odd-Electron Cations," Can. J. Chem. 59, 80 (1981).

# 81HOT

K. Hottmann, "Uber einige Zusammenhange zwischen massenspektrometrischen Ionenhaufigkeiten und Molekuleigenschaften an element-organischen Verbindungen der Gruppe IVb," J. f. Prakt. Chemie 323, 399 (1981).

# 81JAC/PĖL

R.L. Jackson, M.J. Pellerite and J.I. Brauman, "Photodetachment of the Azide Ion in the Gas Phase. Electron Affinity of the Azide Radical," J. Am. Chem. Soc. 103, 1802 (1981).

### 81JEN/RAN

W.B. Jennings, D. Randall, S.D. Worley and J.H. Hargis, "Conformation and Stereodynamics of 2-Dialkylamino-1,3-dimethyl-2,3-dihydro-1H-1,3,2-benzodiaza-phospholes. An Experimental Nuclear Magnetic Resonance, Ultraviolet Photoelectron, and Theoretical MNDO Investigation," J. Chem. Soc. Perkin Trans. II, 1411 (1981).

## 81JON/MOO

G. Jonkers, R. Mooyman and C.A. De Lange, "Ultraviolet Photoelectron Spectroscopy of Unstable Species: Nitrosyl Cyanide (ONCN)," Chem. Phys. 57, 97 (1981).

## 81JOR

F.S. Jorgensen, "Photoelectron Spectrum and Molecular Orbital (MNDO and PRDDO) Study of Dimethoxymethane," J. Chem. Res. 212 (1981).

#### 81JOR/CAR

F.S. Jorgensen, L. Carlsen and F. Duus, "The Electronic Structure of  $\beta$ -Thioxoketones. A Photoelectron Spectroscopic Study of the Enol-Enethiol Tautomerism of Thioacetylacetone and Related Compounds," J. Am. Chem. Soc. 103, 1350 (1981).

## 81JOR/NOR

F.S. Jorgensen, L. Norskov-Lauritsen, R.B. Jensen and G. Schroll, "Polyethers. Structural Analysis of the 1,4,5,8-Tetraoxadecalins and 2,2'-bis(1,3-Dioxolane) by Photoelectron Spectroscopy, Molecular Mechanics and Molecular Orbital Calculations," Tetrahedron 37, 3671 (1981).

#### 81KAI

W. Kaim, "Organometal-Stabilized 1,4-Dihydropyrazines: Extremely Electron-Rich Heterocycles," Angew. Chem. Int. Ed. 20, 600 (1981).

#### 81KAN/MOO

A. Kant and K.A. Moon, "Mass Spectrometric Determination of the Dissociation Energies of Gaseous AlH, GaH, InH, ScH, CoH and Estimation of the Maximum Dissociation Energies of TiH, CrH, MnH and FeH," High Temp. Sci. 14, 23 (1981).

## 81KAP/SŤA

M.M. Kappes and R.H. Staley, "Oxidation of Transition-Metal Cations in the Gas Phase. Oxygen Bond Dissociation Energies and Formation of an Excited State Product," J. Phys. Chem. 85, 942 (1981).

#### 81KAU/VAH

R. Kaufel, G. Vahl, R. Minkwitz and H. Baumgartel, "Die Photoionenspektren von SCl₂, S₂Cl₂ und S₂Br₂," Z. Anorg. Allg. Chem. 481, 207 (1981).

## 81KHV/ZÝK

V.I. Khvostenko, B.G. Zykov, V.P. Yuriev, V.F. Mironov, G.I. Kovel'zon, A.A. Panasenko, V.D. Sheludyakov and I.A. Gailyunas, "Study of  $d(\pi)$ - $p(\pi)$  Interaction in Vinyl- and Alkylsilicon-Containing Compounds by Photoelectron Spectroscopy," J. Organometall. Chem. 218, 155 (1981).

## 81KIM/KAT

K. Kimura, S. Katsumata, Y. Achiba, T. Yamazaki and S. Iwata, "Ionization Energies, Ab Initio Assignments and Valence Electronic Structure for 200 Molecules," Handbook of HeI Photoelectron Spectra of Fundamental Organic Compounds, Japan Scientific Soc. Press, Tokyo (1981) and Halsted Press, New York (1981).

### 81KIM/STE

Y.B. Kim, K. Stephan, E. Mark and T.D. Mark, "Single and Double Ionization of Nitric Oxide by Electron Impact from Threshold up to 180 eV," J. Chem. Phys. 74, 6771 (1981).

### 81KIN/MAI

G.K. King, M.M. Maricq, V.M. Bierbaum and C.H. DePuy, "Gas Phase Reaction of Negative Ions with Alkyl Nitrites," J. Am. Chem. Soc. 103, 7133 (1981).

# 81KLY/SHU

N.A. Klyuev, Y.V. Shurukhhin, I.I. Grandberg, I.K.81pad Yakushchenko and A.E. Bolubitskii, "Stereospecific Fragmentation of 1-Methyl-1,2-Diarylcyclopropanes," Z. Org. Khim. 17, 556 (1981).

## 81KOB/ARA

T. Kobayashi, T. Arai, H. Sakuragi, K. Tokumaru and C. Utsunomiya, "A New Method for Conformational Analysis by Photoelectron Spectroscopy with Application to Alkyl-Substituted Styrenes," Bull. Chem. Soc. Jpn. 54, 1658 (1981).

# 81KOE/MCK

T. Koenig and W. McKenna, "First Ionization Band of 1,1-Dimethylsilaethylene by Transient Photoelectron Spectroscopy," J. Am. Chem. Soc. 103, 1212 (1981).

## 81KOM/DYK

A. Komornicki, C.E. Dykstra, M.A. Vincent and L. Radom, J. Am. Chem. Soc. 103, 1652 (1981).

### 81KOP/PIK

I. Koppel, R. Pikver, A. Sugis, E. Suurmaa and E. Lippmaa, Org. Reac. 18, 3 (1981).

#### 81KUD/KUD

A.P. Kudchadker, S.A. Kudchadker, R.C. Wilhoit and S.K. Gupta, "Acenaphthylene, Acenaphthene, Fluorene, and Fluoranthene," API Monograph, 715-81, American Petroleum Institute, Washington, D.C. (1981).

#### 81KUD/KUD2

A.P. Kudchadker, S.A. Kudchadker, R.C. Wilhoit and S.K. Gupta, "Carbazole, 9-Methylcarbazole and Acridine," API Monograph, 716-81, American Petroleum Institute, Washington, D.C. (1981).

#### 81KUD/KUD3

A.P. Kudchadker, S.A. Kudchadker, R.C. Wilhoit and S.K. Gupta, "Thiophene, 2,3- and 2,5-Dihydrothiophene and Tetrahydrothiophene," API Monograph 717-81, American Petroleum Institute, Washington, D.C. (1981).

## 81LAU/BRI

K.H. Lau, R.D. Brittain and D.L. Hildenbrand, Chem. Phys. Lett. 81, 227 (1981).

#### 81LEB/YEV

B.D. Lebedev, A.A. Yevstropov and Y.G. Kiparisova, Int. J. Chem. Kinet. 13, 1185 (1981).

# 81LEE/POT

E.P.F. Lee and A.W. Potts, "Fine Structure in the He(I)/He(II) Photoelectron Spectra of the Metal Valence (d) Shells of the Group IIB Dihalides," J. Electron Spectrosc. Rel. Phenom. 22, 247 (1981).

#### 81LEU/HOF

S. Leutwyler, M. Hofmann, H.-P. Harri and E. Schumacher, "The Adiabatic Ionization Potentials of the Alkali Dimers Na₂, NaK and K₂," Chem. Phys. Lett. 77, 257 (1981).

## 81LIF/TZI

C. Lifshitz and E. Tzidony, "Kinetic Energy Release Distributions for C₃H₆O + Ion Dissociations: A Further Test of the Applicability of the Energy Randomization Hypothesis to Unimolecular Fragmentations," Int. J. Mass Spectrom. Ion Phys. 39, 181 (1981).

## 81LIN/BES

T.B. Lindemer, T.M. Bessman and C.E. Johnson, J. Nucl. Mater. **100**, 178 (1981).

## 81LIV/ROB

P. Livant, K.A. Roberts, M.D. Eggers and S.D. Worley, "The Gas Phase Conformation of 3,7-Dimethyl-3,7-Diazabicyclo[3.3.1]nonane," Tetrahedron 37, 1853 (1981).

# 81LOG/TAK

Y. Loguinov, V.V. Takhistov and L.P. Vatlina, "Photoionization Studies of Substituted Trimethylamines," Org. Mass Spec. 16, 239 (1981).

## 81LOS/LAM

F.P. Lossing, Y.-T. Lam and A. Maccoll, "Gas Phase Heats of Formation of Alkyl Immonium Ions," Can. J. Chem. 59, 2228 (1981).

### 81MA)

J.P. Maier, "Structure and Decay of Gaseous Organic Radical Cations Studied by Their Radiative Decay, Exemplified by the 1,3-Pentadiyne Cation," Angew. Chem. Int. Ed. Engl. 20, 638 (1981).

## 81MAI/MIS

J.P. Maier, L. Misev and F. Thommen, "191. Laser-Induced Fluorescence and Photoelectron-Photon Coincidence Studies of 3,5-Octadiyne Cation," Helv. Chim. Acta 64, 1985 (1981).

## 81MAI/SCH

W.F. Maier and P. von R. Schleyer, J. Am. Chem. Soc. 103, 1891 (1981).

# 81MAI/THO

J.P. Maier and F. Thommen, "Fluorescence Quantum Yields and Lifetimes of Fluorobenzene Cations in Selected Levels of Their B and C States Determined by Photoelectron-Photoion Coincidence Spectroscopy," Chem. Phys. 57, 319 (1981).

## 81MAI/THO2

J.P. Maier and F. Thommen, "Photoelectron-photon coincidence Measurements of the Fluorescence quantum Yields of cis-1,2-Difluoroethylene Cation in Selected Levels of the A²A₁ State," J. Chem. Soc. Faraday Trans. II 77, 845 (1981).

## 81MAL/ALI

I.P. Malkerova, A.S. Alikhanyan, V.D. Butskii, V.S. Pervov and V.I. Gorkoraki, "The Behavior of Tungsten Sulphide Tetrafluoride WSF4 When Heated," Zh. Neorganich. Khim. 26, 1955 (1981). Engl. Trans.: Russ. J. Inorg. Chem. 26, 1055 (1981).

# 81MAL/MEL

I.P. Malkerova, E.I. Mel'nichenko, A.S. Alikhanyan, E.G. Rakov and V.I. Gorgoraki, "Thermal Decomposition of the Tungsten Oxide Fluorides W2O4F.O.2(NOF) and W2O4F," Zh. Neorganich. Khim. 26, 17 (1981); Engl. Trans.: Russ. J. Inorg. Chem. 26, 9 (1981).

#### 81MAN/SUN

M. Mansson and S. Sunner, J. Chem. Thermodyn. 13, 671 (1981).

#### 81MAS/MOU

P. Masclet, G. Mouvier and J.F. Bocquet, "Effets Electroniques et Effets Steriques dus a la Substitution Alcoyle dans les Dienes Conjugues," J. Chim. Phys. 78, 99 (1981).

#### 81MAU/SIE

M. Meot-Ner (Mautner), L.W. Sieck and P. Ausloos, "Ionization of Normal Alkanes: Enthalpy, Entropy, Structural, and Isotope Effects," J. Am. Chem. Soc. 103, 5342 (1981).

#### 81MCD/CHO

R.N. McDonald, A.K. Chowdhury and D.W. Setser, "Gas Phase Generation of Phenylnitrene Anion Radical - Proton Affinity and Heat of Formation of PhN- and Its Clustering with ROH Molecules," J. Am. Chem. Soc. 103, 6599 (1981).

## 81MCL/CAM

S.A. McLuckey, D. Cameron and R.G. Cooks, "Proton Affinities from the Dissociation of Proton Bound Dimers," J. Am. Chem. Soc. 103, 1313 (1981).

## 81MEE/WAH

J. Meeks, A. Wahlborg and S.P. McGlynn, "Photoelectron Spectroscopy of Carbonyls: Benzoic Acid and Its Derivatives," J. Elec. Spectrosc. Rel. Phenom. 22, 43 (1981).

## 81MIC/SVE

G.D. Michels and H.J. Svec, "Characterization of MnTc(CO)₁₀ and TcRe(CO)₁₀, Inorg. Chem. 20, 3445

## 81MIL/CIL

S. Millefiori, E. Ciliberto, A. Millefiori and M.A. Zerbo, "Gas Phase U. V. Photoelectron Investigation of Azoxybenzene and 4,4'-di(n-alkoxy)azoxybenzenes," Spectromchim. Acta 37A, 605 (1981).

# 81MIL/MIL

S. Millefiori and A. Millefiori, "Spectroscopic and Electrochemical Properties of Intramolecularly Hydrogen-Bonded Compounds. Ortho-Hydroxyazobenzenes," 81NOV/CVI Can. J. Chem. 59, 821 (1981).

## 81MOD/DIS

A. Modelli and G. Distefano, "L. C. B. O.: An Easy Method to Predict Valence Ionization Energies. Application to Substituted Benzenes," Z. Naturforsch. 36a, 1344 (1981).

## 81MOD/DIS2

A. Modelli and G. Distefano, "He(I) Photoelectron Spectra of Chloro-, Vinyl- and Acetyl-Pyridines," J. Elec. Spectrosc. Rel. Phenom. 23, 323 (1981).

#### 81MOH/HIR

S. Mohmand, T. Hirabayashi and H. Bock, "Gasphasen-Reaktionen, 22. Thermische Erzeugung von C4H4O: Vinylketen und Ethylidenketen," Chem. Ber. 114, 1609 (1981).

#### 81МОН/ЛА

M. Mohraz, W. Jian-qi, E. Heilbronner, A. Solladie-Cavallo and F. Matloubi-Moghadam, "11. Some Comments on the Conformations of Methyl Phenyl Sulfides, Sulfoxides and Sulfones," Helv. Chim. Acta 64, 97 (1981).

#### 81MOR/KOL

B.J. Morris-Sherwood, B.W.S. Kolthammer and M.B. Hall, "Photoelectron Spectra of and Molecular Orbital Calculations on(η5-Cyclopentadienyl)dinitrosylhalochromium and -Tungsten," Inorg. Chem. 20, 2771 (1981).

## 81MUL/PRE

K. Muller and F. Previdoli, "247. Enamines. III. A Theoretical and Photoelectron Spectroscopic Study of the Molecular and Electronic Structures of Aziridine Enamines," Helv. Chim. Acta 64, 2508 (1981).

# 81MUL/PRE2

K. Muller, F. Previdoli and H. Desilvestro, "246. Enamines. II. A Theoretical and Photoelectron Spectroscopic Study of the Molecular and Electronic Structure of Aliphatic Enamines," Helv. Chim. Acta 64, 2497 (1981).

E. Murad, "Thermochemical Properties of the Gaseous Alkaline Earth Monohydroxides," J. Chem. Phys. 75, 4080 (1981).

#### 81NAK/ASA

H. Nakagawa, M. Asano and K. Kubo, "Mass Spectrometric Study of the Vaporization of Lithium Metasilicate," J. Nucl. Mat. 102, 292 (1981).

#### 81NAP/GIN

B.M. Nappi and K.A. Gingerich, "Dissociation Energy and Standard Heat of Formation of Gaseous LaPt," Inorg. Chem. 20, 522 (1981).

### 81NAT/FRA

P. Natalis and J.L. Franklin, "Ionization and Dissociation of Diphenyl and Condensed-Ring Aromatics by Electron Impact. III. Azobenzene," Int. J. Mass Spectrom. Ion Phys. 40, 35 (1981).

## 81NEL/GRE

S.F. Nelsen, L.A. Grezzo and W.C. Hollinsed, "Effects of Structure on the Ease of Electron Removal from o-Phenylenediamines. 2. Photoelectron Spectra of o-Phenylenediamines," J. Org. Chem. 46, 283 (1981).

## 81NES/BAI

A.N. Nesmeyanov, V.N. Baiden, Y.V. Chizhov, M.M. Timoshenko, Y.S. Nekrasov and I.I. Kritskaya, "He(I) Photoelectron Investigation of Functionally Substituted Camphene Derivatives," Dokl. Akad. Nauk SSSR 256, 121 (1981).

M.I. Nikitin, L.N. Sidorov, E.V. Skokan and I.D. Sorokin, "Mass Spectrometric Determination of the Heats of Formation of ScF₄⁻ and KF₂⁻," Russ. J. Phys. Chem. 55, 1107 (1981).

## 81NIK/SID2

M.I. Nikitin, L.N. Sidorov and M.V. Korobov, "The Electron Affinity of Platinum Hexafluoride," Int. J. Mass Spectrom. Ion Proc. 37, 13 (1981).

I. Novak, T. Cvitas and L. Klasinc, "Photoelectron Spectrum of Tetravinylstannane, Sn(CH = CH₂)₄," J. Organometall. Chem. 220, 145 (1981).

## 81NOV/CVI2

I. Novak, T. Cvitas and L. Klasinc, "Photoelectron Spectrum of Tetraiodomethane," Chem. Phys. Lett. 79, 154 (1981).

## 81NOV/CVI3

I. Novak, T. Cvitas, L. Klasinc and H. Gusten, "Photoelectron Spectra of Some Halogenomethanes," J. Chem. Soc. Faraday Trans. II 77, 2049 (1981).

## 810NO/OSU

Y. Ono, E.A. Osuch and C.Y. Ng, "Molecular Beam Photoionization Study of OCS, (OCS)2, (OCS)3, and OCS·CS2," J. Chem. Phys. 74, 1645 (1981).

#### 81PAD/PAT

M.N. Paddon-Row, H.K. Patney, R.S. Brown and K.N. Houk, "Observation of a Very Large Orbital Interaction through Four Bonds. An Alternative Model of Orbital Interactions through Bonds," J. Am. Chem. Soc. 103, 5575 (1981).

## 81PAL/SIM

M.H. Palmer, I. Simpson and J.R. Wheeler, "Gas Phase Tautomerism in the Triazoles and Tetrazoles: A Study by Photoelectron Spectroscopy and ab Initio Molecular Orbital Calculations," Z. Naturforsch. 36a, 1246 (1981).

#### 81PAP/ERA

T. Papina, P.A. Erastov and V.P. Kolesov, J. Chem. Thermodyn. 13, 683 (1981).

## 81PAQ/HER

L.A. Paquette, L.W. Hertel, R. Gleiter, M.C. Bohm, M.A. Beno and G.G. Christoph, "Electronic Control of Stereoselectivity. 8. The Stereochemical Course of Electrophilic Additions to Aryl-Substituted 9-Isopropylidenebenzonorbornenes," J. Am. Chem. Soc. 103, 7106 (1981).

## 81PEL/JAC

M.J. Pellerite, R.L. Jackson and J.I. Brauman, "Proton Affinity of the Gaseous Azide Ion. The N-H Bond Dissociation Enegry in HN₃," J. Phys. Chem. **85**, 1624 (1981).

#### 81PFI/GUI

G. Pfister-Guillouzo, C. Guimon, J. Frank, J. Ellison and A.R. Katritzky, "Tautomeric Pyridines, 26. A Photoelectron Spectral Study of the Vapour Phase Tautomerism of 2- and 4-Quinolone," Liebigs Ann. Chem. 366 (1981).

## 81PLE/VIL

V.V. Plemenkov, Y.Y. Villem, N.V. Villem, I.G. Bolesov, L.S. Surmina, N.I. Yakushkina and A.A. Formanovskii, "Photoelectron Spectra of Polyalkylcyclopropenes and Polyalkylcyclopropanes," Zh. Obshchei. Khim. 51, 2076 (1981).

# 81POL/RAI

S.K. Pollack, B.C. Raine and W.J. Hehre, "Determination of the Heats of Formation of the Isomeric Xylylenes by Ion Cyclotron Resonance Spectroscopy," J. Am. Chem. Soc. 103, 6308 (1981).

# 81PRA/CHU

S.T. Pratt and W.A. Chupka, "Photoionization Study of the Kinetics of Unimolecular Decomposition of Halobenzene Ions," Chem. Phys. 62, 153 (1981).

## 81PRO/RAD

A. Pross and L. Radom, Prog. Phys. Org. Chem. 13, 1 (1981).

### 81RAB/HEL

M.A. Rabbih, A.I. Helal and M.A. Fahmey, "Mass Spectrometric Studies of Methylacetophenone Isomers by Electron Impact," Indian J. Pure Appl. Phys. 19, 335 (1981).

## 81RAN/WRI

D.W.H. Rankin and J.G. Wright, "The Preparation and Properties of 1-Difluorophosphino-pyrrole," J. Fluorine Chem. 17, 469 (1981).

## 81RID/RAY

D.M. Rider, G.W. Ray, E.J. Darland and G.E. Leroi, "A Photoionization Mass Spectrometric Investigation of CH₃CN and CD₃CN," J. Chem. Phys. 74, 1652 (1981).

### 81ROB/STE

D.A. Robaugh and S.E. Stein, Int. J. Chem. Kinet. 13, 445 (1981).

## 81ROT/SCH

W.R. Roth and B.P. Scholz, Chem. Ber. 114, 3741 (1981).

## 81RUS/KLA

B. Ruscic, L. Klasinc, A. Wolf and J.V. Knop, "Photoelectron Spectra of and Ab Initio Calculations on Chlorobenzenes. 3. Hexachlorobenzene," J. Phys. Chem. 85, 1495 (1981).

#### 81RUS/KLA2

B. Ruscic, L. Klasinc, A. Wolf and J.V. Knop, "Photoelectron Spectra of and Ab Initio Calculations on Chlorobenzenes. 1. Chlorobenzene and Dichlorobenzenes," J. Phys. Chem. 85, 1486 (1981).

## 81RUS/KLA3

B. Ruscic, L. Klasinc, A. Wolf and J.V. Knop, "Photoelectron Spectra of and Ab Initio Calculations on Chlorobenzenes. 2. Trichlorobenzenes, Tetrachlorobenzenes, and Pentachlorobenzene," J. Phys. Chem. 85, 1490 (1981).

## 81SAB/MIN

R. Sabbah and C. Mindakis, Thermochim. Acta 43, 269 (1981).

#### 81SAS/HAR

T. Sasamoto, H. Hara and T. Sata, "Mass Spectrometric Study of the Vaporization of Magnesium Oxide from Magnesium Aluminate Spinel," Bull. Chem. Soc. Jpn. 54, 3327 (1981).

#### 81SAT/SEK

N. Sato, K. Seki and H. Inokuchi, "Polarization Energies of Organic Solids Determined by Ultraviolet Photoelectron Spectroscopy," J. Chem. Soc. Faraday Trans. II 77, 1621 (1981).

#### 81SCH/GRO

B. Schaldach, B. Grotemeyer, J. Grotemeyer and H.-F. Grutzmacher, "Kinetic and Thermodynamic Effects on Intramolecular Aromatic Substitution in meta and para Substituted Benzalacetones," Org. Mass Spectrom. 16, 410 (1981).

#### 81SCH/SCH

R. Schulz and A. Schweig, "Cyclopentadienethione," Angew. Chem. Int. Ed. 20, 570 (1981).

#### 81SEN/KEB

D.K. Sen Sharma and P. Kebarle, "Stability and Reactivity of the Benzyl and Tropylium Cations in the Gas Phase," Can. J. Chem. 59, 1592 (1981).

# 81SHA/AKI

M. Shahbaz, I. Akiyama and P. LeBreton, "Ultraviolet Photoelectron Studies of Methyl Substituted Chrysenes," Biochemical and Biophysical Research Communications 103, 25 (1981).

## 81SID/SOR

L.N. Sidorov, I.D. Sorokin, N.I. Nitikin and E.V. Skokan, "Effusion Method for Determining the Electron Affinity and Heat of Formation of Negative Ions," Int. J. Mass Spectrom. Ion Phys. 39, 311 (1981).

## 81SKO/NIK

E.V. Skokan, M.I. Nikitin, I.D. Sorokin, A.V. Gusarov and L.N. Sidirov, "Determination of the Heat of Formation of the Tetrafluoroscandate and Pentfluorozirconate Ions by the Effusion Method," Russ. J. Phys. Chem. 55, 1062 (1981).

# 81SMI/ADA

D. Smith, N.G. Adams and W. Lindinger, "Reactions of the  $H_nS$  Ions (n = 0 to 3) with Several Molecular Gases at Thermal Energies," J. Chem. Phys. 75, 3365 (1981).

### 81SMI/LA

G.P. Smith and R.M. Laine, "Organometallic Bond Dissociation Energies. Laser Pyrolysis of Fe(CO)5," J. Phys. Chem. 85, 1620 (1981).

# 81SMÌ/STÉ

O.I. Smith and J.S. Stevenson, "Determination of Cross Sections for Formation of Parent and Fragment Ions by Electron Impact from SO₂ and SO₃," J. Chem. Phys. 74, 6777 (1981).

## 81SOR/SID

I.D. Sorokin, L.N. Sidorov, M.I. Nikitin and E.V. Skokan, "Mass-Spectrometric Determination of the Enthalpies of Dissociation of Gaseous Complex Fluorides into Neutral and Charged Particles. V. Heats of Formation of FeF₃- and FeF₄-," Int. J. Mass Spectrom. Ion Phys. 41, 45 (1981).

#### 81SPE

P.J. Spencer, "Hafnium: Physicochemical Properties of its compounds and Alloys" ("Atomic Energy Review Special Issue 8," ed. K.L. Komarek, IAEA, Vienna, 1981).

#### 81STE/BAR

S.E. Stein and B.D. Barton, Thermochim. Acta 44, 265 (1981).

# 81SUL/DEP

S.A. Sullivan, C.H. DePuy and R. Damrauer, "Gas Phase Reactions of Cyclic Silanes," J. Am. Chem. Soc. 103, 480 (1981).

#### 81SUR/HAC

S. Suradi, J.M. Hacking, G. Pilcher, I. Gumrukcu and M.F. Lappert, J. Chem. Thermodyn. 13, 857 (1981).

## 81SZE/KOR

L. Szepes, T. Koranyi, G. Naray-Szabo, A. Modelli and G. Distefano, "Ultraviolet Photoelectron Spectra of Group IV Hexamethyl Derivatives Containing a Metal-Metal Bond," J. Organometall. Chem. 217, 35 (1981).

#### 81TAA/SUM

M. Taagepera, K.D. Summerhays, W.J. Hehre, R.D. Topsom, A. Pross, L. Radom and R.W. Taft, J. Org. Chem. 46, 891 (1981).

#### 81TER/HEE

J.K. Terlouw, W. Heerma and G. Dijkstra, "On the Structure of the Odd Electron [C₂H₆O] + Ions in the Mass Spectrum of [1,3-Propanediol] +," Org. Mass Spectrom. 16, 326 (1981).

# 81TIM/KOR

M.M. Timoshenko, I.V. Korkoshko, V.T. Kleimenov, N.E. Petrachenko, Y.V. Chizhov, V.V. Ryl'kov and M.E. Akopyan, "Ionization Potentials of Rhodamine Dyes," Dokl. Akad. SSSR 260, 138 (1981).

#### 81TPIS

L.V. Gurvich, I.V. Veits, V.A. Medvedev, G.A. Khachkuruzov, V.S. Yungman and G.A. Bergman, et al., "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); Glushko, V.P., gen. ed., Vol. 3, parts 1 and 2(1981), Izdatel'stvo"Nauka"Moscow.

# 81TRA

J.C. Traeger, "Heat of Formation of sec-Butyl Cation in the Gas Phase," Org. Mass Spectrom. 16, 193 (1981).

## 81TRA/MCL

J.C. Traeger and R.G. McLoughlin, "Absolute Heats of Formation for Gas Phase Cations," J. Am. Chem. Soc. 103, 3647 (1981).

### 81TRA/RED

V.F. Traven', V.V. Redchenko, M.Y. Eismont and B.I. Stepanov, "Photoelectron Spectra and Electronic and Steric Structures of Silicon and Sulfur-Containing Analogs of 9,10-Dihydroanthracene," Zh. Obs. Khim. 51, 1297 (1981); English Trans.: J. Gen. Chem. (USSR) 51, 1099 (1981).

## 81TRA/RED2

F. Traven', V.V. Redchenko and B.I. Stepanov, "Photoelectron Spectrum of Thianthrene," Zh. Obs. Khim. 51, 1293 (1981); English Trans.: J. Gen. Chem. (USSR) 51, 1094 (1981).

## 81TRO/NED

B.A. Trofimov, N.A. Nedolya, N.B. Lebedev, V.L. Ryadnenko, T.N. Masalitinova, S.L. Dobychin, R.K. Zacheslavskaya and G.N. Petrov, Bull. Acad. Sci. USSR Div. Chem. Sci. 537 (1981).

### 81TSA

W. Tsang, "Shock Tubes in Chemistry," (A. Lifshitz, Editor; Dekker, 1981), p. 59.

### 81VAN/TER

H. Van Dam, A. Terpstra, A. Oskam and J.H. Teuben, "UV Photoelectron Spectra of Some Bent Bis(η5-cyclopentadienyl)Niobium and Tantalum Complexes,"
 Z. Naturforsch. 36b, 420 (1981).

#### 81VOV/DUD

V.I. Vovna, A.S. Dudin, A.M. Kleshchevnikov, S.N. Lopatin and E.G. Rakov, "Photoelectron Spectra and Electronic Structure of Molybdenum, Tungsten, Rhenium, and Osmium Oxotetrafluorides," Koord. Khim. 7, 575 (1981).

#### 81WAL

R. Walsh, "Bond Dissociation Energy Values in Silicon-Containing Compounds and Some of Their Implications," Acc. Chem. Res. 14, 246 (1981).

## 81WAL/BLA

E.A. Walters and N.C. Blais, "Molecular Beam Photoionization of  $(H_2S)_n$ , n=1-7," J. Chem. Phys. 75, 4208 (1981).

## 81WEC/CHR

D. Wecker, A.A. Christodoulides and R.N. Schnidler, "Studies by the Electron Cyclotron Resonance (ECR) Technique. XV. Interactions of Thermal-Energy Electrons with ClO₂ and Cl₂O," Int. J. Mass Spectrom. Ion Phys. 38, 391 (1981).

## 81WES/REI

J.B. Westmore, M.L.J. Reimer and C. Reichert, "Ionization Energies of Metal Chelates. Acetylacetonates, Trifluoroacetylacetonates, and Hexafluoroacetylacetonates of Trivalent Metals of the First Transition Series," Can. J. Chem. 59, 1797 (1981).

#### 81WHI/FRI

R.A. Whiteside, M.J. Frisch, J.S. Binkley, D.J. DeFrees, B. Schlegel, K. Raghavachari and J.A. Pople, "Carnegie-Mellon Quantum Chemistry Archive" (2nd Edn., Pittsburgh, 1981).

## 81WIB/SQU

K.B. Wiberg and R.R. Squires, J. Am. Chem. Soc. 103, 4473 (1981).

# 81WIB/WÁS

K.B. Wiberg and D.J. Wasserman, J. Am. Chem. Soc. 103, 6563 (1981).

## 81WOJ/FÓL

L. Wojnarovits and G. Foldiak, "Electron Capture Detection of Aromatic Hydrocarbons," J. Chromatogr. 206, 511 (1981).

### 81WON/DUT

K.S. Wong, T.L. Dutta and T.P. Fehlner, "The Proton as a Probe of Cluster Bonding. The UV Photoelectron Spectra of Two Hydrido Transition Metal Clusters," J. Organometall. Chem. 215, C48 (1981).

## 81WOO

A.A. Woolf, Adv. Inorg. Chem. Radiochem. 24, 1 (1981).

# 81WOR/GIB

S.D. Worley, D.H. Gibson and W.-L. Hsu, "Electronic Structures of Some  $\eta^3$ -Allyl Transition Metal Complexes," Inorg. Chem. 20, 1327 (1981).

# 81WRI/BEA

C.A. Wright and J.L. Beauchamp, "Infrared Spectra of Gas Phase Ions and Their Use in Elucidating Reaction Mechanisms. Identification of C7H7⁻ Structural Isomers by Multiphoton Electron Detachment Using a Low-Powered Laser," J. Am. Chem. Soc. 103, 6499 (1981).

# 81YU/ODO

C. Yu, T.J. O'Donnell and P.R. LeBreton, "Ultraviolet Photoelectron Studies of Volatile Nucleoside Models. Vertical Ionization Potential Measurements of Methylated Uridine, Thymidine, Cytidine, and Adenosine," J. Phys. Chem. 85, 3851 (1981).

## 81ZHO/HÉI

Y. Zhong-zhi, E. Heilbronner, H.C. Kang and V. Boekelheide, "The Photoelectron Spectra of 4,13-Diaza- and 4,16-Diaza[2,4](1,2,4,5)cyclophanes" Helv. Chim. Acta 64, 2029 (1981).

## 81ZHO/KOV

Y. Zhong-zhi, B. Kovak, E. Heilbronner, S. Eltamany and H. Hopf, "192. Ionization Energies of Methyl-substituted [2.2] Paracyclophanes," Helv. Chim. Acta 64, 1991 (1981).

#### 81ZVE/ERM

V.V. Zverev and L.V. Ermolaeva, "Ionization Potentials and Intramolecular Charge Transfer. II. The Photoelectron Spectrum and Electronic Structure of Trichloromethylbenzene," Zh. Strukt. Khim. 22, 22 (1981).

#### 81ZVE/VIL

V.V. Zverev, Y.Y. Villem, N.V. Villem, B.G. Liorber and Y.P. Kitaev, "Photoelectron Spectra of Some Unsaturated Three- and Four-Coordinate Phosphorus Compounds," Zh. Obs. Khim. 51, 303 (1981); English trans.: J. Gen. Chem.(USSR), 51, 242 (1981).

#### 81ZVE/VIL2

V.V. Zverev, Y.Y. Villem and R.P. Arshinova, "Photoelectron Spectra of Di- and Triesters of Trivalent Phosphorus," Dokl. Akad. Nauk, SSSR 256, 1412 (1981).

#### 81ZYK/KHV

B.G. Zykov, V.I. Khvostenko, M.G. Voronkov, V.P. Yur'ev, G.S. Lomakin and E.N. Suslova, "Photoelectron Spectra of Si-Substituted Chloromethylsilanes," Dokl. Akad. Nauk SSSR 258, 135 (1981).

#### 82ALD/ARR

R.W. Alder, R.J. Arrowsmith, C.S.J. Boothby, E. Heilbronner and Y. Zhong-zhi, "1-Azabicyclo[4.4.4]tetradec-5-ene," J. Chem. Soc. Chem. Commun. 940 (1982).

#### 82ALL/DOD

N.L. Allinger, H. Dodziuk, D.W. Rogers and S.N. Naik, Tetrahedron 38, 1593 (1982).

#### 82ALL/MIG

S.H. Allam, M.D. Migahed and A. El-Khodary, "Electron Impact Ionization and Dissociation of Deuterated and non-Deuterated Methanol, Methyl Cyanide, Nitromethane and Nitrobenzene," Egypt. J. Phys. 13, 167 (1982).

#### 82ARM/HAL

P.B. Armentrout, L.F. Halle and J.L. Beauchamp, "Reaction of Cr+, Mn+, Fe+, Co+, and Ni+ with O2 and N2O. Examination of the Translational Energy Dependence of the Cross Sections of Endothermic Reactions," J. Chem. Phys. 76, 2449 (1982).

## 82ARN/VEN

E.M. Arnett, K.G. Venkatasubaramanian, R.T. McIver, E.K. Fukuda, F.G. Bordwell and F.D. Press, "Stabilization of the Monoanion of 1,8-Diaminonaphthalene by Intramolecular Hydrogen Bonding. A Novel Case of Anion Homoconjugation in Superbase Solution," J. Am. Chem. Soc. 104, 325 (1982).

# 82AUD/BOU

H.E. Audier, G. Bouchoux, Y. Hoppilliard and A. Milliet, "The Mechanism of Formation of [C₄H₉O] + Ions from Isobutyl Ethyl Ether," Org. Mass Spectrom. 17, 382 (1982).

### 82BAI/CON

M.A. Baig, J.P. Connerade and J. Hormes, "Autoionisation Resonances in the 4p(II) Spectrum of Methyl Bromide," J. Phys. B: At. Mol. Phys. 15, L5 (1982).

## 82BAL/CAR

M.A. Baldwin, D.M. Carter and J. Gilmore, "Loss of Hydroxyl Radical from Isomeric Ethylnitrobenzenes," Org. Mass Spectrom. 17, 45 (1982).

# 82BAN/CHA

S. Banon, C. Chatillon and M. Allibert, "High Temperature Mass Spectrometric Study of Ionization and Fragmentation of TiO and TiO₂ Gas Under Electron Impact," High Temp. Sci. 15, 17 (1982).

## 82BAN/CHA2

G.M. Bancroft, T. Chan, R.J. Puddephatt and J.S. Tse, "Role of the Au 5d Orbitals in Bonding: Photoelectron Spectra of [AuMe(PMe₃)]," Inorg. Chem. 21, 2946 (1982).

### 82BAN/PEL

G.M. Bancroft, E. Pellach, A.P. Sattelberger and K.W. McLaughlin, "The Photoelectron Spectrum of Quadruply Bonded W₂(O₂CCF₃)₄," J. Chem. Soc. Chem. Commun. 752 (1982).

#### 82BAR

J.E. Bartmess, "Gas Phase Ion Chemistry of 5-Methylene-1,3-cyclohexadiene (o-Isotoluene) and 3-Methylene-1,4-cyclohexadiene (p-Isotoluene)," J. Am. Chem. Soc. 104, 335 (1982).

#### 82BAR/CAU

V. Barone, C. Cauletti, F. Lelu, M.N. Piancastelli and N. Russo, "Relative Ordering and Spacing of n and  $\pi$  Levels in Isomeric Bipyrimidines. A Theoretical and Gas-Phase UV Photoelectron Spectroscopic Study," J. Am. Chem. Soc. 104, 4571 (1982).

#### 82BAR/HEI

R. Bar, T. Heinis, C. Nager and M. Jungen, "Photoionization of Ferrocene," Chem. Phys. Lett. **91**, 440 (1982).

## 82BAU/BUN

H. Baumann, J.-C. Bunzli and J.F.M. Oth, "58. The Photoelectron Spectrum of [18] Annulene," Helv. Chim. Acta 65, 582 (1982).

## 82BAU/COX

D.L. Baulch, R.A. Cox, P.J. Crutzen, R.F. Hampson, Jr., J.A. Kerr, J. Troe and R.T. Watson, J. Phys. Chem. Ref. Data 11, 327 (1982).

## 82BAX/COW

S.G. Baxter, A.H. Cowley, J.G. Lasch, M. Lattman, W.P. Sharum and C.A. Stewart, "Electronic Structures of Bent-Sandwich Compounds of the Main-Group Elements: A Molecular Orbital and UV Photoelectron Spectroscopic Study of Bis(cyclopentadienyl)tin and Related Compounds," J. Am. Chem. Soc. 104, 4064 (1982).

#### 82BEN/DUR

A. Bened, R. Durand, D. Pioch, P. Geneste, J.-P. Declercq, G. Germain, J. Rambaud, R. Roques, C. Guimon and G. Pfister-Guillouzo, "Isoxazolines by Cycloadditions of Mesitonitrile Oxide with Benzo[b]thiophene S-Oxide and S,S-Dioxide. Structural Studies, Theoretical Explanations, and Kinetics," J. Org. Chem. 47, 2461 (1982).

## 82BER/HEN

U. Berg, L. Henriksen, K.A. Lerstrup and J. Sandstrom, "The Torsional Barrier of the Dimethylamino Group in N,N-Dimethyltellurobenzamide. A Comparison with N,N-Dimethylbenzamide and its Thio and Seleno Analogues," Acta Chem. Scand. B 36, 19 (1982).

# 82BIE/ASB

G. Bieri, L. Asbrink and W. Von Niessen, "30.4-nm He(II) Photoelectron Spectra of Organic Molecules," J. Electron Spectrosc. Rel. Phenom. 27, 129 (1982).

## 82BLO/COR

E. Block, E.R. Corey, R.E. Penn, T.L. Renken, P.F. Sherwin, H. Bock, T. Hirarayashi, S. Mohmand and B. Solouki, "Synthesis and Thermal Decomposition of 1,3-Dithetane and Its S-Oxides," J. Am. Chem. Soc. 104, 3119 (1982).

### 82BOC/MOH

H. Bock, S. Mohmand, T. Hirabayashi and A. Semkow, "Thioacrolein," J. Am. Chem. Soc. 104, 312 (1982).

### 82BOC/MOH2

H. Bock, S. Mohmand, T. Hirabayashi and A. Semkow, "Thioacrolein: Das stabilste C₃H₄S-Isomers und sein PE-spektroskopischer Nachweis in der Gasphase," Chem. Ber. 115, 1339 (1982).

## 82BOC/WIT

H. Bock, J. Wittmann, J. Mintzer and J. Russow, "Ni/Pd-Katalysierte Gasphasen-Bromierung von Trifluormethan," Chem. Ber. 115, 2346 (1982).

# 82BOH

M.C. Bohm, "The Photoelectron Spectra of Bis(cyclopentadienyl)titanium Derivatives - a Green's Function Approach," Inorg. Chim. Acta 62, 171 (1982).

#### 82BOH/ECK

M.C. Bohm, M. Eckert-Maksic, R.D. Ernst, D.R. Wilson and R. Gleiter, "Electronic Structure of Bis(pentadienyl)iron. Semiempirical Calculations and Photoelectron Spectra," J. Am. Chem. Soc. 104, 2699 (1982).

#### 82BOH/GLE

M.C. Bohm, R. Gleiter and W. Petz, "The He(I) Photoelectron Spectrum of Fe(CO)₄CS," Inorg. Chim. Acta

#### 82BOH/GLE2

M.C. Bohm and R. Gleiter, "The Electronic Structure and the He(I) Photoelectron Spectrum of Bis( $\pi$ -Pentadienyl)dinickel," Chem. Phys. 64, 183 (1982).

R. Bombach, J. Dannacher, J.-P. Stadelmann, J. Vogt, L.R. Thorne and J.L. Beauchamp, "Photoelectron-Photoion Coincidence Study of CF₃I. Implications for the CW IR Laser Multiphoton Dissociation of CF₃I⁺," Chem. Phys. 66, 403 (1982).

## 82BRE/SCH

M. Breitenstein, R. Schulz and A. Schweig, "Photoelectron Spectrum and Infrared Spectrum of Thermally Generated Transient Benzodithiete," J. Org. Chem. 47, 1979 (1982).

## 82BRO/NYB

A.G. Brook, S.C. Nyburg, F. Abdesaken, B. Gutekunst, G. Gutekunst, R.K.M. R. Kallury, Y.C. Poon, Y.-M. Chang and W. Wong-Ng, "Stable Solid Silaethylenes," J. Am. Chem. Soc. 104, 5667 (1982).

## 82BRU/CIL

G. Bruno, E. Ciliberto, R.D. Fischer, I. Fragala and A.W. Spieg, "Photoelectron Spectroscopy of f-Element Organometallic Complexes. 5. Comparative Study of Ring-Substituted Uranocenes," Organometall. 1, 1060 (1982).

## 82BUR/FEI

S.M. Burnett, C.S. Feigerle, A.E. Stevens and C.W. Lineberger, "Photoelectron Spectroscopy of CS- and NS-," J. Phys. Chem. 86, 4486 (1982).

## 82BUR/HAY

N.A. Burdett and A.N. Hayhurst, "Hydration of Gas Phase Ions and the Measurement of Boundary Layer Cooling During Flame Sampling into a Mass Spectrometer. J. Chem. Soc. Farad. I 78, 2997 (1982).

## 82BUR/HOL

P.C. Burgers, J.L. Holmes, F.P. Lossing, A.A. Mommers, F.R. Povel and J.K. Terlouw, "Isomeric and Tautomeric [C₄H₄O] + Ions. Their Thermochemistry and Collisionally Induced Fragmentation Characteristics," Can. J. Chem. 60, 2246 (1982).

# 82BUR/HOL2

P.C. Burgers and J.L. Holmes, "Metastable Ion Studies. XIII. The Measurement of Appearance Energies of Metastable Peaks," Org. Mass Spectrom. 17, 123 (1982).

H. Burger, G. Pawelke, R. Dammel and H. Bock, "Effects of Fluorine Substitution on Methyl Amines," J. Fluorine Chem. 19, 565 (1982).

### 82BUR/TER

P.C. Burgers, J.K. Terlouw and K. Levsen, "Gaseous[C7H8 + Ilons: [Methylene Cyclohexadiene] +, a Stable Species in the Gas Phase," Org. Mass Spectrom. 17, 295 (1982).

### 82BUR/TER2

P.C. Burgers, J.K. Terlouw and J.L. Holmes, "The Vinyloxonium Cation,  $CH_2 = CH-OH_2^+$ , a Stable  $[C_2H_5O]^+$ Species in the Gas Phase," Org. Mass Spectrom. 17, 369 (1982).

# 82BUS/WÉI

B. Busse and K.G. Weil, "Mass Spectrometric Studies on the Vapour Phase Composition over Solid and Fused Cs₃Sb," Ber. Bunsenges. Phys. Chem. 86, 93 (1982).

#### 82BUT/BAE

J.J. Butler and T. Baer, "Photoionization Study of the Heat of Formation of HCS +," J. Am. Chem. Soc. 104, 5016 (1982).

#### 82BUT/FRA

J.J. Butler, M.L. Fraser-Monteiro, L. Fraser-Monteiro, T. Baer and J.R. Hass, "Thermochemistry and Dissociation Dynamics of State-Selected C₄H₈O₂ + Ions. 2. Butanoic Acid," J. Phys. Chem. 86, 747 (1982).

#### 82BYS

K. Bystrom, J. Chem. Thermodyn. 14, 865 (1982).

#### 82BYS/MAN

K. Bystrom and M. Mansson, J. Chem. Soc. Perkins Trans. II, 505 (1982).

#### 82CAB/COW

D.E. Cabelli, A.H. Cowley and J.J. Lagowski, "The Bonding in Some Bis(arene)Chromium Compounds as Indicated by U.V. Photoelectron Spectroscopy," Inorg. Chim. Acta 57, 195 (1982).

#### 82CAR/KIB

F. Carnovale, M.H. Kibel, G.L. Nyberg and J.B. Peel, "Photoelectron Spectroscopic Assignment of the p-States of Benzenethiol," J. Electron Spectrosc. Rel. Phenom. 25, 171 (1982).

## 82CAS/CIL

M. Casarin, E. Ciliberto, I. Fragala and G. Granozzi, "Photoelectron Spectroscopy of f-Element Coordination Compounds. 2. He-II Spectra of  $\beta$ -Diketonate Complexes of Uranium(IV), Thorium(IV), Zirconium(IV) and Dioxouranium(VI)," Inorg. Chim. Acta 64, L247 (1982).

## 82CAS/GOD

C.J. Casewitt and W.A. Goddard, III, J. Am. Chem. Soc. 104, 3280 (1982).

#### 82CHE/LAP

E.K. Chess, R.L. Lapp and M.L. Gross, "The Question of Tautomerism of Alkylnitrile and Isonitrile Radical Cations," Org. Mass Spectrom. 17, 475 (1982).

## 82CHI/LIE

J.S. Chickos and J.F. Liebman unpublished result.

## 82CHO/FRO

D.P. Chong, D.C. Frost, W.M. Lau and C.A. McDowell, "Shake-Up Satellites in HeI Photoelectron Spectra: N2O4 and CH₃NO," Chem. Phys. Lett. 90, 332 (1982). 82CHU/NGU

J.Y. Chu, T.T. Nguyen and K.D. King, J. Phys. Chem. 86, 443 (1982)

## 82COL/JIM

M. Colomina, P. Jimenez and C. Turrion, J. Chem. Thermodyn. 14, 779 (1982).

# 82COM/REI

R.N. Compton and P.W. Reinhardt, "Collisonal Ionization between Fast Alkali Atoms and Hexafluorobenzene." Chem. Phys. Lett. 91, 268 (1982).

## 82CON/ZAF

J.A. Connor, M.T. Zafarani-Moattar, J. Bickerton, N.I. El-Saied, S. Suradi, R. Carson, G. Al Takkhin and H.A. Skinner, Organometallics 1, 1166 (1982).

N.C.V. Costa, D.R. Lloyd, P. Brint, W.K. Pelin and T.R. Spalding, "The Photoelectron Spectra of Enneacarbonyl- $\eta^3$ -methylidyne-tricobalt and Some Derivatives," J. Chem. Soc. Dalton Trans. 201 (1982).

## 82COW/KEM

A.H. Cowley, R.A. Kemp, M. Lattman and M.L. McKee, "Lewis Base Behavior of Methylated and Fluorinated Phosphines. A Photoelectron Spectroscopic Investigation," Inorg. Chem. 21, 85 (1982)

## 82COW/LAT

A.H. Cowley, M. Lattman, P.M. Stricklen and J.G. Verkade, "UV Photoelectron Spectroscopic Investigation of Some Polycyclic Group 5A Compounds and Related Acyclic Species. 1. Free and Coordinated Aminophosphines and Related Compounds," Inorg. Chem. 21, 543 (1982).

#### 82CRE

D. Cremer, J. Comput. Chem. 3, 165 (1982).

#### 82CRI/LIC

K. Crimaldi, R.L. Lichter and A.D. Baker, "Nitrogen-15 Nuclear Magnetic Resonance and Photoelectron Spectroscopy of Substituted N-Phenylaziridines," J. Org. Chem. 47, 3524 (1982).

#### 82DEH/PRA

P.M. Dehmer and S.T. Pratt, "Photoionization of ArKr, ArXe, and KrXe and Bond Dissociation Energies of the Rare Gas Dimer Ions," J. Chem. Phys. 77, 4804 (1982).

## 82DEH/PRA2

P.M. Dehmer and S.T. Pratt, "Photoionization of Argon Clusters," J. Chem. Phys. 76, 843 (1982).

## 82DEK/WON

R.L. DeKock, K.S. Wong and T.P. Fehlner, "Effects of Bridging Hydrogens on Metal-Metal Bonds. 2. UV Photoelectron and UV-Visible Spectra and Quantum Chemical Calculations for  $\text{Fe}_3(\mu\text{-H})_3(\text{CO})_9(\mu^3\text{-CCH}_3)$  and  $\text{Co}_3(\text{CO})_9(\mu^3\text{-CCH}_3)$ ," Inorg. Chem. 21, 3203 (1982).

#### 82DES/DUT

P. Deshmukh, T.K. Dutta, J.L.-S. Hwang, C.E. Housecroft and T.P. Fehlner, "Photoelectron Spectroscopic Measurements of the Relative Charge on Carbyne Fragments Bound to Polynuclear Cobalt Carbonyl Clusters," J. Am. Chem. Soc. 104, 1740 (1982).

#### 82DEW

M.J.S. Dewar, "Ionization Energies of p-Quinodimethane and 2,5-Dimethyl-p-quinodimethane," J. Am. Chem. Soc. 104, 1447 (1982).

#### 82DOL/MED

W.R. Dolbier, Jr., K.S. Medinger, A. Greenberg and J.F. Liebman, Tetrahedron 38, 2415 (1982).

## 82DRA/EUJ

J.E. Drake, R. Eujen and K. Gorzelska, "ESCA and UV Photoelectron Spectra of Methyl(trifluoromethyl)germanes,  $(CF_3)_{4^{-}n}Ge(CH_3)_n$  (n=1-3), and Tetrakis(trifluoromethyl)germane,  $(CF_3)_{4}Ge$ ," Inorg. Chem. 21, 1784 (1982).

### 82DRA/GOR

J.E. Drake, K. Gorzelska, G.S. White and R. Eujen, "Photoelectron Spectra of Trifluoromethyl(bromo)- and Trifluoromethyl(chloro)-Germanes (CF₃)₄-_nGeX_n (X = Br, Cl; n = 1-3)," J. Electron Spectrosc. Rel. Phenom. 26, 1 (1982).

## 82DRA/GOR2

J.E. Drake, K. Gorzelska, R. Helbing and R. Eujen, "UV and X-Ray Excited Photoelectron Spectra of Trifluoromethylgermanes (CF₃)₄-_nGeH_n (n = 1-3)," J. Electron Spectrosc. Rel. Phenom. 26, 19 (1982).

## 82DRZ/BRA

P.S. Drzaic and J.I. Brauman, "Electron Photodetachment of Sulfur Hexafluoride Anion. Comments on the Structure of SF₆", J. Am. Chem. Soc. 104, 13 (1982).

## 82DYK/GRA

J.M. Dyke, B.W.J. Gravenor, R.A. Lewis and A. Morris, "Gas-Phase High Temperature Photoelectron Spectroscopy: An Investigation of the Transition Metals Iron, Cobalt, and Nickel," J. Phys. B: At. Mol. Phys. 15, 4523 (1982).

## 82DYK/JON

J.M. Dyke, N. Jonathan, A.E. Lewis and A. Morris, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. Part 14. A Study of the Ground State of NF+ via the Ionization Processes NF+(X  $2\Pi$ )-NF( $X^3\Sigma^-$ , $a^1\Delta$ )," J. Chem. Soc. Faraday Trans. II 78, 1445 (1982).

# 82DYK/JON2

J. M. Dyke, N. Jonathan and A. Morris, "Recent Progress in the Study of Transient Species with Vacuum Ultraviolet Photoelectron Spectroscopy," Int. Rev. Phys. Chem. 2, 3 (1982).

#### 82DYK/JOS

J.M. Dyke, G.D. Josland, R.A. Lewis and A. Morris, "Improved First Ionization Potential of the Dimethylsilaethylene Molecule Obtained with High-Temperature Photoelectron Spectroscopy," J. Phys. Chem. 86, 2913 (1982).

#### 82DYK/MOR

J.M. Dyke, A. Morris and A. Ridha, "Study of the Ground State of PO + Using Photoelectron Spectroscopy," J. Chem. Soc. Faraday Trans. II 78, 2077 (1982).

#### 82DYK/MOR2

J.M. Dyke, A. Morris, A.M.A. Ridha and J.G. Snijders, "Gas Phase High Temperature Photoelectron Spectroscopy: The Tin Monoxide Molecule," Chem. Phys. 67, 245 (1982).

## 82EIS/DEM

D. Eisel and W. Demtroder, "Accurate Ionization Potential of Li₂ from Resonant Two-Photon Ionization," Chem. Phys. Lett. **88**, 481 (1982).

## 82ELB/DIE

S. Eibel, H.T. Dieck and R. Demuth, "Photoelectron Spectra of Group V Compounds. IX. The Relative Perfluoroalkyl Substituent Effect," J. Fluorine Chem. 19, 349 (1982).

## 82ELL/ENG

G.B. Ellison, P.C. Engleking and W.C. Lineberger, "Photoelectron Spectroscopy of Alkoxide and Enolate Negative Ions," J. Phys. Chem. 86, 4873 (1982).

## 82EMO/HOR

H.-H. Emons, W. Horlbeck and D. Kiessling, "Massenspektrometrische Untersuchung der Gasphase uber Alkalimetalliodiden," Z. Anorg. Allg. Chem. 488, 212 (1982).

## 82EMO/KIE

H.-H. Emons, D. Kiessling and W. Horlbeck, "Dampfdruckmessungen und massenspektrometrische Untersuchungen der Gasphase uber Erdalkalimetallhalogeniden," Z. Anorg. Allg. Chem. 488, 219 (1982).

#### 82ENG/SOL

P.S. Engel, L.R. Soltero, S.A. Baughman, C.J. Nalepa, P.A. Cahill and R.B. Weisman, J. Am. Chem. Soc. 104, 1698 (1982).

## 82ERA/KOL

P.A. Erastov and V.P. Kolesov, J. Chem. Thermodyn. 14, 103 (1982).

## 82ERM/KIR

A.I. Ermakov, E.A. Kirichenko, N.I. Pimkin, Y.V. Chizhov and V.I. Kleimenov, "Photoelectronic Spectra and Electronic Structure of Organotri- and Organotetrasiloxanes of Linear and Cyclic Structure," Zh. Struk. Khim. 23, 61 (1982).

## 82FAN/GIA

R. Fantoni, A. Giardini-Guidoni and R. Tiribelli, "(e,2e) Spectroscopy of Valence States of the NO Molecule," J. Electron Spectrosc. Rel. Phenom. 26, 99 (1982).

# 82FAR/SRI

M. Farber, R.D. Srivastava and J.W. Moyer, "Mass Spectrometric Determination of the Thermodynamics of Potassium Hydroxide and Minor Potassium-Containing Species Required in Magnetohydrodynamic Power Systems," J. Chem. Thermodyn. 14, 1103 (1982).

## 82FRA/FRA

M.L. Fraser-Monteiro, L. Fraser-Monteiro, J.J. Butler, T. Baer and J.R. Hass, "Thermochemistry and Dissociation Dynamics of State-Selected C₄H₈O₂ + Ions. 1. 1,4-Dioxane," J. Phys. Chem. 86, 739 (1982).

## 82FRA/FRA2

L. Fraser-Monteiro, M.L. Fraser-Monteiro, J.J. Butler and T. Baer, "Thermochemistry and Dissociation Dynamics of State-Selected C₄H₈O₂ + Ions. 3. Ethyl Acetate," J. Phys. Chem. 86, 752 (1982).

## 82FRE/IKU

M.A. French, S. Ikuta and P. Kebarle, "Hydrogen Bonding of O-H and C-H Hydrogen Donors to Cl⁻. Results from Mass Spectrometric Measurement of the Ion-Molecule Equilibria RH + Cl⁻ = RHCl⁻," Can. J. Chem. **60**, 1907 (1982).

#### 82FRO/LAU

D.C. Frost, W.M. Lau, C.A. McDowell and N.P.C. Westwood, "A Study by He I Photoelectron Spectroscopy of Monomeric Nitrosomethane, the Cis and Trans Dimers, and Formaldoxime," J. Phys. Chem. 86, 3577 (1982).

#### 82FUC

R. Fuchs, personal communication of unpublished heat of vaporization data.

# 82FUC/HAL

R. Fuchs, J.H. Hallman and M.O. Perlman, Can. J. Chem. 60, 1832 (1982).

#### 82FUC/PEA

R. Fuchs, L.A. Peacock and W.K. Stephenson, Can. J. Chem. 60, 1953 (1982).

#### 82FUR/SAK

J. Furukawa, M. Sakiyama, S. Seki, Y. Saito and K. Kusano, Bull. Chem. Soc. Jpn. 55, 3329 (1982).

#### 82GEL/CLE

G. Gellene, D. Cleary and R. Porter, "Stability of the Ammonium and Methylammonium Radicals from Neutralized 82HAS/NEU Ion-Beam Spectroscopy," J. Chem. Phys. 77, 3471 (1982).

#### 82GIO/BOC

J. Giordon and H. Bock, "Radical Ions, 51. Oxidative Rearrangement of Diphenyl Disulfides to Thianthrenes," Chem. Ber. 115, 2548 (1982).

#### 82GLE/DOB

R. Gleiter, W. Dobler and M. Eckert-Maksic, "The Electronic Structure of o-Tropoquinone, p-Tropoquinone, and Cyclopentene-1,2,3-trione - PE Spectroscopic Investigations," Nouv. J. Chim. 6, 123 (1982).

R. Gleiter, M. Eckert-Maksic, W. Schafer and E.A. Truesdale, "Quest for a Strong Through Bond Interaction in [2.2] Paracyclophane," Chem. Ber. 115, 2009 (1982).

#### 82GLE/GUB

C.R. Gleiter and K. Gubernator, "Through-Bond- und Through-Space-Wechselwirkungen bei den Photodimeren von Acenaphthylen," Chem. Ber. 115, 3811 (1982).

## 82GOM/CHA

M. Gomez, C. Chatillon and M. Allibert, "Thermodynamics of Gaseous and Condensed Indium Oxides by Mass Spectrometry with Controlled Oxygen Pressure," J. Chem. Thermodyn. 14, 447 (1982).

# 82GRA/AJO

G. Granozzi, D. Ajo, C. Boschi and R. Roulet, "UV Photoelectron Spectra of Iron Tricarbonyl Complexes of 2,3,5,6-Tetrakis(methylene)-7-oxabicyclo[2.2.2]heptane," J. Organometall. Chem. 224, 147 (1982).

## 82GRA/CAS

G. Granozzi, M. Casarin, D. Ajo and D. Osella, "Electron Structure of  $[{Ni(\eta^5-C_5H_5)(\mu-CO)}_2]$  by He(I) and He(II) Photoelectron Spectroscopy," J. Chem. Soc. Dalton Trans. 2047 (1982).

## 82GRA/TON

G. Granozzi, E. Tondello, D. Ajo, M. Casarin, S. Aime and D. Osella, "Gas Phase Helium I Photoelectron Spectra of Methinyltricobalt Enneacarbonyl Clusters," Inorg. Chem. 21, 1081 (1982).

## 82GRE/KEL

J.C. Green, M.R. Kelly, P.D. Grebenik, C.E. Briant, N.A. McEvoy and D.M.P. Mingos, "UV Photoelectron Spectral and Theoretical Studies on Tris(butadiene)-Molybdenum and -Tungsten," J. Organometall. Chem. 228, 239 (1982).

### 82GRE/LIE

A. Greenberg and J.F. Liebman, J. Org. Chem. 47, 2084 (1982)

# 82GRE/MCC

M.M. Green, R.J. McCluskey and J. Vogt, "A Comparison between the Stereoselective Thermal-Induced and Ionization-Induced Elimination of Acetic Acid from 2-Butyl Acetate," J. Am. Chem. Soc. 104, 2262 (1982).

#### 82GRE/PAY

J.C. Green, M. Payne, E.A. Seddon and R.A. Andersen, "He-I and He-II Photoelectron Studies of Bonding in Metal Silylamido-complexes,  $M[N(SiMe_3)_2]_n$  (n = 1, 2, or 3)," J. Chem. Soc. Dalton Trans. 887 (1982).

# 82GUI/KHA

C. Guimon, S. Khayar, G. Pfister-Guillouzo, R.M. Claramunt and J. Elguero, "A Direct Photoelectron Spectroscopy Study of the 1-Azidopyridine Pyrolysis," Spectrosc. Letters 15, 435 (1982).

C. Guimon, G. Pfister-Guillouzo and E. Rose, "Applications de la Spectroscopie Photoelectronique aux Proprietes Moleculaires. X. Influence de la Conformation des Arenes Chrome Tricarbonyle ortho Disubstitues sue Leur Structure Electronique et Leur Reactivite Nucleophile: Etude par Spectroscopie Photoelectronique UV(He(I), He(II)) et Calculs EHT," J. Organometall. Chem. 224, 125 (1982).

## 82HA/NGU

T.-K. Ha and M.T. Nguyen, Theochem. 4, 355 (1982).

E. Haselbach, L. Neuhaus, R.P. Johnson, K.N. Houk and M.N. Paddon-Row, "II-Orbital Interactions in Mobius-Type Molecules as Studied by Photoelectron Spectroscopy," Helv. Chim. Acta 65, 1743 (1982).

## 82HAY/IWA

T. Hayaishi, S. Iwata, M. Sasanuma, E. Ishiguro, Y. Morioka, Y. Iida and M. Nakamura, "Photoionisation Mass Spectrometric Study of Acetylene in the VUV Region," J. Phys. B: At. Mol. Phys. 15, 79 (1982).

## 82HEP/TRE

J.W. Hepburn, D.J. Trevor, J.E. Pollard, D.A. Shirley and Y.T. Lee, "Multiphoton Ionization Photoelectron Spectroscopy of CCl₂F₂ and CCl₃F," J. Chem. Phys. 76, 4287 (1982).

## 82HIL

K. Hilpert, J. Chem. Phys. 77, 1425 (1982).

## 82HIR/MOH

T. Hirabayashi, S. Mohmand and H. Bock, "Thermische Zersetzung ofenkettiger kialkyl-Sulfide, -disulfide und -diselenide," Chem. Ber. 115, 483 (1982).

## 82HIT/HAO

A.P. Hitchcock, N. Hao, N.H. Werstiuk, M.J. McGlinchey and T. Ziegler, "Electronic Structure of Zr(BH₄)₄ and Hf(BH₄)₄ Studied by Photoelectron Spectroscopy and LCAO-HFS Calculations," Inorg. Chem. 21, 793 (1982).

J.L. Holmes, P.C. Burgers and Y.A. Mollah, "Alkane Elimination from Ionized Alkanols," Org. Mass Spectrom. 17, 127 (1982).

## 82HOL/LOS

J.L. Holmes, F.P. Lossing, J.K. Terlouw and P.C. Burgers, "The Radical Cation [CH2OH2] + and Related Stable Gas Phase Ion-Dipole Complexes," J. Am. Chem. Soc. 104, 2931 (1982).

J.L. Holmes and F.P. Lossing, "Towards a General Scheme for Estimating the Heats of Formation of Organic Ions in the Gas Phase. Part II. The Effect of Substitution at Charge-Bearing Sites," Can. J. Chem. 60, 2365 (1982).

# 82HOL/LOS3

J.L. Holmes and F.P. Lossing, "Heats of Formation of the Ionic and Neutral Enols of Acetaldehyde and Acetone," J. Am. Chem. Soc. 104, 2648 (1982).

### 82HOL/SMI

J.B. Holbrook, B.C. Smith, C.E. Housecroft and K. Wade, Polyhedron 1, 701 (1982).

# 82HON/EAT

E. Honegger, P.E. Eaton, B.K. Ravi Shankar and E. Heilbronner, "195. The Electronic Structure of Pentaprismane (C₁₀H₁₀) as Revealed by its Photoelectron Spectrum," Helv. Chim. Acta 65, 1982 (1982).

### 82HUB/LIC

J.L. Hubbard and D.L. Lichtenberger, "Vibrational Fine Structure in the Valence Ionizations of Transition-Metal Hexacarbonyls: New Experimental Indication of Metal-to-Carbonyl  $\pi$  Bonding," J. Am. Chem. Soc. 104, 2132 (1982).

#### 82IKE/TAM

Y. Ikeda, M. Tamaki, G. Matsumoto, K. Amioka and T. Mizuno, "Mass Spectrometric Studies of Lithium-Containing Oxides at High Temperatures," Spectrochim. Acta 37B, 647 (1982).

#### 82IKU/KEB

S. Ikuta, P. Kebarle, G.M. Bancroft, T. Chan and R.J. Puddephatt, "Basicities of Methyl-, Methylphenyl-, and Phenylphosphines in the Gas Phase," J. Am. Chem. Soc. 104, 5899 (1982).

#### 82INA/MUR

S. Inagaki, S. Murata, M. Sakiyama, Y. Ito, Y. Umihara, T. Hijiya and T. Matsura, Bull. Chem. Soc. Jpn. 55, 2803 (1982).

#### 82INA/MUR2

S. Inagaki, S. Murata and M. Sakiyama, Bull. Chem. Soc. Jpn. 55, 2808 (1982).

#### 82JANAF

M.J. Chase, Jr., J.L. Curnutt, J.R. Downy Jr., R.A. McDonald, A.N. Syverud and E.A. Valenzuela, "JANAF Thermochemical Tables 1982 Supplement," J. Phys. Chem. Ref. Data 11, 695 (1982).

## 82JOH/KIM

C.E. Johnson, K.Y. Kim and M. Mansson, Personal communication.

#### 82JOH/POW

K. Johnson, I. Powis and C.J. Danby, "A Photoelectron-Photoion Coincidence Study of Acetaldehyde and Ethylene Oxide Molecular Ions," Chem. Phys. 70, 329 (1982).

## 82JON/DEL

G. Jonkers, C.A. De Lange and J.G. Snijders, "Effects of Relativity in the He(I) Photoelectron Spectrum of CI₄," Chem. Phys. **69**, 109 (1982).

## 82JON/GRA

G. Jonkers, O. Grabandt, R. Mooyman and C.A. De Lange, "He(I) Photoelectron Spectroscopy of Transient Species: Fluorothiocyanate (FSCN)," J. Electron Spectrosc. Rel. Phenom. 26, 147 (1982).

## 82JON/VAN

G. Jonkers, S.M. Van Der Kerk and C.A. De Lange, "He(I) Photoelectron Spectroscopy of Transient Species: Germanium Dichloride and Germanium Dibromide," Chem. Phys. 70, 69 (1982).

## 82JON/VAN2

G. Jonkers, S.M. Van Der Kerk, R. Mooyman, C.A. De Lange and J.G. Snijders, "He(I) Photoelectron Spectroscopy of Tetraiodoethylene (C₂I₄)," Chem. Phys. 69, 115 (1982).

## 82JON/VAN3

G. Jonkers, S.M. Van Der Kerk, R. Mooyman and C.A. De Lange, "UV Photoelectron Spectroscopy of Transient Species: Germanium Difluoride (GeF₂)," Chem. Phys. Lett. **90**, 252 (1982).

### 82JOS

R.M. Joshi, J. Macromol. Sci. Chem. A18, 861 (1982). 82KAS/CHE

O.E. Kashireninov, A.D. Chervonnyi and V.A. Piven, High Temp. Sci. 15, 79 (1982).

# 82KAT/SHI

S. Katsumata, H. Shiromaru, K. Mitani, S. Iwata and K. Kimura, "Photoelectron Angular Distribution and Assignments of Photoelectron Spectra of Nitrogen Dioxide, Nitromethane and Nitrobenzene," Chem. Phys. 69, 423 (1982).

## 82KLA/SAB

L. Klasinc, A. Sabljic, G. Kluge, J. Rieger and M. Scholz, "Chemistry of Excited States. Part 13. Assignment of Lowest II-Ionizations in Photoelectron Spectra of Thiophen, Furan, and Pyrrole," J. Chem. Soc. Perkin Trans. II 539 (1982).

## 82KOB/KUB

T. Kobayashi, T. Kubota, K. Ezumi and C. Utsunomiya, "Photoelectron Angular Distribution Study of Some Isoxazoles Combined with Perturbation Theoretic Approach," Bull. Chem. Soc. Jpn. 55, 3915 (1982).

## 82KOZ/MAS

M.P. Kozina, V.S. Mastryunov and E.M. Mil'vitshaya, Russ. Chem. Rev. 1, 765 (1982).

#### 82KRE/SCH

J. Kreile, A. Schweig and W. Thiel, "Experimental and Theoretical Investigation of the Photoionization of Hydrogen Cyanide," Chem. Phys. Lett. 87, 473 (1982).

#### 82KUT/EDW

R. Kutina, A. Edwards, G. Goodman and J. Berkowitz, "Photoionization Mass Spectrometry of CH₃SH, CD₃SH, and CH₃SD: Heats of formation of CH₃S+ (CH₂SH+), CH₂S+, CH₂S, and HCS+," J. Chem. Phys. 77, 5508 (1982).

#### 82KUT/GOC

R.E. Kutina, G.L. Goodman and J. Berkowitz, "Photoionization Mass Spectrometry of NH₂OH: Heats of Formation of HNO + and NOH +," J. Chem. Phys. 77, 1664 (1982).

## 82LEL/BAL

L. Lelik, V.K. Balthazarne, O.E. Kaposi and G. Sajo, "Homo-es heterokomplexek kepzodesenek magashomersekletu tomegspektrometrias vizsgalata NaI/CsI rendszer egyensulyi goztereben, I.," Magyar Kem. Fol. 88, 513 (1982).

#### 82LEV/LIA

R. Levin and S.G. Lias, "Ionization Potential and Appearance Potential Measurements, 1971-1981," Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U.S.) 71, (1982).

#### 82LIA

S. Lias, "Thermochemical Information from Ion-Molecule Rate Constants," Ion-Cyclotron Resonance Spectrometry II (H. Hartmann and K.-P. Wanczek, editors), Springer-Verlag, Berlin (1982), p. 409.

## 82LIF

C. Lifshitz, "Time-Dependent Mass Spectra and Breakdown Graphs. 2. The Kinetic Shift in Pyridine," J. Phys. Chem. 86, 606 (1982).

## 82LIF2

C. Lifshitz, "A Surprisal Analysis of the Dissociation Dynamics of C₃H₆O ⁺ Cations," Int. J. Mass Spectrom. Ion Phys. 43, 179 (1982).

# 82LOU/AND

J.N. Louwen, R.R. Andrea, D.J. Stufkens and A. Oskam, "He(I) and He(II) Photoelectron Spectra of M[Co(CO)4]2 and M[Mn(CO)5]2 Complexes (M = Zn, Cd, and Hg)," Z. Naturforsch. 37b, 711 (1982).

# 82LOU/HAR

J.N. Louwen, J. Hart, D.J. Stufkens and A. Oskam, "The HeI and HeII Photoelectron Spectra of [Fe  $\eta^3$ -C₃H₅(CO)₃X] and Fe  $\eta^3$ -C₄H₇(CO)₃X] (X = Cl, Br, I) and [CoC₃H₅(CO)₃]," Z. Naturforsch. 37b, 179 (1982).

## 82LOU/VAN

J.N. Louwen, H. Van Dam, D.J. Stufkens, A. Oskam and H.H. Jaffe, "The Electronic Structures of Some Aromatic Sulfinylamines," J. Electron Spectrosc. Rel. Phenom. 26, 235 (1982).

### 82MAC

A. Maccoll, "Ion Enthalpies and Their Application in Mass Spectrometry," Org. Mass Spectrom. 17, 1 (1982).

## 82MAI/MIS

J.P. Maier, L. Misev and F. Thommen, "Dicyanoacetylene Cation. Laser-Induced Fluorescence and Photoelectron-Photon Coincidence Studies," J. Phys. Chem. 86, 514 (1982).

#### 82MAI/THO

J.P. Maier and F. Thommen, "Relaxation of Dihaloacetylene Cations in Their A and B States Studied by Photoelectron-Photoion Coincidence Spectroscopy," Chem. Phys. 70, 325 (1982).

#### 82MAI/THO2

J.P. Maier and F. Thommen, "Photoelectron-Photoion Coincidence Studies of Halobenzene Cations in Their Excited Electronic States," J. Chem. Phys. 77, 4427 (1982).

#### 82MAR/CHE

S. Martin, J. Chevaleyre, S. Valignat, J.P. Perrot, M. Broyer, B. Cabaud and A. Hoareau, "Autoionizing Rydberg States of the Na₂ Molecule," Chem. Phys. Lett. 87, 235 (1982).

#### 82MAR/THR

D.S. Marynick, L. Throckmorton and R. Backquet, J. Am. Chem. Soc. 104, 1 (1982).

## 82MAS/BOH

R.S. Mason, D.K. Bohme and K.R. Jennings, "Gas Phase Basicities of Halogenotoluenes," J. Chem. Soc. Faraday Trans. I 78, 1943 (1982).

#### 82MCI/FUK

R.T. McIver, Jr. and E.K. Fukuda, "Equilibrium Electron Affinities," Lec. Notes in Chem. 31 165. Data are anchored to EA(SO₂) Ref. 74CEL/BEN.

#### 82MCM/GOL

D.F. McMillen and D.M. Golden, "Hydrocarbon Bond Dissociation Energies," Ann. Rev. Phys. Chem. 33, 493 (1982).

#### 82MEI/HAN

H. Meier, N. Hanold and H. Kolshorn, Angew. Chem. Int. Ed. 21, 66 (1982).

#### 82MIK/TRU

A.I. Mikaya, E.A. Trusova, V.G. Zaikin, E.N. Karaulova and L.M. Petrova, "Ionization Energy and Appearance Energy in Organic Chemistry. Communication 5. Energy Differences of Stereoisomers of 2-Methyl-1-Thiadecalin," Izv. Akad. Nauk SSSR, Ser. Khim. 1479 (1982); English trans.: Bull. Acad. Sci. USSR Div. Chem. Sci., 1319 (1982).

# 82MIN/SAB

C. Mindakis and R. Sabbah, Thermochim. Acta 55, 147 (1982).

### 82MIŠ/POK

B.G. Mishchanchuk, V.A. Pokrovskii, V.P. Shabel'nikov and E.N. Korol, "Mass Spectrometric Study of Energy Characteristics of Methanol and Ethanol Ions During Ionization by a Strong Electric Field," Teor. Eks. Khim. 18, 307 (1982).

## 82MOR/MER

J.-P. Morizur, J. Mercier and M. Sarraf,
"2-Substituted-2,3-dihydro-4H-pyrans: Competition between
'Retro Diels-Alder' Fragmentation and Substituent Loss,"
Org. Mass Spectrom. 17, 327 (1982).

# 82NAT/PEN

P. Natalis, P. Pennetreau, L. Longton and J.E. Collin, "Ionisation Energy Values for the Vibronic Transitions from HCl  $X^1\Sigma^+$  (v" = 0) to HCl + Ionic States  $X^2\Pi$  (v' = 0-13) and  $A^2\Sigma^+$  (v' = 0-12), Determined by Photoelectron Spectroscopy, "J. Electron Spectrosc. Rel. Phenom. 27, 267 (1982).

## 82NEL/GAN

S.F. Nelsen and P.M. Gannett, "The 3,3-Dimethyl-2-azabicyclo[2.2.2]octyl System as a Bredt's Rule Kinetically Stabilized Dialkylamino Group in Electron Transfer Studies," J. Am. Chem. Soc. 104, 5292 (1982).

## 82NIS/SHI

N. Nishi, H. Shinohara and I. Hanazaki, J. Chem. Phys. 77, 246 (1982).

#### 82OLE/TUR

J.J. Oleksik and A.G. Turner, Inorg. Chim. Acta 55, 165 (1984).

## 82PAD/PÁT

M.N. Paddon-Row, H.K. Patney and R.S. Brown, "Orbital Interactions. XI. Application of Photoelectron Spectroscopy to the Study of Orbital Interactions in Some 2- and 9-Substituted Octahydrodimethanonaphthalenes," Aust. J. Chem. 35, 293 (1982).

## 82PAM/RÓG

M. Pamidimukkala, D. Rogers and G.B. Skinner, J. Phys. Chem. Ref. Data 11, 83 (1982).

#### 82PAP/KOL

T.S. Papina and V.P. Kolesov, Russ. J. Phys. Chem. 56, 675 (1982).

#### 82PAU/DAL

J.F. Paulson and J. Dale, "Reactions of OH-H₂O with NO₂," J. Chem. Phys. 77, 4006 (1982).

#### 82PAU/HEH

C.F. Pau and W.J. Hehre, J. Phys. Chem. 86, 321 (1982).

## 82PAU/HEH2

C.F. Pau and W.J. Hehre, J. Phys. Chem. 86, 1282 (1982).

## 82PFI/GER

G. Pfister-Guillouzo, S. Geribaldi and J.-F. Gal, "Spectres Photoelectroniques de Cyclohexene-2-ones-1 Diversement Substituees en Position 3. Correlations avec la Reactivite," Can. J. Chem. 60, 1163 (1982).

#### 82PIE/HEH

W.J. Pietro and W.J. Hehre, J. Am. Chem. Soc. 104, 4329 (1982).

## 82PIL/SKI

G. Pilcher and H.A. Skinner, "The Chemistry of the Metal-Carbon Bond" (ed. F.R. Hartley and S. Patai, John Wiley & Sons, New York, 1982).

# 82POL/DEH

E.D. Poliakoff, P.M. Dehmer, J.L. Dehmer and R. Stockbauer, "Photoelectron-photoion Coincidence Spectroscopy of Gas-Phase Clusters," J. Chem. Phys. 76, 5214 (1982).

# 82PRA/DEH

S.T. Pratt and P.M. Dehmer, "Photoionization of the Kr₂ Dimer," Chem. Phys. Lett. 87, 533 (1982).

# 82PRA/DEH2

S.T. Pratt and P.M. Dehmer, "Photoionization of the Neon-Rare Gas Dimers NeAr, NeKr, and NeXe," J. Chem. Phys. 76, 3433 (1982).

### 82ROG

D.W. Rogers, Am. Lab., p. 15, et. seq. (Jan. 1982).

### 82ROS/BUF

H.M. Rosenstock, R. Buff, M.A.A. Ferreira, S.G. Lias, A.C. Parr, R.L. Stockbauer and J.L. Holmes, "Fragmentation Mechanism and Energetics of Some Alkyl Halide Ions," J. Am. Chem. Soc. 104, 2337 (1982).

# 82ROS/DAN

H.M. Rosenstock, J. Dannacher and J.F. Liebman, "The Role of Excited Electronic States in Ion Fragmentation: C₆H₆+," Radiat. Phys. Chem. 20, 7 (1982).

## 82ROY/MCM

M. Roy and T.B. McMahon, Org. Mass Spectrom. 17, 392 (1982). 82ROZ/HOU

M.D. Rozeboom and K.N. Houk, "Stereospecific Alkyl Group Effects on Amine Lone-Pair Ionization Potentials: Photoelectron Spectra of Alkylpiperidines," J. Am. Chem. Soc. 104, 1189 (1982).

## 82ROZ/HOU2

M.D. Rozeboom, K.N. Houk, S. Searles and S.E. Seyedrezai, "Photoelectron Spectroscopy of N-Aryl Cyclic Amines. Variable Conformations and Relationships to Gas- and Solution-Phase Basicities," J. Am. Chem. Soc. 104, 3448 (1982).

## 82SAB/GOM

R. Sabbah and L.A.T. Gomez, Thermochim. Acta 52, 285 (1982).

#### 82SAI/YAM

Y. Saito, K. Yamauchi, K. Mihama and T. Noda, "Formation and Ionization Potentials of Lead Clusters," Japanese J. Appl. Phys. 21, L396 (1982).

## 82SCH/MEA

P.A. Schulz, R.D. Mead, P.L. Jones and W.C. Lineberger, "OH- and OD- Threshold Photodetachment," J. Chem. Phys. 77, 1153 (1982).

## 82SCH/SCH

R. Schulz and A. Schweig, "Photoelectron Spectra of Thermally Generated Unstable Organic Compounds -2-Propene-1-imine," J. Elec. Spectros. Rel. Phenom. 28, 33 (1982).

#### 82SCO/ERD

L.T. Scott, I. Erden, W.R. Brunsvold, T.H. Schultz, K.N. Houk and M.N. Paddon-Row, "Competitive [6 + 2], [4 + 2], and [2 + 2] Cycloadditions. Experimental Classification of Two-Electron Cycloaddends," J. Am. Chem. Soc. 104, 3659 (1982).

## 82SEL/HEL

E.T.M. Selim and A.I. Helal, "The Study of C1-C3 Monosubstituted Alkyl Benzenes by the Inverse Convolution of First Differential Ionization Efficiency Curves," Org. Mass Spectrom. 17, 539 (1982).

#### 82SHA

W.M. Shaub, Thermochim. Acta 55, 59 (1982).

#### 82SHE/HAL

D.E. Sherwood, Jr. and M.B. Hall, "Electronic Structure of Metal Clusters. 2. Photoelectron Spectrum and Molecular Orbital Calculations of Decacarbonyldihydridotriosmium," Inorg. Chem. 21, 3458 (1982).

## 82SHI/GIN

I. Shim and K.A. Gingerich, J. Chem. Phys. 77, 2490 (1982).

L.N. Sidirov, "Molecules With A High Electron Affinity," Russ. Chem. Rev. 51, 356 (1982).

# 82SID/GUB

L.N. Sidirov and G.D. Gubarevich, "Dissociation of the Gaseous Complex Fluorides. Alkali Metal Trifluoromanganates and Tetrafluoromanganates," Koord. Khim. 8, 463. CA: 97, 12708c (1982).

## 82SIE/MAU

L.W. Sieck and M. Mautner (Meot-Ner), "Ionization Energies and Entropies of Cycloalkanes. Kinetics of Free Energy Controlled Charge-Transfer Reactions," J. Phys. Chem. 86, 3646 (1982).

## 82SKO/SOR

E.V. Skokan, I.D. Sorokin, M.I. Nikitin, N.S. Chilingarov and L.N. Sidorov, "The Electron Affinity of UF6," Russ. J. Phys. Chem. 57, 1745 (1983).

## 82SOL/BOC

B. Solouki, H. Bock, R. Appel, A. Westerhaus, G. Becker and G. Uhl, "Photoelektronen-Spektren von Methylidinphosphanen R-CP," Chem. Ber. 115, 3747 (1982).

## 82SPA/GLE

J. Spanget-Larsen, R. Gleiter, K. Gubernator, R.J. Ternansky and L.A. Paquette, "Electronic and Molecular Structure of Simple Bicyclopropyls. Photoelectron Spectroscopy and Model Calculations," J. Org. Chem. 47, 3082 (1982).

## 82SPA/KOR

J. Spanget-Larsen, C. de Korswagen, M. Eckert-Maksic and R. Gleiter, "90. Electronic and Molecular Structure of Simple 3,3'-Bicyclopropenyls. Photoelectron Spectroscopy and Model Calculations," Helv. Chim. Acta 65, 968 (1982).

### 82SPL/CAL

J.S. Splitter and M. Calvin, "Conformational Dependence in the Mass Spectrum of Cyclohexanecarboxaldehyde," J. Org. Chem. 47, 4545 (1982).

#### 82SQU/DEP

R.R. Squires and C.H. DePuy, "Flowing Afterglow Studies of the Reactions Between Negative Ions and Trimethylsilyl Enol Ethers. Regiospecific Generation of Gas Phase Enolate Ions," Org. Mass Spectrom. 17, 187 (1982).

# 82SUR/ELS

S. Suradi, N. El-Saiad, G. Pilcher and H.A. Skinner, J. Chem. Thermodyn. 14, 45 (1982).

#### 82TN270

D.D. Wagman, W.H. Evans, V.B. Parker, R.H. Schumm, I. Halow, S.M. Bailey, K.L. Churney, R.L. Nuttall, "The NBS Tables of Chemical Thermodynamic Properties (NBS Tech Note 270)," J. Phys. Chem. Ref. Data 11, Supl. 1 (1982).

## 82TOR/SAB

L.A.F. Torres Gomez and R. Sabbah, Thermochim. Acta 57, 67 (1982).

#### 82TOR/SAB2

L.A.F. Torres Gomez and R. Sabbah, Thermochim. Acta 58, 311 (1982).

#### 82TPIS

L.V. Gurvich, I.V. Veits, V.A. Medvedev, G.A. Khachkuruzov, V.S. Yungman and G.A. Bergman, et al., "Termodinamicheskie Svoistva Individual'nykh Veshchestv" (Thermodynamic Properties of Individual Substances); Glushko, V.P., gen. ed., Vol. 4, parts 1 and 2(1982), Izdatel'stvo"Nauka"Moscow.

#### 82TRA/MCL

J.C. Trager, R.G. McLouglin and A.J.C. Nicholson, "Heat of Formation for Acetyl Cation in the Gas Phase," J. Am. Chem. Soc. 104, 5318 (1982).

# 82TRA/RED

V.F. Traven', V.V. Redchenko and B.I. Stepanov, "Parameterization of Quantum Chemical Calculations of Organic Compounds of Silicon by Means of Photoelectron Spectroscopy and the Electronic Spectroscopy of CTC," Zh. Obs. Khim. 52, 2262 (1982); English trans.: J. Gen. Chem. (USSR) 52, 2015 (1982).

## 82TRA/RED2

V.F. Traven', V.V. Redchenko, V.Y. Bartenev and B.I. Stepanov, "Photoelectron Spectra of Permethyl-di-, -tri-, and -tetra-germanes, Zh. Obs. Khim. 52, 358 (1982). English trans.: J. Gen. Chem. (USSR) 52, 310 (1982).

## 82TRA/ROD

V.F. Traven', O.G. Rodin, V.V. Redchenko, T.A. Chibisova and B.I. Stepanov, "Photoelectron Spectra of Selenanthrene and Dibenzoselenophene," Zh. Obs. Khim. 52, 2650 (1982); English trans.: J. Gen. Chem. (USSR) 52, 2345 (1982).

## 82VON/ASB

W. Von Niessen, L. Asbrink and G. Bieri, "30.4 nm He(II) Photoelectron Spectra of Organic Molecules. Part VI. Halogeno-Compounds (C, H, X: X = Cl, Br, I)," J. Electron Spectrosc. Rel. Phenom. 26, 173 (1982).

## 82WAR/PEA

P.M. Warner and S. Peacock, J. Comput. Chem. 3, 417 (1982).

# 82WIB/WEN

K.B. Wiberg and J.J. Wendolowski, J. Am. Chem. Soc. 104, 5679 (1982).

## 82WOR/HAR

S.D. Worley, J.H. Hargis, L. Chang, G.A. Mattson and W.B. Jennings, "The UPS of Some Compounds Containing the Heteroatoms Phosphorus, Nitrogen and Oxygen," J. Electron Spectrosc. Rel. Phenom. 25, 135 (1982).

# 82WOR/WEB

S.D. Worley, T.R. Webb and T.Y. Ou, "He(I) Photoelectron Spectra of Three Novel Ruthenium Tricarbonyl  $\pi$  Complexes," J. Electron Spectrosc. Rel. Phenom. 28, 129 (1982).

## 82YOK/QUI

A. Yokozeki, E.L. Quitevis and D.R. Herschbach, "Electron Attachment to Volatile Uranyl Molecules," J. Phys. Chem. 86, 617 (1982).

#### 82ZVE/ASH

V.V. Zverev, L.K. Ashrafullina, Y.Y. Villem, N.V. Villem and R.R. Shagidullin, "Photoelectron Spectrum and Electronic and Steric Structure of o-Aminothiophenol," Izv. Akad. Nauk SSSR, Ser. Khim. 2165 (1982).

## 82ZVE/VIL

V.V. Zverev, Y.Y. Villem, N.V. Villem, E.N. Klimovitskii and B.A. Arbuzov, "Photoelectron Spectra and Intramolecular Interactions of Dimethoxymethane and 4,7-Dihydro-1,3-dioxepin," Zh. Obsh. Khim. 52, 1888 (1982); Engl. trans.: J. Gen. Chem. USSR 52, 1775 (1982).

#### 83ALE/FED

V.I. Alekseev, L.I. Fedorova and A.V. Baluev, "Mass Spectrometric Study of Thermochemical Characteristics of Perchloryl Fluoride and its Decomposition Product Chlorosyl Fluoride," Izv. Akad. Nauk SSR, Ser. Khim. 1084 (1983).

#### 83ALT/CON

G. Al-Takhin, J.A. Connor and H.A. Skinner, J. Organomet. Chem. 259, 313 (1983).

#### 83AN/MAN

X.-W. An and M. Mansson, J. Chem. Thermodyn. 15, 287 (1983).

#### 83AND/CÁU

E. Andoni, C. Cauletti and C. Furlani, "Electronic Structure and Bonding in 2,2-Diphenyl-1,3-dithiacyclopentanes of IV A Group Elements Studied by UV Photoelectron Spectroscopy," Inorg. Chim. Acta 76, L35 (1983).

H.E. Audier, A. Milliet and J.-P. Denhez, "Mecanismes d'Isomerisation des Indanois-2 en Spectrometrie de Masse," Bull. Soc. Chim. France II-202 (1983).

#### 83BAK/ARM

A.D. Baker, G.H. Armen and S. Funaro, "Oral Levels of Crown Ethers and Related Macrocycles Studies by Ultraviolet Photoelectron Spectroscopy: Relationship to Complexation Studies," J. Chem. Soc. Dalton Trans., 2519 (1983).

## 83BAL/GIG

G. Balducci, G. Gigli and M. Guido, "Thermodynamic Study of Gaseous Ternary Oxide Molecules. The Europium-Vanadium-Oxygen System," J. Chem. Phys. 79, 5623 (1983).

# 83BAL/NÈU

T. Bally, L. Neuhaus, S. Nitsche, E. Haselbach, J. Janssen and W. Luttke, "Cross Conjugated Polyenes Derived from 2-Vinylbutadiene: Electronic States of Their Radical Cations and Triplet Energy," Helv. Chim. Acta 66, 1288 (1983).

## 83BAN/BRI

G.M. Bancroft and D.J. Bristow, "High Resolution HeI and HeII Photoelectron Spectra of the Thallium Halides: Valence Bands and Ti 5d Ligand Field Splittings," Can. J. Chem. 61, 2669 (1983).

## 83BAN/DAV

J.A. Bandy, C.E. Davies, J.C. Green, M.L.H. Green, K. Prout and D.P.S. Rodgers, "Synthesis, Crystal Structures, and Bonding of the Molybdenum Cubane Compounds  $[Mo(\mu-C_5H_4Pr^i)(\mu^3-S)]_4^{n+}$ , where n = 0, 1, and 2," J. Chem. Soc. Chem. Commun. 1395 (1983).

## 83BAR/BAS

J.E. Bartmess, T. Basso and R.M. Georgiadis, "The Electron Affinity of a Nitroxide Radical," J. Phys. Chem. 87, 912 (1983).

# 83BIÈ/MÓR

H.W. Biermann and T.H. Morton, "Reversible Tautomerization of Radical Cations. Photoionization of 2-Methoxyethanol and 3-Methoxy-1-propanol," J. Am. Chem. Soc. 105, 5025 (1983).

#### 83BIN

M. Binnewies, "Bildung und Stabilitat von gasformigem AsOCl und SbOCI Massenspektrometrische Untersuchungen," Z. Anorg. Allg. Chem. 505, 32 (1983).

## 83BIN/LAK

M. Binnewies, M. Lakenbrink and H. Schnockel, Z. Anorg. Allg. Chem. 497, 7 (1983).

## 83BOA/HOU

G. Boand, R. Houriet and T. Baumann, "The Gas Phase Acidity of Aliphatic Alcohols," J. Am. Chem. Soc. 105, 2203 (1983).

#### 83BOC/MOH

H. Bock, S. Mohmand, T. Hirabayashi, G. Maier and H.P. Reisenauer, "Photoelektronen-spektroskopischer Nachweis und Matrix-Isolierung von Thio-para-benzochinonen," Chem. Ber. 116, 273 (1983).

## 83BOC/ROT

H. Bock and B. Roth, "Radical Ions. 49. Redox Reactions of Some Thiophene Derivatives," Phosphorus and Sulfur 14, 211 (1983)

## 83BOH/GLE2

M.C. Bohm, R. Gleiter, T.A. Albright and V. Sriyunyongwat, "The Low-Lying Cationic Hole-States of n3-Allyl Tetracarbonyl Complexes of Mn and Re. Photoelectron Spectra and Green's Function Calculations," Molec. Phys. 50, 113 (1983).

## 83BOM/DAN

R. Bombach, J. Dannacher and J.-P. Stadelmann, "The Rate-Energy Functions for the Formation of Tropylium and Benzylium Ions from Toluene Molecular Cations," Chem. Phys. Lett. 95, 259 (1983).

#### 83BOM/DAN2

R. Bombach, J. Dannacher and J.-P. Stadelmann, "Energy and Time Dependence of the Decay Processes of Toluene Molecular Cations," J. Am. Chem. Soc. 105, 4205 (1983).

## 83BOM/DAN3

R. Bombach, J. Dannacher, J.-P. Stadelmann and R. Neier, "Fundamental Aspects of Ionic Dissociations: The Fragmentation Pathways of Excited Bicyclobutane Cations," Helv. Chim. Acta 66, 701 (1983).

# 83BOM/DAN4

R. Bombach, J. Dannacher, E. Honegger, J.-P. Stadelmann and R. Neier, "Unimolecular Dissociations of Excited C₃H₆+: A Photoelectron-Photoion Coincidence Study of Cyclopropanol and Allyl Alcohol," Chem. Phys. 82, 459 (1983).

W.A. Brand and T. Baer, "Unimolecular Dissociation of Energy-Selected t-Butylbenzene Ions and Effect of Thermal Energy on Data Analysis," Int. J. Mass Spectrom. Ion Phys. 49, 103 (1983).

# 83BRA/BAE2

W.A. Brand, T. Baer and C.E. Klots, "Kinetic Energy Release Distributions in the Fragmentation of Energy-Selected Iodopropane Ions," Chem. Phys. 76, 111 (1983).

R.S. Brown, J.M. Buschek, K.R. Kopecky and A.J. Miller, "Photoelectron Spectra of syn- and anti-Sesquinorbornene. Evidence for Vertical  $\Sigma$ - $\pi$  Delocalization in Bicyclo[2.2.1]heptene," J. Org. Chem. 48, 3692 (1983).

# 83BUR/CAS

T.J. Burkey, A.L. Castelhano, D. Griller and F.P. Lossing, "Heats of Formation and Ionization Potentials of Some α-Aminoalkyl Radicals," J. Am. Chem. Soc. 105, 4701 (1983).

## 83BUR/HOL

P.C. Burgers, J.L. Holmes, A.A. Mommers and J.E. Szulejko, "The Collisionally Induced Dissociation of Allyl and 2-Propenyl Cations," Org. Mass Spectrom. 18, 596 (1983). 83BUR/HOL2

P.C. Burgers, J.L. Holmes, J.E. Szulejko, A.A. Mommers and J.K. Terlouw, "The Gas Phase Ion Chemistry of the Acetyl Cation and Isomeric  $[C_2H_3O]^+$  Ions. On the Structure of the  $[C_2H_3O]^+$  Daughter Ions Generated from the Enol of Acetone Radical Cation," Org. Mass Spectrom. 18, 254 (1983).

### 83BUR/HOL3

P.C. Burgers, J.L. Holmes, F.P. Lossing, F.R. Povel and J.K. Terlouw, "The Role of Charge-site Location in Fragmenting Ions. 1- [CH₃CHXCOOCH₃] + and [CH₂XCH₂COOCH₃] + Ions and the Structures of Daughter Ions Derived from the Loss of X(X = I, Br, Cl and CH₃)," Org. Mass Spectrom. 18, 335 (1983).

## 83BUR/MOM

P.C. Burgers, A.A. Mommers and J.L. Holmes, "Ionized Oxycarbenes: [COH] +, [HCOH] +, [C(OH)₂] +, [HCO₂] +, and [COOH] +, Their Generation, Identification, Heat of Formation, and Dissociation Characteristics," J. Am. Chem. Soc. 105, 5976 (1983).

#### 83BUR/STE

S.M. Burnett, A.E. Stevens, C.S. Feigerle and W.C. Lineberger, "Observation of X¹A₁ Vinylidene by Photoelectron Spectroscopy of the C₂H₂- Anion," Chem. Phys. Lett. 100, 124 (1983).

## 83BUT/BAE

J.J. Butler, T. Baer and S.A. Evans, Jr., "Energetics and Structures of Organosulfur Ions: CH₃SSCH₃+, CH₃SS+, C₂H₅S+, and CH₂SH+," J. Am. Chem. Soc. 105, 3451 (1983).

# 83BUT/BAE2

J.J. Butler and T. Baer, "A Photoionization Study of Organosulfur Ring Compounds: Thiirane, Thietane and Tetrahydrothiophene," Org. Mass Spectrom. 18, 248 (1983).

## 83BYS

K. Bystrom, J. Comput. Chem. 4, 308 (1983).

## 83CAL

W.L. Calhoun, J. Chem. Eng. Data 28, 147 (1983).

## 83CAL/BAR

G. Caldwell and J.E. Bartmess, unpublished results.

#### 83CHE/WEN

E.C.M. Chen and W.E. Wentworth, "Determination of Molecular Electron Affinities Using the Electron Capture Detector in the Pulse Sampling Mode at Steady State," J. Phys. Chem. 87, 45 (1983).

## 83CAM/CIU

R. Cambi, G. Ciullo, A. Sgamellotti, F. Tarantelli, R. Fantoni, A. Giardini-Guidoni, I.E. McCarthy and V. di Martino, "An (e, 2e) Spectroscopic Investigation and a Green's Function Study of the Ionization of Chloro- and Bromoethylene," Chem. Phys. Lett. 101, 477 (1983).

## 83CAN/HAM

P.H. Cannington and N.S. Ham, "He(I) and He(II) Photoelectron Spectra of Glycine and Related Molecules," J. Electron Spectrosc. Rel. Phenom. 32, 139 (1983).

## 83CAR/LIV

F. Carnovale, M.K. Livett and J.B. Peel, "Identification of the Gas Phase Trimer (CH₃)₂S·(HF)₂ by Photoelectron Spectroscopy," J. Am. Chem. Soc. 105, 6788 (1983).

## 83CAS/AJO

M. Casarin, D. Ajo, G. Granozzi, E. Tondello and S. Aime, "Gas-Phase Ultraviolet Photoelectron Spectra of  $[Ni(\eta-C_5H_5)]_2(\mu-C_2R_2)]$  (R = H or CF₃) Complexes," J. Chem. Soc. Dalton Trans., 869 (1983).

## 83CAS/KIM

M.C. Caserio and J.K. Kim, "Thioacylium Ions. Gas Phase Ion-Molecule Reactions of Thioic and Dithioic Acid Derivatives," J. Am. Chem. Soc. 105, 6896 (1983).

## 83CAT/ELG

J. Catalan, J. Elguero, R. Flammang and A. Maquestiau, "The Relative Basicities of Imidazole and Benzimidazole,' Angew. Chem. Int. Ed. 22, 323 (1983).

## 83CET/LAP

B. Cetinkaya, M.F. Lappert and R.J. Suffolk, "Photoelectron Spectra of Some Sterically Hindered Phenols and Related Compounds," J. Chem. Res. (S), 316 (1983).

## 83CET/LAP2

B. Cetinkaya, M.F. Lappert, J.G. Stamper and R.J. Suffolk, "The He(I) and He(II) Photoelectron Spectra of bis(2,4,6-Tri-t-butylphenyl)-diphosphene," J. Electron Spectrosc. Rel. Phenom. 32, 133 (1983).

#### 83CLA/COR

R.M. Clay, S. Corr, G. Keenan and W.V. Steele, J. Am. Chem. Soc. 105, 2071 (1983).

#### 83COM/REI

R.N. Compton, P.W. Reinhardt and H.C. Schweinler, "Formation of Gas-Phase Negative Ions in Vinylene Carbonate," Int. J. Mass Spectrom. Ion Phys. 49, 113 (1983).

#### 83DAM/BOC

R. Dammel, H. Bock and J.-M. Denis, "The Photoelectron Spectrum of 1-Azetine," Chem. Phys. Lett. 102, 239 (1983).

## 83DAN/ROS

J. Dannacher, H.M. Rosenstock, R. Buff, A.C. Parr, R.L. Stockbauer, R. Bombach and J.-P. Stadelmann, "Benchmark Measurement of Iodobenzene Ion Fragmentation Rates," Chem. Phys. 75, 23 (1983).

#### 83DAS/GRO

C. Dass and M.L. Gross, "Electrocyclic Ring Opening of 1-Phenylcyclobutene and 3-Phenylcyclobutene Radical Cations," J. Am. Chem. Soc. 105, 5724 (1983).

## 83DEK/DES

R.L. DeKock, P. Deshmukh, T.P. Fehlner, C.E. Housecroft, J.S. Plotkin and S.G. Shore, "UV Photoelectron Spectra and Electronic Structure of ( $\eta$ 5-C₅H₅)(CO)₂FeB₂H₅. Comparison of the Fe-B Bonding with the Fe-C Bonding in (CO)₄FeC₂H₄," J. Am. Chem. Soc. 105, 815 (1983).

## 83DEP/SCH

C.H. Depuy and R. Schmitt, Personal Communication.

## 83ELL/ELL

H.B. Ellis Jr. and G.B. Ellison, "Photoelectron Spectroscopy of HNO and DNO," J. Chem. Phys. 78, 6541 (1983).

# 83DEW/HEA

M.J.S. Dewar and E. Healy, J. Comput. Chem. 4, 542 (1983).

# 83DEW/RZE

M.J.S. Dewar and H.S. Rzepa, J. Comput. Chem. 4, 158 (1983). 83DIE/BRU

H. tom Dieck, B. Bruder and K.-D. Franz, "Synthese offenkettiger und cyclischer, silylierter 1,2-Ethendiamine," Chem. Ber. 116, 136 (1983).

## 83DOB/HIL

B. Dobson, I.H. Hillier, J.A. Connor, D. Moncrieff, M.L. Scanlan and C.D. Garner, "Electronic Structure and Low-energy Photoelectron Spectra of 4,4'-Disubstituted 2,2'-Bipyridines," J. Chem. Soc. Faraday Trans. II 79, 295 (1983).

## 83DUD/GRE

N. Dudeney, J.C. Green, P. Grebenik and O.N. Kirchner, "Synthesis and Structural Characterization of the Electron Rich Complexes Co(η-C₅Me₅)(R₂PCH₂CH₂PR₂) (R = Me, Ph). Photoelectron Spectroscopic Studies of Some Pentamethylcyclopentadienylphosphinecobalt Complexes," J. Organometall. Chem. 252, 221 (1983).

# 83DYK/GRA

J.M. Dyke, B.W.J. Gravenor, R.A. Lewis and A. Morris, "A Study of the First Ionization Potential of the CrO (X⁵π) Molecule with High-temperature Photoelectron Spectroscopy," J. Chem. Soc., Faraday Trans. II 79, 1083 (1983).

## 83DYK/JON

J.M. Dyke, N. Jonathan, A.E. Lewis, J.D. Mills and A. Morris, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. Part 16. The NCO (X²II) Radical," Molec. Phys. **50**, 77 (1983).

# 83DYK/ĴONŹ

J.M. Dyke, N. Jonathan, A. Morris, A. Ridha and M.J. Winter, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. XVII. The SiH₃ (X²A₁) Radical," Chem. Phys. 81, 481 (1983).

#### 83DYK/KIR

J.M. Dyke, C. Kirby and A. Morris, "Study of the Ionization Process BF +  $(X^2\Sigma^+)$ +BF $(X^1\Sigma^+)$  by High-temperature Photoelectron Spectroscopy," J. Chem. Soc. Faraday Trans. II 79, 483 (1983).

#### 83EBA/ANE

T. Ebata, Y. Anezaki, M. Fujii, N. Mikami and M. Ito, "High Rydberg States of NO Studied by Two-Color Multiphoton Spectroscopy," J. Phys. Chem. 87, 4773 (1983).

R.S. Edmundson, "Cyclic Organophosphorus Compounds. XVIII-The Mass Spectroscopy of Some 2-Amino-1,3,2-dioxaphosphorinans, Cyclic Phosphorodiamidates and Phosphorodiamidothionates," Org. 83GLE/SAA Mass Spectrom. 18, 150 (1983).

## 83ELL/ELL

H.B. Ellis, Jr. and G.B. Ellison, "Photoelectron Spectroscopy of HNO- and DNO-," J. Chem. Phys. 78, 6541 (1983)

#### 83ERM/AKO

A.I. Ermolenko, M.E. Akopyan and Y.L. Sergeev, "Decomposition of Dimethyl Sulfide Molecular Ions. Randomization of States during Photoionization Dissociation of Molecules," Khim. Vys. Ener. 17, 25 (1983); English trans.: High Energy 17, 19 (1983).

## 83ERV/LOH

K. Ervin, S.K. Loh, N. Aristov and P.B. Armentrout, "Metal Cluster Ions: The Bond Energy of Mn2+," J. Phys. Chem. 87, 3593 (1983).

## 83EVA/WEE

B.S. Evans, S.I. Weeks and E. Whittle, "Bromination of Fluoroalkanes. Part 5. Kinetics of Forward and Reverse Reactions in the System Br₂ + i-C₃F₇H = HBr + i-C₃F₇Br," 83GRA/WIE J. Chem. Soc. Faraday Trans. I 79, 1471 (1983).

## 83FUC/HAL

R. Fuchs and J.H. Hallman, Can. J. Chem. 61, 503 (1983).

### 83FUC/SMI

R. Fuchs and N. Smith, Personal communication of unpublished heat of formation and heat of vaporization data.

## 83GAU/HOU

T. Gaumann, R. Houriet, D. Stahl, J.-C. Tabet, N. Heinrich and H. Schwarz, "Further Examples of Skeletal Rerrangement of the Wagner-Meerwein Type in Chemical Ionization Mass Spectrometry: the Case of [C₆H₉+] Ions," Org. Mass Spectrom. 18, 215 (1983).

J.P. Gilman, T. Hsieh and G.G. Meisels, "Competition between Isomerization and Fragmentation of Gaseous Ions. II. Nitromethane and Methylnitrite Ions," J. Chem. Phys. 78, 1174 (1983).

## 83GIL/HSI2

J.P. Gilman, T. Hsieh and G.G. Meisels, "The Unimolecular Decomposition Rates of Energy Selected Methylnitrite and Deuterated Methylnitrite Ions," J. Chem. Phys. 78, 3767 (1983).

## 83GLE/BÓH

R. Gleiter, M.C. Bohm, A. de Meijere and T. Preuss, "Electronic Structure and Reactivity of Homobarrelene Derivatives," J. Org. Chem. 48, 796 (1983).

R. Gleiter, M.C. Bohm, M. Eckert-Maksic, W. Schafer, M. Baudler, Y. Aktalay, G. Fritz and K.-D. Hoppe, "The Electronic Structure of Phosphorus Cages with the Nortricyclane Skeleton. Model Calculations and Photoelectron Spectroscopic Investigations," Chem. Ber. 116, 2972 (1983).

#### 83GLE/GOO

R. Gleiter, W.D. Goodmann, W. Schafer, J. Grobe and J. Apel, "He(I)-PE Spektren der Verbindungen (CH3)nE(CF3)3-n fur  $E = \hat{P}$ , As, Sb und n = 0 - 3," Chem. Ber. 116, 3745 (1983).

#### 83GLE/HAI

R. Gleiter, R. Haider, P. Bischof and J.-J. Lindner, "Zur Konformation von Tetravinyl- und Trivinylmethan - Vergleich er PE-Spektren von Tetravinylmethan mit trans, trans-1,2,3,4-Tetravinylcyclobutan," Chem. Ber. 116, 3736 (1983).

#### 83GLE/HAI2

R. Gleiter, R. Haider, K. Gubernator and P. Bischof, "cis,trans,cis- and trans,trans,trans-1,2,3,4-Tetravinylcyclobutane - Preparation and Some Spectroscopic Properties," Chem. Ber. 116, 2983 (1983).

R. Gleiter, R.W. Saalfrank, W. Paul, D.O. Cowan and M. Eckert-Maksic, "Das Photoelektronenspektrum von 1,1-Diethoxy-3,3-bis(trifluormethyl)allen. Der Effekt von Trifluormethylgruppen auf kumulierte Systeme," Chem. Ber. 116, 2888 (1983).

# 83GLE/SPA

R. Gleiter, J. Spanget-Larsen, R. Bartetzko, H. Neunhoeffer and M. Clausen, "Photoelectron Spectra of 1,2,3-Triazine and Its Methyl Derivatives," Chem. Phys. Lett. 97, 94 (1983).

#### 83GON/PFI

D. Gonbeau, G. Pfister-Guillouzo, J. Escudie, C. Couret and J. Satge, "Application de la Spectroscopie Moleculaire aux Proprietes Moleculaires. XVII. Etude Structurale de Diphosphenes par Spectroscopie Photoelectronique," J. Organometall. Chem. 247, C17 (1983).

#### 83GOR/BOU

M.S. Gordon, P. Boudjouk and F. Anwari, J. Am. Chem. Soc. 105, 4972 (1983).

M. Grade, J. Wienecke, W. Rosinger and W. Hirschwald, "Electron Impact Investigation of the Molecules SeS(g) and TeSe(g) under High-Temperature Equilibrium Conditions," Ber. Bunsenges. Phys. Chem. 87, 355 (1983).

J.C. Green, M.P. Payne and A. Streitwieser, Jr., "He I and He II Photoelectron Spectral Studies of Alkyluranocenes," Organometall. 2, 1707 (1983).

## 83GRE/TOM

A. Greenberg, R.P.T. Tomkins, M. Dobrovolny and J.F. Liebman, J. Am. Chem. Soc. 105, 6855 (1983).

## 83GUI/PFI

C. Guimon, G. Pfister-Guillouzo and M. Begtrup, "Tautomerism of Pyrazoline-5-thione and Trazoline-5-thione Studied by Variable Temperature Photoelectron Spectroscopy," Can. J. Chem. 61, 1197 (1983).

## 83GUI/PFI2

G. Guimon, G. Pfister-Guillouzo, H. Lavayssiere, G. Dousse, J. Barrau and J. Satge, "Generation of Dimethylgermathione and Dimethylsilathione and Their Detection in the Gas Phase by Photoelectron Spectroscopy," J. Organometal. Chem. 249, C17 (1983).

# 83HAR/OHN

Y. Harada, K. Ohno and H. Mutoh, "Penning Ionization Electron Spectroscopy of CO and Fe(CO)5. Study of Electronic Structure of Fe(CO)5 from Electron Distribution of Individual Molecular Orbitals," J. Chem. Phys. 79, 3251 (1983).

H. Helm and R. Moller, "Bound-Free Spectroscopy of Cs2+," Phys. Rev. A 27, 2493 (1983).

# 83HEN/BEN

S.P. Heneghan and S.W. Benson, "Kinetics and Thermochemistry of Electron Attachment to SF₆," Int. J. Chem. Kinet. 15, 109 (1983).

### 83HIL

K. Hilpert, Ber. Buns. Gesell. Phys. Chem. 87, 161 (1983).

#### 83HIL/GIN

K. Hilpert and K.A. Gingerich, "Mass Spectrometric Study on the Evaporation of Phases of the System NaI-SnI2," Int. J. Mass Spectrom. Ion Phys. 47, 247 (1983).

J.L. Holmes, Unpublished result.

## 83HOL/BUR

J.L. Holmes, P.C. Burgers, J.K. Terlouw, H. Schwarz, B. Ciommer and H. Halim, "Stable  $C_2H_5X^+$  (X = Cl,Br) Radical Cations of Structure [CH3CHXH+]: Their Energetics and Dissociation Characteristics," Org. Mass Spectrom. 18, 208 (1983).

# 83HOL/LOS

J.L. Holmes and F.P. Lossing, "The Need for Adequate Thermochemical Data for the Interpretation of Fragmentation Mechanisms and Ion Structure Assignments," Int. J. Mass Spectrom. Ion Phys. 47, 133 (1983).

#### 83HOL/LOS2

J.L. Holmes, F.P. Lossing, J.K. Terlouw and P.C. Burgers, "Novel Gas-Phase Ions. The Radical Cations [CH2XH] + (X = F, Cl, Br, I, OH, NH₂, SH) and  $[CH_2CH_2NH_3]^+$ ," Can. J. Chem. 61, 2305 (1983).

## 83HOU/RON

K.N. Houk, N.G. Rondan, M.N. Paddon-Row, C.W. Jefford, P.T. Huy, P.D. Burrow and K.D. Jordan, "Ionization Potentials, Electron Affinities, and Molecular Orbitals of 2-Substituted Norbornadienes. Theory of 1,2 and Homo-1,4 Carbene Cycloaddition Selectivities," J. Am. Chem. Soc. 105, 5563 (1983).

## 83ING/NIB

S. Ingemann and N.M.M. Nibbering, "Gas Phase Reactions of Anions with 2-, 3-, and 4-Fluoroanisole," J. Org. Chem. 48, 183 (1983).

## HOM/AILE8

W. Jian-qi, M. Mohraz, E. Heilbronner, A. Krebs, K. Schutz, J. Voss and B. Kopke, "79. The  $He(I\alpha)$ Photoelectron Spectra of Substituted 1,2-Dithietes," Helv. Chim. Acta 66, 801 (1983).

### 83JOC/DEK

R. Jochem, H. Dekker, C. Mosselman and G. Soumen, J. Chem. Thermodyn. 15, 95 (1983).

## 83JON/VAN

G. Jonkers, S.M. Van Der Kerk, R. Mooyman, C.A. De Lange and J.G. Snijders, "UV Photoelectron Spectroscopy of Transient Species: Germanium Diiodide (GeI2)," Chem. Phys. Lett. 94, 585 (1983).

# 83JOR/CAR

F.S. Jorgensen and L. Carlsen, "1,2-Oxathiolane - A Photoelectron Spectroscopic Study," Chem. Ber. 116, 2374 (1983).

# 83JOR/MCC

F.S. Jorgensen and P.H. McCabe, "Cis-Disulfides. Photoelectron Spectrum of a 6,7-Dithiabicyclo[3.2.1]octane," Tetrahedron Lett. 24, 319 (1983).

# 83JOR/PAD

F.S. Jorgensen, M.N. Paddon-Row and H.K. Patney, "Photoelectron Spectra of Some Decahydrotrimethanoanthracenes: Observation of Large II Orbital Interactions through Six Bonds and an Apparent Violation of the trans Rule," J. Chem. Soc. Chem. Commun. 573 (1983).

## 83KAG/UJS

N.D. Kagramanov, K. Ujszaszy, J. Tamas, A.K. Maltsev and O.M. Nefedov, "Mass Spectrometric Detection of Allylic and Perfluoroallylic Free Radicals and the Determination of Their Ionization Potentials," Izv. Akad. Nauk SSSR, Ser. Khim. 7, 1683 (1983); English trans.: Bull. Acad. Sci. USSR Div. Chem. Sci. 7, 1531 (1984).

## 83KAK/GIE

W. Kakolowicz and E. Giera, J. Chem. Thermodyn. 15, 203 (1983).

#### 83KIR/DOM

D.B. Kirklin and E.S. Domalski, J. Chem. Thermodyn. 15, 941 (1983).

#### 83KIT/MOR

S. Kitagawa, I. Morishima and K. Yoshikawa, "UV Photoelectron Spectra of Some Transition Metal(II) Acetylacetonates," Polyhedron 2, 43 (1983).

#### 83KLA/KOV

L. Klasinc, B. Kovac and H. Gusten, "Photoelectron Spectra of Acenes. Electronic Structure and Substituent Effects," Pure & Appl. Chem. 55, 289 (1983).

## 83KLA/MAI

D. Klapstein, J.P. Maier and W. Zambach, "Emission Spectra of Rotationally Cooled Dihaloacetylene Cations in the Gas Phase:  $A2\Pi(\Omega,g) \rightarrow x2\Pi(\Omega,u)$  Band Systems," Chem. Phys. 77, 463 (1983). 83KLE/NIB

J.C. Kleingeld and N.M.M. Nibbering, "The Long-lived H₃O- Ion in the Gas Phase: Its Formation, Structure, and Reactions," Int. J. Mass Spectrom. Ion Phys. 49, 311 (1983).

## 83KOB

T. Kobayashi, "Conformational Analysis of Terphenyls by Photoelectron Spectroscopy," Bull. Chem. Soc. Jpn. 56, 3224 (1983)

#### 83KOL/PAP

V.P. Kolesov and T.S. Papina, Russ. Chem. Rev. 52, 754 (1983).

#### 83KOP/MOL

I.A. Koppel, U.H. Molder and R.J. Pikver, "Photoelectron Spectra of Molecules. I. Alcohols," Org. Reactivity 20, 45 (1983).

#### 83KOR/BON

M.V. Korobov, A.A. Bondarenko, L.N. Sidorov and V.V. Nikulin, "Enthalpies of Formation of the Gaseous Platinum Fluorides, PtF2 and PtF4," High Temp. Sci. 16, 411 (1983).

#### 83LAC/MAN

K. Lacmann, M.J.P. Maneira, A.M.C. Moutinho and U. Weigman, "Total and Double Differential Cross Sections of Ion-Pair Formations in Collisions of K Atoms with SnCl4 and CCl4," J. Chem. Phys. 78, 1767 (1983).

### 83LAR/MCM

J.W. Larson and T.B. McMahon, "Strong Hydrogen Bonding in Gas-Phase Anions. An Ion Cyclotron Resonance Determination of Fluoride Binding Energetics to Bronsted Acids from Gas-Phase Fluoride Exchange Equilibria Measurements," J. Am. Chem. Soc. 105, 2944 (1983).

# 83LIE

J.F. Liebman, "The Cyclophanes" (ed. P.M. Keehn and S. Rosenfeld, Academic Press, New York, 1983).

### 83LJF

C. Lifshitz, "Energy-Entropy Trade-offs in the Unimolecular Decompositions of SF₆", J. Phys. Chem. 87, 3474 (1983).

### 83LIF/BER

C. Lifshitz, P. Berger and E. Tzidony, "Kinetic Energy Release Distributions (KERDs) for the Dissociation of Metastable Enol Ions," Chem. Phys. Lett. 95, 109 (1983).

## 83LIF/EAT

C. Lifshitz and P.E. Eaton, "Time-Dependent Mass Spectra and Breakdown Graphs. III. The Cubane Cation Complete or Partial Instability," Int. J. Mass Spectrom. Ion Phys. 49, 337 (1983)

## 83LIN/BRO

S.H. Linn, J.M. Brom, Jr., W.-B. Tzeng and C.Y. Ng, "Molecular Beam Photoionization Study of HgCl₂," J. Chem. Phys. 78, 37 (1983)

## 83LIN/IZE

S.H. Linn, W.-B. Tzeng, J.M. Brom, Jr. and C.Y. Ng, "Molecular Beam Photoionization Study of HgBr₂ and HgI₂," J. Chem. Phys. 78, 50 (1983).

## 83LOC/MCI

M.J. Locke and R.T. McIver, Jr., "Effect of Solvation on the Acid/Base Properties of Glycine," J. Am. Chem. Soc. 105, 4226 (1983).

#### 83MAK/VER

A.V. Makarov, E.N. Verkhoturov and O.T. Nikitin, "Mass Spectrometric Study of the Processes of Ionization of the Vapor above Molybdenum Dichloride," Vest. Mosk. Univ. Khim. 38, 350 (1983); English trans.: Moscow Univ. Chem. Bull. 38, 42 (1983).

## 83MAL/MIL

W.G. Mallard, J.H. Miller and K.C. Smyth, "The ns Rydberg Series of 1,3-trans-Butadiene Observed Using Multiphoton Ionization," J. Chem. Phys. 79, 5900 (1983).

#### 83MAR/MAY

H.-D. Martin, B. Mayer, R. Gleiter, W. Schafer and F. Vogtle, "Photoelektronenspektroskopische Untersuchung transanularer  $\pi$ -,  $\sigma$ - und n-Wechselwirkungen in bruckenkopfsubstituierten Triptycenen," Chem. Ber. 116, 2546 (1983).

#### 83MAR/REI

R. Maripuu, I. Reineck, H. Agren, W. Nian-Zu, J. Rong, H. Veenhuizen, S. Al-Shamma, L. Karlsson and K. Siegbahn, "The HeI Excited Electron Spectrum of Phosphine. An Experimental and Theoretical Study," Molec. Phys. 48, 1255 (1983).

## 83MAU

M. Meot-Ner (Mautner), Personal communication.

#### 83MAZ

M. Mazzoni, "²P Photoionization Cross Section of Sb I," Phys. Lett. **97A**, 381 (1983).

## 83MCA/HUD

D.J. McAdoo and C.E. Hudson, "The Decompositions of Metastable [C₄H₈O] + Ions and the [C₄H₈O] + Potential Surface," Org. Mass Spectrom. 18, 466 (1983).

## 83MCG/SCH

M.W. McGeogh and R.E. Schlier, "Autoionizing Rydberg States of the Li₂ Molecule: Molecular Constants for Li₂+," Chem. Phys. Lett. 99, 347 (1983).

## 83MET/ARA

R.M. Metzger and E.S. Arafat, J. Chem. Phys. 78, 2696 (1983).

## 83MOL/PÍK

U.H. Molder, R.J. Pikver and I.A. Koppel, "Photoelectron Spectra of Molecules. 2. Ethers," Org. Reactivity 20, 208 (1983).

## 83MOL/PIK2

U.H. Molder, R.J. Pikver and I.A. Koppel, "Photoelectron Spectra of Molecules. 3. Nitriles," Org. Reactivity 20, 230 (1983).

## 83MOL/PIK3

U.H. Molder, R.J. Pikver and I.A. Koppel, "Photoelectron Spectra of Molecules. 4. Amines," Org. Reactivity 20, 355 (1983).

# 83MOO/SEI

G.K. Moortgart, W. Seiler and P. Warnek, "Photodissociation of HCHO in Air: CO and H₂ Quantum Yields at 220 and 300K," J. Chem. Phys. 78, 1185 (1983).

## 83MUR

E. Murad, "Abstraction Reactions of Ca + and Sr + Ions," J. Chem. Phys. 78, 6611 (1983).

### 83NES/MII

O. Neskovic, M. Miletic, M. Veljkovic, D. Golobocantin and K.F. Zmbov, "Ionization and Fragmentation of Phosphorous Oxyfluoride by Electron Impact," Int. J. Mass Spectrom. Ion Proc. 47, 141 (1983).

## 83NIS/SAK

K. Nishiyama, M. Sakiyama and S. Seki, Bull. Chem. Soc. Jpn. 56, 3171 (1983).

## 83NOB/WAL

P.N. Noble and R. Walsh, "Kinetics of the Gas Phase Reaction between Iodine and Monogermane and the Bond Dissociation Energy D(H₃Ge-H)," Int. J. Chem. Kinet. 15, 547 (1983).

#### 83NOV/POT

I. Novak and A.W. Potts, "The Ultraviolet Photoelectron Spectra of Gas Phase and Condensed Bismuth Halides and Antimony Trifluoride," J. Chem. Soc. Dalton Trans., 635 (1983).

## 83NOV/POT2

I. Novak and A.W. Potts, "The Ultraviolet Photoelectron Spectra and Electron Structure of Gas Phase and Condensed SnF₂ and PbF₂," J. Chem. Soc. Dalton Trans., 2211 (1983).

#### 83OAK/ELL

J.M. Oakes and B.G. Ellison, "Photoelectron Spectroscopy of the Allenyl Anion  $CH_2 = C = CH^{-,*}$  J. Am. Chem. Soc. 105, 2969 (1983).

#### 83OAK/JON

J.M. Oakes, M.E. Jones, V.M. Bierbaum and G.B. Ellison, "Photoelectron Spectroscopy of CCO" and HCCO", J. Phys. Chem. 87, 4810 (1983).

#### 83OGD/SHA

I.K. Ogden, N. Shaw, C.J. Danby and I. Powis, "Competing Dissociation Channels of Nitromethane and Methyl Nitrite Ions and the Role of Electronic and Internal Modes of Excitation," Int. J. Mass Spectrom. Ion Proc. 54, 41 (1983).

#### 830HN/IMA

K. Ohno, K. Imai, S. Matsumoto and Y. Harada, "Penning Ionization Electron Spectroscopy of C₂H₅X (X = NH₂, OH, H, Cl, I). Relative Reactivity of Orbital Localizing on Functional Groups upon Electrophilic Attack by Metastable Helium Atoms," J. Phys. Chem. 87, 4346 (1983).

#### 830ZG

T. Ozgen, "Mass Spectrometric Determination of the Appearance Potentials of PCl₃, AsCl₃, SbCl₃, BiCl₃ and Their Fragments," Int. J. Mass Spectrom. Ion Proc. 48, 427 (1983).

#### 83PED/MAR

J.B. Pedley and E.M. Marshall, J. Phys. Chem. Ref. Data 12, 957 (1983).

## 83PEN/NAT

P. Pennetreau, P. Natalis, L. Longton and J.E. Collin, "Ionization Energies for the Vibronic Transitions from DCI  $X^1\Sigma^+(v^*=0)$  to DCI  $+ X^2\Pi$  (V' = 0-18) and  $A^2\Sigma^+$  (v' = 0-17) Determined by Photoelectron Spectroscopy," J. Electron Spectrosc. Rel. Phenom. 28, 295 (1983).

# 83PET/DAO

K.I. Peterson, P.D. Dao and A.W. Castleman, Jr.,
"Photoionization Studies of Na₂Cl and Na₂O and Reactions of
Metal Clusters," J. Chem. Phys. 79, 777 (1983).

## 83PIA/KEL

M.N. Piancastelli, P.R. Keller, J.W. Taylor, F.A. Grimm and T.A. Carlson, "Angular Distribution Parameter as a Function of Photon Energy for Some Mono- and Diazabenzenes and Its Use for Orbital Assignment," J. Am. Chem. Soc. 105, 4235 (1983).

### 83PIC/ROD

J.M. Pickard and A.S. Rodgers, "Kinetics of the Gas Phase Reaction  $CH_3F + I_2 = CH_3FI + HI$ : The C-H Bond Dissociation Energy in Methyl and Methylene Fluorides," Int. J. Chem. Kinet. 15, 569 (1983).

# 83PLA/SIM

V.A. Platonov and Y.N. Simulin, Russ. J. Phys. Chem. 57, 840 (1983).

### 83PLÈ/MÁR

P. Plessis, P. Marmet and R. Dutil, "Ionization and Appearance Potentials of CH₄ by Electron Impact," J. Phys. B: At. Mol. Phys. 16, 1283 (1983).

## 83POT/NOV

A.W. Potts and I. Novak, "Ultraviolet Photoelectron Spectra of Selenium and Tellurium," J. Electron Spectrosc. Rel. Phenom. 28a, 267 (1983).

# 83POT/NOV2

A.W. Potts, I. Novak and M.L. Lyus, "The Valence Shell Electronic Structure and UV Photoelectron Spectra of the Tetrahaloethylenes," J. Electron Spectrosc. Rel. Phenom. 31, 57 (1983).

#### 83POW

I. Powis, "The Unimolecular Dissociation of Electronic State-Selected Methyl Iodide Cations," Chem. Phys. 74, 421 (1983).

## 83POW/HAN

D.E. Powers, S.G. Hansen, M.E. Geusic, D.L. Michalopoulos and R.E. Smalley, "Supersonic Copper Clusters," J. Chem. Phys. 78, 2866 (1983).

#### 83PRE/TZE

H.F. Prest, W.-B. Tzeng, J.M. Brom, Jr. and C.Y. Ng, "Molecular Beam Photoionization Study of H₂S," Int. J. Mass Spectrom. Ion Proc. 50, 315 (1983).

#### 83PRE/IZE2

H.F. Prest, W.-B. Tzeng, J.M. Brom, Jr. and C.Y. Ng, "Photoionization Study of (H₂S)₂ and (H₂S)₃," J. Am. Chem. Soc. 105, 7531 (1983).

#### 83RAB/SEI

M.A. Rabbih and E.T.M. Selim, "A Mass Spectrometric Appearance Energies Study of Cyclohexanol," Egypt. J. Phys. 14, 243 (1983).

#### 83RAK/BOH

A.B. Rakshit and D.K. Bohme, Int. J. Mass Spectrom. Ion Proc. 49, 275 (1983).

#### 83REI/NOH

I. Reineck, C. Nohre, P. Lodin, R. Maripuu, B. Lindberg, L. Karlsson, K. Siegbahn, A.-B. Hornfeldt and S. Gronowitz, "Electronic and Vibrational Structure of 2-Substituted Selenophenes Studied by He(I) Photoelectron Spectroscopy," Chem. Scripta 22, 209 (1983).

# 83ROS/GRA

W. Rosinger, M. Grade and W. Hirschwald, "Detection of Ion States of S₂ to S₈ by Electron Impact," Int. J. Mass Spectrom. Ion Proc. 47, 239 (1983).

# 83RUS/FRE

D.H. Russell, B.S. Freiser, E.H. McBay and D.C. Canada, "The Structure of Decomposing [C7H7O] + Ions: Benzyl versus Tropylium Ion Structures," Org. Mass Spectrom. 18, 474 (1983).

### 83RUS/GOO

B. Ruscic, G.L. Goodman and J. Berkowitz, "Photoelectron Spectra of the Lanthanide Trihalides and Their Interpretation," J. Chem. Phys. 78, 5443 (1983).

## 83SCH/BAL

W. Schmidt, H.-J. Ballschmidt, M. Klessinger, A. Heesing and W. Herdering, "MINDO/3-Rechnungen und PE-Untersuchungen zur Reaktionsweise von Azabicyclen," Chem. Ber. 116, 1097 (1983).

## 83SCH/SCH

R. Schulz, A. Schweig, K. Hartke and J. Koster, "Variable Temperature Photoelectron Spectral Study of 1,3-Dithiol-2-one and 4,5-Disubstituted 1,3-Dithiol-2-ones. Thermal Generation of 1,2-Dithiete, 3,4-Disubstituted 1,2-Dithietes, and Dialkyl Tetrathiooxalates" J. Am. Chem. Soc. 105, 4519 (1983).

# 83SEA/CHU

M. Seaver, W.A. Chupka, S.D. Colson and D. Gauyacq, "Double Resonance Multiphoton Ionization Studies of High Rydberg States in NO," J. Phys. Chem. 87, 2226 (1983).

## 83SEM/RYK

V.I. Semenikhin, A.N. Rykov and L.N. Sidorov, "Mass Spectrometric Study of the Evaporation of Lead Monoxide," Zh. Fiz. Khim. 57, 1663 (1983); Engl. trans.: Russ. J. Phys. Chem. 57, 1008 (1983).

## 83SHU/BEN

L.G.S. Shum and S.W. Benson, "Thermochemistry and Kinetics of the Reaction of Methyl Mercaptan with Iodine," Int. J. Chem. Kinet. 15, 433 (1983).

#### 83SID/RUD

L.N. Sidirov, E.B. Rudnyi, M.I. Nikitin and I.D. Sorokin, "Gas Phase Anion Exchange Reactions and the Determination of the Heats of Formation of Metaphosphate (PO₃-), metaborate (BO₂-), and perrhennate (ReO₄-)," Dokl. Akad. Nauk SSSR, Ser. Khim. 272, 1172 (1983).

# 83SID/ZHU

L.N. Sidirov, L.V. Zhuravlena, M.V. Varkov, E.V. Skokan, I.D. Sorokin, Yu. M. Koronev and P.A. Akishima, "Mass-Spectrometric Determination of Enthalpies of Dissociation of Gaseous Complex Fluorides into Neutral and Charged Particles. VII. MF-ThF4 Systems," Int. J. Mass Spectrom. Ion Proc. 51, 291 (1983).

# 83SKO/SÀB

S. Skoulika and R. Sabbah, Thermochim. Acta 61, 203 (1983).

#### 83SKO/SOR

E.V. Skokan, I.D. Sorokin, M.I. Nikitin, N.S. Chilingarov and L.N. Sidirov, "The Electron Affinity of UF₆," Russ. J. Phys. Chem. 57, 1745 (1983).

#### 83SMI

O.I. Smith, "Cross Sections for Formation of Parent and Fragment Ions by Electron Impact from C₂N₂," Int. J. Mass Spectrom. Ion Proc. 54, 55 (1983).

# 83SPY/SAU

S.M. Spyrou, I. Sauers and L.G. Christophorou, "Electron Attachment to the Perfluoroalkanes n- $C_nF_{2n+2}$  (n = 1-6) and i- $C_4F_{10}$ ," J. Chem. Phys. 78, 7200 (1983).

### 83STE

S.E. Stein, personal communciation to the authors.

#### 83STE/FEI

A.E. Stevens, C.S. Feigerle and W.C. Lineberger, "Laser Photoelectron Spectroscopy of MnH- and FeH-: Electronic Structures of the Metal Hydrides, Identification of a Low Spin Excited State of MnH," J. Chem. Phys. 78, 5420 (1983).

#### 83STE2

W.V. Steele, J. Chem. Thermodyn. 15, 595 (1983).

## 83TER/HOL

J.K. Terlouw, J.L. Holmes and F.P. Lossing, "Ionized Ethylidene Ketene and Its Homologue Methylene Ketene," Can. J. Chem. 61, 1722 (1983).

## 83TER/WEZ

J.K. Terlouw, J. Wezenberg, P.C. Burgers and J.L. Holmes, "New Stable Isomers of [C₂H₄O] + and [C₂H₄O₂] +, the Radical Cations [CH₂COH] + and [CH₃OCOH] +," J. Chem. Soc. Chem. Commun. 1121 (1983).

## 83THO/GLI

C. Thomson and C. Glidewell, J. Comput. Chem. 4, 1 (1983).

# 83TOM/AMM

G.M.R. Tombo, H.J. Ammann, K. Muller and C. Ganter, "5. Nucleophilic Addition to C,C-Double Bonds. VII. Study of Proximity Effects in Olefinic Alcohols and Amines by Photoelectron Spectroscopy," Helv. Chim. Acta 66, 50 (1983).

### 83TUR/HAN

F. Turecek and V. Hanus, "Stereoelectronic Control of Ion Fragmentations: Loss of Hydrogen from Cyclic Ethers during Electron Impact Spectrometry," Tetrahedron 39, 1499 (1983).

## 83VES/HAR

T. Veszpremi, Y. Harada, K. Ohno and H. Mutoh, "Photoelectron and Penning Ionization Electron Spectroscopic Investigation of Trimethylsilyl- and t-Butyl-thiophenes," J. Organometall. Chem. 252, 121 (1983).

# 83WAG/ISE

G. Wagner and N.R. Isenor, "Formation and Dissociation of Na₂ + by Ruby Laser Radiation," Can. J. Phys. 61, 40 (1983).

## 83WAL

R. Walsh, "Thermochemistry of Silicon-containing Compounds," J. Chem. Soc., Faraday Trans. I 79, 2233 (1983).

### 83WAN/LER

F.C.-Y. Wang and G.E. Leroi, "Photoionization and Fragmentation of Halogenated Methanes," Ann. Israel Phys. Soc. 6, 210 (1983).

#### 83WEB/MCD

C.R. Webster, I.S. McDermid and C.T. Rettner, "Laser Optogalvanic Photodetachment spectroscopy: A new technique for studying photodetachment thresholds with application to I⁻," J. Chem. Phys. 78, 646 (1983).

## 83WEI/BEN

M. Weissman and S.W. Benson, J. Phys. Chem. 87, 243 (1983).

#### 83WLO/LUC

S. Wlodek, Z. Luczynski and H. Wincel, "Gas Phase Complexes of NO₂⁻ and NO₃⁻ with SO₂," Int. J. Mass Spectrom. Ion Proc. 49, 301 (1983).

#### 83ZLA/LEE

A. Zlatkis, C.K. Lee, W.E. Wentworth and E.C.M. Chen, "Constant Current Linearization for Determination of Electron Capture Mechanisms," Anal. Chem. 55, 1596 (1983).

## 83ZVE/BÁZ

V.V. Zverev, Z.G. Bazhanova, N.V. Villem and Y.Y. Villem, "Photoelectron Spectra and Electronic Structure of Organophosphorus Compounds of Tricoordinated Phosphorus with a Phosphorus-Sulfur Bond," Zh. Obs. Khim. 53, 1968 (1983); Engl. trans.: J. Gen. Chem. (USSR) 53, 1775 (1983).

#### 83ZYK/ERC

B.G. Zykov, N.P. Erchak, V.I. Khvostenko, E. Lukevits, V.F. Matorykina and N.L. Asfandiarov, "Photoelectron Spectra of Furylsilanes and Their Carbon Analogs," J. Organometall. Chem. 253, 301 (1983).

#### 84ABE/DE

R.S. Abeywickrema, E.W. Della, P.E. Pigou, M.K. Livett and J.B. Peel, "Orbital Interactions in Some Polycycloalkyl Halides: A Photoelectron Spectroscopic Study," J. Am. Chem. Soc. 106, 732 (1984).

### 84ADA/SMI

N.G. Adams and D. Smith, "A Further Study of the Near-Thermoneutral Reaction  $O_2H^+ + H_2 = H_3^+ + O_2$ ," Chem. Phys. Lett. 105, 604 (1984).

## 84AIT/GOS

R.A. Aitken, I. Gosney, H. Farries, M.H. Palmer, I. Simpson, J.I.G. Cadogan and E.J. Tinley, "Chemical Repercussions of Orbital Interactions through Bond and through Space. The Reactivity of the Double Bond in Unsaturated Cyclic Sulphones towards Aziridine Formation and Epoxidation," Tetrahedron 40, 2487 (1984).

### 84AJO/CAS

D. Ajo, M. Casarin, G. Granozzi, H.C.J. Ottenheijm and R. Plate, "An Investigation of the Electronic Structure of α,β-Unsaturated Acetylamino Acid Ethyl Esters Using He(I) and He(II) Photoelectron Spectroscopy," Recueil J. Royal Neth. Chem. Soc. 103, 365 (1984).

## 84ALA/RYE

M. Alai and R.T.B. Rye, "Fragmentation of Selected  $C_6H_{10}O$  Isomers: Evidence for a Common [ $C_5H_{7}O$ ] + Ion Generated by Methyl Loss from Cyclohexene Oxide and 5,6-Dihydro-4-methyl-2H-pyran," Org. Mass Spectrom. 19, 506 (1984).

### 84ALB/ALL

B. Albrecht, M. Allan, E. Haselbach, L. Neuhaus and P.-A. Carrupt, "26. Molecular Ions of Transient Species: Vinyl-Alcohol Cation," Helv. Chim. Acta 67, 216 (1984).

## 84ALB/ALL2

B. Albercht, M. Allan, E. Haselbach, L. Neuhaus and P.-A. Carrupt, "27. Molecular Ions of Transient Species: Vinylamine-Cation," Helv. Chim. Acta 67, 220 (1984).

### 84ALE/VOL

V.I. Alekseev, V.M. Volkov, L.I. Fedorova and A.V. Baluev, "Mass Spectrometric Study of the Ionization of an Oxygen Difluoride Molecule," Izv. Akad. Nauk SSR, Ser. Khim 1302 (1984).

## 84ALT/CON

G. Al-Takhin, J.A. Connor, H.A. Skinner and M.T. Zaharani-Moettar, J. Organomet. Chem. 260, 189 (1984).

#### 4ALT/CON2

G. Al-Takhin, J.A. Connor, G. Pilcher and H.A. Skinner, J. Organomet. Chem. 265, 263 (1984).

#### 84AND/CER

R.R. Andrea, H. Cerfontain, H.J.A. Lamberchts, J.N. Louwen and A. Oskam, "He I and He II Photoelectron Spectra and CNDO/S and MNDO MO Calculations of Some Bridged [10] Annulenes," J. Am. Chem. Soc. 106, 2531 (1984).

## 84AND/DEP

A.H. Andrist, C.H. DePuy and R.R. Squires, "Structures of Isomeric Anions in the Gas Phase: Arylallyl and Arylcyclopropyl Anions," J. Am. Chem. Soc. 106, 845 (1984).

## 84AND/DYK

L. Andrews, J.M. Dyke, N. Jonathan, N. Keddar, A. Morris and A. Ridha, "A Photoelectron Spectroscopic Study of the Ground States of CH₂F⁺ and CD₂F⁺," J. Phys. Chem. 88, 2364 (1984).

## 84AND/DYK2

L. Andrews, J.M. Dyke, N. Jonathan, N. Keddar and A. Morris, "Photoelectron Spectroscopic Study of the Ground States of CH₂Cl⁺, CHCl₂⁺, and CHFCl⁺," J. Am. Chem. Soc. **106**, 299 (1984).

## 84AND/DYK3

L. Andrews, J.M. Dyke, N. Jonathan, N. Keddar and A. Morris, "The First Bands in the Photoelectron Spectra of the CH₂Br, CD₂Br, CHBr₂, and CH₂I Free Radicals," J. Phys. Chem. 88, 1950 (1984).

## 84ARI/YOS

M. Arimura and Y. Yoshikawa, "Ionization Efficiency and Ionization Energy of Cyclic Compounds by Electron Impact," Mass Spectrosc. 32, 375 (1984).

## 84ASA/YAS

M. Asano, Y. Yasue and K. Kubo, "Mass Spectrometric Study of Ions Formed from Cesium Metaborate Vapor under Electron Impact," J. Nucl. Sci. Tecn. 21, 614 (1984).

## 84ASF/ZYK

N.L. Asfandiarov and B.C. Zykov, "Photoelectron Spectra of Methyl-Substituted 1,3-Dioxanes," Izv. Akad. Nauk SSSR, Ser. Khim. 2293 (1983). English trans.: Bull. Acad. Sci. USSR Div. Chem. Sci. 2069 (1983).

## 84BAI/DOM

V.N. Baidin, I.N. Domnin, O.A. Prokhorenko, S. Elbel and A. de Meijere, "Photoelectron Spectra of Phenyl Substituted Cyclopropene Derivatives," J. Electron Spectrosc. Rel. Phenom. 34, 103 (1984).

## 84BAN/YAT

G.M. Bancroft, B.W. Yates, K.H. Tan and L.L. Coatsworth, "High Resolution Gas Phase Photoelectron Spectra Using Synchrotron Radiation. Selective Enhancement of the I 5p Cross Section in CF₃I Due to Photoexcitation of I 4d Electrons," J. Chem. Soc. Chem. Commun. 1613 (1984).

# 84BAR

J.E. Bartmess, "The Gas Phase Thermochemistry of Ph₃C⁻, Ph₃C₋, and Ph₃C⁺," 32nd Ann. Conf. on Mass Spectrom. Allied Topics, San Antonio TX 27 May - 1 June, 1984. Abstracts p. 472.

## 84BAR/BUR

J.E. Bartmess and R. Burnham, "Effect of Central Substituents on the Gas Phase Acidities of Propenes," J. Org. Chem. 49, 1382 (1984).

## 84BAR/CAU

V. Barone, C. Cauletti, L. Commisso, F. Lelj, M.N. Piancastelli and N. Russo, "Quantum-mechanical and Ultraviolet Photoelectron Spectroscopic Studies of Azabiphenyls. The Case of 4-Phenylpyridine" J. Chem. Research (S) 338 (1984).

## 84BAR/YEH

N. Bartlett, S. Yeh, K. Kourtakis and T. Mallouk, J. Fluor. Chem. 26, 97 (1984).

#### 84BEA/EYE

D.B. Beach, C.J. Eyermann, S.P. Smit, S.F. Xiang and W.L. Jolly, "Applications of the Equivalent Cores Approximation. The Determination of Proton Affinities and Isocyanide-to-Nitrile Isomerization Energies from Core Binding Energies," J. Am. Chem. Soc. 106, 536 (1984).

#### 84BER/GRE

J. Berkowitz, J.P. Greene, J. Foropoulos, Jr. and O.M. Neskovic, "Bonding and Ionization Energies of N-F and P-F Compounds," J. Chem. Phys. 81, 6166 (1984).

#### 84BER/GRE2

J. Berkowitz and J.P. Greene, "The Barrier to Inversion in NF₃ +," J. Chem. Phys. **81**, 3383 (1984). **84BIC/MIN** 

J. Bickerton, M.E. Minas da Piedade and G. Pilcher, J. Chem. Thermodyn. 16, 661 (1984).

#### 84BIC/PIL

J. Bickerton, G. Pilcher and G. Al-Takhin, J. Chem. Thermodyn. 16, 373 (1984).

#### 84BIE/GRA

V.M. Bierbaum, J.J. Grabowski and C.H. DePuy, "Gas-Phase Synthesis and Reactions of Nitrogen- and Sulfur-Containing Anions," J. Phys. Chem. 88, 1389 (1984).

#### 84BLA/WAL

E.A. Walters and N.C. Blais, "Molecular Beam Photoionization and Fragmentation of D₂S, (H₂S)₂, (D₂S)₂, and H₂S·H₂O," J. Chem. Phys. 80, 3501 (1984).

# 84BOC/AYG

H. Bock, S. Aygen, P. Rosmus, B. Solouki and E. Weissflog, "Gasphasen-Reaktionen, 40. Selenoformaldehyd: hochkorrelierte Wellenfunktion und photoelektronenspektroskopischer Nachweis," Chem. Ber. 117, 187 (1984).

## 84BOC/ROS

H. Bock, P. Rosmus, B. Solouki and G. Maier, "Gas Phase Reactions. XXXXVI. Silabenzene: Photoelectron Spectrum from 1-Sila-2,5-hexadiene Pyrolysis and Assignment of Valence Ionisation Energies," J. Organometall. Chem. 271, 145 (1984).

### 84BOH/FAH

H. Bohringer, D.W. Fahey, F.C. Fehsenfeld and E.E. Ferguson, "Bond Energies of the Molecules H2O, SO2, H₂O₂, and HCl to Various Atmospheric Negative Ions," J. Chem. Phys. 81, 2805 (1984).

## 84BOL/HOU

J.-C. Bollinger, R. Houriet and T. Yvernault, "Gas Phase Basicity of Hexamethylphosphotriamide (HMPT) Phosphinoxide Derivatives," Phosphorus and Sulfur 19, 379 (1984).

## 84BOU/BRA

C. Bousquet, N. Bras and Y. Majdi, J. Phys. B 17, 1831 (1984).

## 84BOU/DAG

G. Bouchoux and J. Dagaut, "The Loss of Br from [(CH₃)₂CBrCOCH₃] +," Org. Mass Spectrom. 19, 291 (1984).

## 84BOU/FLA

G. Bouchoux, R. Flammang, Y. Hoppilliard, P. Jaudon, A. Maquestiau and P. Meyrant, "Mecanismes de Formation des Ions [C5H9O] + a Partir des Cetones [CH3COC4H9] +," Int. J. Spectrosc. 3, 1 (1984).

## 84BOU/HOP

G. Bouchoux, Y. Hoppilliard, P. Jaudon and R. Houriet, "The Heats of Formation of Some Protonated Olefinic Carbonyl Compounds: [C₅H₉O] + and [C₄H₇O₂] + Ions," Org. Mass Spectrom. 19, 394 (1984).

# 84BOU/PFI

J.P. Boutique, G. Pfister-Guillouzo, J. Riga, J.J. Verbist, J.G. Fripiat, J. Delhalle, R.C. Haddon and M.L. Kaplan, "Gas Phase UPS Study of Naphtho[1,8-cd:4,5c'd']bis[1,2,6]thiadiazine," J. Electron Spectrosc. Rel. Phenom. 34, 199 (1984).

#### 84BOU/VER

J.P. Boutique, J.J. Verbist, J.G. Fripiat, J. Delhalle, G. Pfister-Guillouzo and G.J. Ashwell, "3,5,11,13-Tetraazacycl[3.3.3]azine: Theoretical (ab-Initio) and Experimental (X-ray and Ultraviolet Photoelectron Spectroscopy) Studies of the Electronic Structure," J. Am. Chem. Soc. 106, 4374 (1984).

## 84BOW/MAC

R.D. Bowen and A. Maccoll, "Low Energy, Low Temperature Mass Spectra," Org. Mass Spectrom. 19, 379 (1984).

#### 84BRA/BAE

W.A. Brand and T. Baer, "Dissociation Dynamics of Energy-Selected  $C_5H_{10}^+$  Ions," J. Am. Chem. Soc. 106, 3154 (1984).

## 84BUR/FUK

D.J. Burinsky, E.K. Fukuda and J.E. Campana, "Electron Affinities from Dissociations of Mixed Negative Ion Dimers," J. Am. Chem. Soc. 106, 2270 (1984).

## 84BUR/HOL

P.C. Burgers, J.L. Holmes and J.K. Terlouw, "Gaseous [H2, C, N] + and [H₃, C, N] + Ions. Generation of Formation, and Dissociation Characteristics of [H2CN] +, [HCNH] +, [CNH2] +, [H₂CNH] +, and [HCN] +," J. Am. Chem. Soc. 106, 2762 (1984).

#### 84BUR/HÓL2

P.C. Burgers and J.L. Holmes, "The Generation of Triplet Methoxy Cations," Org. Mass Spectrom. 19, 452 (1984).

#### 84BUR/HOL3

P.C. Burgers and J.L. Holmes, "Fragmentation Rate Constants and Appearance Energies for Reactions Having a Large Kinetic Shift and the Energy Partitioning in Their Metastable Decomposition," Int. J. Mass Spectrom. Ion Proc. 58, 15 (1984).

## 84BUR/KUD

G.G. Burdukovskaya, L.S. Kudin, M.F. Butman and K.S. Krasnov, "Ionic Forms in the Vapour over Potassium Iodide," Zh. Neorgan. Khim. 29, 3020 (1984).

#### 84BUT/HÖL

J.J. Butler, D.M.P. Holland, A.C. Parr and R. Stockbauer, "A Threshold Photoelectron-Photoion Coincidence Spectrometric Study of Dimethyl Ether (CH₃OCH₃)," Int. J. Mass Spectrom. Ion Proc. 58, 1 (1984).

### 84BUT/KUD

M.F. Butman, L.S. Kudin and K.S. Krasnov, "The Mass Spectrometric Determination of the Proton Affinity of the Molecules  $M_2O$  (M = Na, K, Rb, Cs)," Zh. Neorgan. Khim. 29, 2150 (1984); English trans.: Russ. J. Inorg. Chem. 29, 1228 (1984).

# 84CAL/KEB

G. Caldwell and P. Kebarle, "Binding Energies and Structural Effects in Halide Anion-ROH and -RCOOH Complexes from Gas Phase Equilibria Measurements," J. Am. Chem. Soc. 106, 967 (1984).

## 84CAL/ROZ

G. Caldwell, M.D. Rozeboom, J.P. Kiplinger and J.E. Bartmess, "Anion-Alcohol Hydrogen Bond Strengths in the Gas Phase," J. Am. Chem. Soc. 106, 4660 (1984).

## 84CAO/BAC

J.-R. Cao and M.H. Back, Int. J. Chem. Kinet. 16, 961 (1984).

### 84CAR/FAH

T.A. Carlson, A. Fahlman, W.A. Svensson, M.O. Krause, T.A. Whitley, F.A. Grimm, M.N. Piancastelli and J.W. Taylor, "Angle-Resolved Photoelectron Cross Section of CF₄," J. Chem. Phys. 81, 3828 (1984).

# 84CAS/FRE

C.J. Cassady and B.S. Freiser, "Determination of the Fe +-OH and Co + OH Bond Energies by Deprotonation Reactions and by Photodissociation," J. Am. Chem. Soc. 106, 6176 (1984).

# 84CAT/PAZ

J. Catalan, J.L.G. de Paz, M. Yanez and J. Elguero, "Relationship between Substituent-Induced Energy and Charge Effects in Proton-Transfer Equilibria Involving Heteroaromatic Nitrogen Systems. The "Lone Pair Charge" Approach," J. Am. Chem. Soc. 106, 6552 (1984).

#### 84CAU/FUR

C. Cauletti, C. Furlani, G. Nicotra, K.-D. Schleinitz and W. Wegener, "Substituent Effects on the Electronic Structure of Some Styryl Methyl Sulphones Studied by Ultraviolet Photoelectron Spectroscopy," J. Chem. Soc. Perkin Trans. II 533 (1984).

## 84CHA/HIL

H. Chatham, D. Hils, R. Robertson and A. Gallagher, "Total and Partial Electron Collisional Ionization Cross Sections for CH₄, C₂H₆, SiH₄, and Si₂H₆," J. Chem. Phys. 81, 1770 (1984).

## 84CHE/HAL

P.T. Chesky and M.B. Hall, "Electronic Structure of Triple-Decker Sandwiches. Photoelectron Spectra and Molecular Orbital Calculations of Bis( $\eta$ 5-cyclopentadienyl)( $\mu$ , $\eta$ 6-benzene)divanadium and Bis( $\eta$ 5-cyclopentadienyl)( $\mu$ , $\eta$ 6-mesitylene)divanadium," J. Am. Chem. Soc. 106, 5186 (1984).

#### 84CHI/KOF

N.S. Chilingarov, M.V. Korobov, L.N. Sidirov, V.N. Mitkin, V.A. Shipachev and S.V. Zemskov, "Electron Affinity of Rhodium Tetrafluoride," J. Chem. Therm. 16, 965 (1984).

## 84CIL/DOR

E. Ciliberto, K.A. Doris, W.J. Pietro, G.M. Reisner, D.E. Ellis, I. Fragala, F.H. Herbstein, M.A. Ratner and T.J. Marks, "π-π Interactions and Bandwidths in 'Molecular Metals'. A Chemical, Structural, Photoelectron Spectroscopic, and Hartree-Fock-Slater Study of Monomeric and Cofacially Joined Dimeric Silicon Phthalocyanines," J. Am. Chem. Soc. 106, 7748 (1984).

#### 84COL/JIM

M. Colomina, P. Jimenez, M.V. Roux and C. Turrion, J. Chem. Thermodyn. 16, 1121 (1984).

## 84COO/KRO

T.A. Cooper, H.W. Kroto, C. Kirby and N.P.C. Westwood, "A Photoelectron Spectroscopic Study of the (FBS)_n System (n = 1-3)," J. Chem. Soc. Dalton Trans. 1047 (1984).

## 84CZI/TAM

G. Czira, J. Tamas and G. Kalaus, "Effects of Stereoisomerism on the Electron Impact Fragmentation of Some Compounds with an Eburnane Skeleton," Org. Mass Spectrom. 19, 555 (1984).

# 84DAÔ/PET

P.D. Dao, K.I. Peterson and A.W. Castleman, Jr., "The Photoionization of Oxidized Metal Clusters," J. Chem. Phys. 80, 563 (1984).

## 84DEH/PAR

J.L. Dehmer, A.C. Parr, S.H. Southworth and D.M.P. Holland, "Angle-Resolved Photoelectron Study of the Valence Levels of BF3 in the Range 17 < hv < 28 eV," Phys. Rev. A 30, 1783 (1984).

### 84DEK/NIB

L.J. de Koening and N.M.M. Nibbering, "Formation of the Long-Lived H₂O⁻· Ion in the Gas Phase," J. Am. Chem. Soc. 106, 7971 (1984).

## 84DEL/ABE

E.W. Della, R.S. Abeywickrema, M.K. Livett and J.B. Peel, "The Photoelectron Spectra of Some 1-Halogenobicycloalkanes," J. Chem. Soc. Perkin Trans. II 1653 (1984).

## 84DEL/PIĠ

E.W. Della, P.E. Pigou, M.K. Livett and J.B. Peel, "The Photoelectron Spectrum and Molecular Geometry of Bicyclo[2.1.1]Hexane," J. Elec. Spectrosc. Rel. Phenom. 33, 163 (1984).

## 84DEM/SIM

H. Demian, I. Simiti and N. Palibroda, "Contributions to the Study of Some Heterocycles. 58-Mass Spectra of 2-Phenyl-4-carboxy- and 5-Carboxy-thiazoles," Org. Mass Spectrom. 19, 196 (1984).

#### 84DEN/AUD

J.P. Denhez and H.E. Audier, "Isomerization of [C₆H₅-C₃H₅O] + Ions: The Case of 1-Phenylpropenol," Org. Mass Spectrom. 19, 407 (1984).

#### 84DEP/BIE

C.H. DePuy, V.M. Bierbaum and R. Damrauer, "Relative Gas-Phase Acidities of the Alkanes," J. Am. Chem. Soc. 106, 4051 (1984).

### 84DEP/DAM

C.H. DePuy and R. Damrauer, "Reactions of Organosilane Anionic Species with Nitrous Oxide, Organomet. 3, 362 (1984).

#### DATA ENGLISHED A

M.J.S. Dewar, E.F. Healy and J.J.P. Stewart, J. Comput. Chem. 5, 4 (1984).

## 84DIX/KOM

D.A. Dixon, A. Komornicki and W.P. Kraemer, "Energetics of the Protonation of CO: Implications for the Observation of HOC⁺ in Dense Interstellar Clouds," J. Chem. Phys. 81, 3603 (1984).

### 84DOG/POU

J.P. Dognon, C. Pouchan, A. Dargelos and J.P. Flament, "Ab Initio CI Study and Vibronic Analysis of the Photoelectron Spectra of Formaldoxime," Chem. Phys. Lett. 109, 492 (1984).

#### 84DRZ/BR/

P.S. Drzaic and J.I. Brauman, "A Determination of the Singlet-Triplet Splitting in Phenylnitrene via Photoelectron Detachment," J. Am. Chem. Soc. 106, 3443 (1984).

#### 84DRZ/BRA2

P.S. Drzaic and J.I. Brauman, "A Determination of the Singlet-Triplet Splitting in Phenylnitrene via Photoelectron Detachment," J. Phys. Chem. 88, 5285 (1984).

## 84DRZ/MAR

P.S. Drzaic, J. Marks and J.I. Brauman, "Electron Photodetachment from Gas Phase Molecular Anions," in "Gas Phase Ion Chemistry," V. 3, M.T. Bowers, Ed., Academic Press, NY, 1984, Ch. 21.

### 84DUD/GRE

N. Dudeney, J.C. Green, O.N. Kirchner and F.S.J. Smallwood, "A Study of the Electronic Structure of the Dimers  $[Co_2(\eta-C_5Me_5)_2(CO)_2]$ ,  $[Rh_2(\eta-C_5Me_5)_2]$ ,  $[Co_2(\eta-C_5Me_5)_2(NO)_2]$  and  $[Co_2(\eta-C_5Me_5)_2(CO)(NO)]$  by He-I and He-II Photoelectron Spectroscopy," J. Chem. Soc. Dalton Trans. 1883 (1984).

# 84DUD/KIR

N. Dudeney, O.N. Kirchner, J.C. Green and P. Maitlis, "Electronic Structure and Reactivity of Pentamethylcyclopentadienyl Complexes of Cobalt, Rhodium, and Iridium: He-I and He-II Photoelectron Spectroscopic Investigation," J. Chem. Soc. Dalton Trans. 1877 (1984).

## 84DUN/HON

R.C. Dunbar and J.P. Honovich, "Threshold Ion Photodissociation. Bromobenzene and Iodobenzene Ions," Int. J. Mass Spectrom. Ion Proc. 58, 25 (1984).

## 84DYK/ELL

J.M. Dyke, A.R. Ellis, N. Keddar and A. Morris, "A Reinvestigation of the First Band in the Photoelectron Spectrum of the Ethyl Radical," J. Phys. Chem. 88, 2565 (1984).

### 84DYK/ELL2

J.M. Dyke, A.R. Ellis, N. Jonathan, N. Keddar and A. Morris, "Observation of the CH₂OH Radical in the Gas Phase by Vacuum Ultraviolet Photoelectron Spectroscopy," Chem. Phys. Lett. 111, 207 (1984).

### 84DYK/GRA

J.M. Dyke, B.W.J. Gravenor, G.D. Josland, R.A. Lewis and A. Morris, "A Gas Phase Investigation of Titanium Monoxide and Atomic Titanium Using High Temperature Photoelectron Spectroscopy," Molec. Phys. 53, 465 (1984).

#### 84DYK/JOS

J.M. Dyke, G. D. Josland, J. G. Snijders and P.M. Boerrigter, "Ionization Energies of the Diatomic Halogens and Interhalogens Studied with Relativistic Hartree-Fock-Slater Calculations," Chem. Phys. 91, 419 (1984).

#### 84DYK/KIR

J.M. Dyke, C. Kirby, A. Morris, B.W.J. Gravenor, R. Klein and P. Rosmus, "A Study of Aluminium Monofluoride and Aluminium Trifluoride by High-Temperature Photoelectron Spectroscopy," Chem. Phys. 88, 289 (1984).

#### 84DYK/LEW

J.M. Dyke, A.E. Lewis and A. Morris, "A Photoelectron Spectroscopic Study of the Ground State of  $CF^+$  via the Ionization Process  $CF^+(X^1\Sigma^+)\leftarrow CF(X^2\Pi)$ ," J. Chem. Phys. 80, 1382 (1984).

## 84ELB/KUD

S. Elbel, J. Kudnig, M. Grodzicki and H.J. Lempka, "Photoelectron Spectra of Group V Compounds. The Elements: Sb4," Chem. Phys. Lett. 109, 312 (1984).

#### 84ELK/ARM

J.L. Elkind and P.B. Armentrout, "Threshold Behavior for Chemical Reactions: Line-of-Centers Cross Section for  $Si^+(^2P) + H_2 \rightarrow SiH^+ + H$ ," J. Phys. Chem. 88, 5454 (1984).

# 84ERA/KOL

P.A. Erastov, V.P. Kolesov and I.K. Igumenov, Russ. J. Phys. Chem. 58, 1311 (1984).

#### 84FAR/SRI

M. Farber and R.D. Srivastava, "Electron and Thermal Dissociation of BF3(g)," J. Chem. Phys. 81, 241 (1984).

## 84FLA/MAQ

R. Flammang, A. Maquestiau, J. Catalan, P. Periz and J. Elguero, "Basicity of Azoles. Experimental Gas Phase Basicities Determined by Mass Spectrometry Towards ab initio Calculated Protonation Energies," Org. Mass Spectrom. 19, 627 (1984).

## 84FRA/FRA

M.L. Fraser-Monteiro, L. Fraser-Monteiro, J. de Wit and T. Baer, "Dissociation Dynamics of Energy-Selected Phenol Ions," J. Phys. Chem. 88, 3622 (1984).

# 84FUC/HAL

R. Fuchs and J.H. Hallman Unpublished results, personal communication to the authors.

## 84FUK/YOS

K. Fuke, H. Yoshiuchi, K. Kaya, Y. Achiba, K. Sato and K. Kimura, "Multiphoton Ionization Photoelectron Spectroscopy and Two-Color Multiphoton Ionization Threshold Spectroscopy on the Hydrogen Bonded Phenol and 7-Azaindole in a Supersonic Jet," Chem. Phys. Lett. 108, 179 (1984).

## 84FUR/MUR

J. Furukawa, S. Murata, M. Sakiyama and S. Seki, Bull. Chem. Soc. Jpn. 57, 3058 (1984).

### 84GAN/LIV

T.H. Gan, M.K. Livett and J.B. Peel, "Comparative He I and He II Photoelectron Spectroscopic Studies of the Benzoyl Halides," J. Chem. Soc. Faraday Trans. II 80, 1281 (1984).

# 84GAT

I.R. Gatland, "Swarms of Ions and Electrons In Gases," W. Lindinger, Ed., Springer-Verlag NY 1984. pg. 44.

### 84GEF/LIF

S. Gefen and C. Lifshitz, "Time-Dependent Mass Spectra and Breakdown Graphs. V. The Kinetic Shift in Iodobenzene," Int. J. Mass Spectrom. Ion Proc. 58, 251 (1984).

# 84GEL/POR

G.I. Gellene and R.F. Porter, "Experimental Evidence for Metastable States of D₃O and Its Monohydrate by Neutralized Ion Beam Spectroscopy," J. Chem. Phys. 81, 5570 (1984).

#### 84GLF/BAR

R. Gleiter, R. Bartetzko and D. Cremer, "Electronic Structure of 1,5-Dithia-2,4,6,8-tetrazocine. Model Calculations and Spectroscopic Investigations," J. Am. Chem. Soc. 106, 3437 (1984).

## 84GLE/BIS

R. Gleiter, P. Bischof, M.C. Bohm, R. Guilard and H. Yamaguchi, "The Electronic Structure of Heterotropones. Photoelectron Spectra and Molecular Orbital Calculations," Bull. Chem. Soc. Jpn. 57, 856 (1984).

## 84GLE/BOH

R. Gleiter, M.C. Bohm and R.D. Ernst, "The He(I) Photoelectron Spectrum of Bis(pentadienyl)-iron: A Comparison with the Ferrocene Spectrum," J. Electron Spectrosc. Rel. Phenom. 33, 269 (1984).

## 84GLE/DOB

R. Gleiter, W. Dobler, M. Eckert-Maksic, A.J. Bloodworth, H.J. Eggelte and D. Cremer, "Photoelectron Spectra of Dioxabicyclo[n.2.1]alkanes," J. Org. Chem. 49, 3716 (1984).

#### 84GLE/FRI

R. Gleiter, G. Friedrich, M. Yoshifuji, K. Shibayama and N. Inamoto, "Photoelectron Spectra of Diaryldiphosphenes," Chem. Lett. 313 (1984).

## 84GLE/HAI

R. Gleiter, R. Haider, P. Bischof, N.S. Zefirov and A.M. Boganov, "Electronic Structure of the Tricyclo[2.1.0.0²,⁵]pentane System. Photoelectron Spectroscopic Investigations of 1,5-Dimethyl-3-exo-methylenetricyclo[2.1.0.0²,⁵]pentane and 1,5-Dimethyltricyclo[2.1.0.0²,⁵]pentan-3-one," J. Org. Chem. 49, 375 (1984).

### 84GLE/SCH

R. Gleiter, W. Schafer and A. Flatow, "Interaction between Triple Bonds in 1,8-Diethynylnaphthalenes," J. Org. Chem. 49, 372 (1984).

#### 84GLE/SCH2

R. Gleiter, W. Schafer, H.A. Staab and T. Saupe, "Electronic Structure of 4,5-Bis(dimethylamine)fluorene. PE Spectroscopic Investigations," J. Org. Chem. 49, 4463 (1984).

## 84GLE/SPA

R. Gleiter, J. Spanget-Larsen, H. Hopf and C. Mlynek, "Photoelectron Spectra of Some Reduction Products of [2.2]Paracyclophane," Chem. Ber. 117, 1987 (1984).

# 84GLE/SPA2

R. Gleiter, J. Spanget-Larsen and W.L.F. Armarego, "Through-bond Effects in Pyrazino[2,3-b]pyrazine. Photoelectron Spectroscopy and Model Calculations," J. Chem. Soc. Perkin Trans. II 1517 (1984).

### 84GOR/PYA

L.N. Gorokhov, A.T. Pyatenko, I.V. Sidorova and V.K. Smirnov, "Thermochemistry of Molecules and Negative Ions in a Uranium-Oxygen-Fluorine System," Probl. Kalorim. Khim. Termodin. Dokl. Vses. Konf. 2, 66 (1984). CA 104, 11261c.

## 84GRA/ROS

M. Grade, W. Rosinger and P.A. Dowben, "Core and Valence Electron Binding Energies of FeI₂ and Stabilities of Gas Phase Species," Ber. Bunsenges. Phys. Chem. 88, 65 (1984).

## 84GRA/ROS2

M. Grade and W. Rosinger, "A Mass Spectrometric Investigation of Inon(II)-Iodide," Ber. Bunsenges. Phys. Chem. 88, 767 (1984).

# 84GRE/POW

J.C. Green, P. Powell and J.E. van Tilborg, "He I and He II Photoelectron Spectroscopic Studies of the Bonding in Cobalt, Rhodium, and Iridium Cyclopentadienyl Diene Complexes," Organometall. 3, 211 (1984).

## 84GRE/STE

A. Greenberg, S.E. Stein and R.L. Brown, Sci. Totl. Env. 40, 219 (1984).

# 84GRO/CHE

G.S. Groenwold, E.K. Chess and M.L. Gross, "Structure of the Intermediate Formed in the Reaction of the Styrene Radical Cation and Neutral Styrene," J. Am. Chem. Soc. 106, 539 (1984).

#### 84GRO/GRO

G.S. Groenwold and M.L. Gross, "Cation Radical Diels-Alder Reaction of 1,3-Butadiene: A Two-Step Cycloaddition," J. Am. Chem. Soc. 106, 6569 (1984).

#### 84GRU/WHE

S.G. Grubb, R.L. Whetten, A.C. Albrecht and E.R. Grant, "A Precise Determination of the First Ionization Potential of Benzene," Chem. Phys. Lett. 108, 420 (1984).

#### 84GUB/GER

A.I. Gubareva, P.A. Gerasimov and V.V. Beregovykh, Zh. Prikl. Khim. 57, 2297 (1984).

## 84HAL/KLE

L.F. Halle, F.S. Klein and J.L. Beauchamp, "Properties and Reactions of Organometallic Fragments in the Gas Phase. Ion Beam Studies of FeH +," J. Am. Chem. Soc. 106, 2543 (1984).

## 84HAR/HOU

A.G. Harrison, R. Houriet and T.T. Tidwell, "Gas Phase Basicities of Substituted Styrenes. Comparison of Gas Phase and Solution Reactivities," J. Org. Chem. 49, 1302 (1984).

# 84HEÌ/BAR

T. Heinis, R. Bar, K. Borlin and M. Jungen, "Photoionization of 1,1-Difluoroethane: The Structure of the C₂H₃F₂ + Ions," Chem. Phys. Lett. 105, 327 (1984). 84HEI/HON

E. Heilbronner, E. Honegger, W. Zambach, P. Schmitt and H. Gunther, "The Persistence of Ribbon Orbitals in Polycyclic Alkanes," Helv. Chim. Acta 67, 1681 (1984).

#### 84HEI/WIR

E. Heilbronner, J. Wirz and R.L. Soulen, "6. The  $He(I\alpha)$  Photoelectron Spectra of the Perfluoroderivatives of Trisannelated Benzenes and Tetrakisannelated Cyclooctatetraenes," Helv. Chim. Acta 67, 47 (1984).

## 84HER/WEN

N. Hernandez-Gill, W.E. Wentworth and E.C.M. Chen, "Electron Affinities of Fluorinated Phenoxy Radicals," J. Phys. Chem. 88, 6181 (1984).

## 84HIE/PAU

P.M. Hierl and J.F. Paulson, "Translational Energy Dependence of Cross Sections for Reactions of OH-(H₂O)_n with CO₂ and SO₂," J. Chem. Phys. **80**, 4890 (1984).

## 84HIL

K. Hilpert, "Vaporization of Sodium Iodide and Thermochemistry of (NaI)₂(g) and (NaI)₃(g): An Experimental and Theoretical Study," Ber. Bunsenges. Phys. Chem. 88, 132 (1984).

### 84HOH/DIS

G. Hohlneicher, D. Distler, M. Muller and H.-J. Freund, "Identification of Shake-Up Satellites in Valence Photoelectron Spectra of Organic Compounds by Comparison with Electronic Absorption Spectra of Radical Cations. Case Study: Octafluoronaphthalene," Chem. Phys. Lett. 111, 151 (1984).

### 84HOL/LOS

J.L. Holmes and F.P. Lossing, Int. J. Mass Spectrosc. Ion Proc. 58, 113 (1984).

# 84HOL/MOM

J.L. Holmes, A.A. Mommers, J.E. Szulejko and J.K. Terlouw, "Two New Stable [C₃H₈O] + Isomers: the Radical Cations [C₃H₆OH₂] +," J. Chem. Soc. Chem. Commun. 165 (1984).

### 84HOL/SZU

J.L. Holmes and J.E. Szulejko, "The Generation and Identification of the Transient Vinylidene Cation," Chem. Phys. Lett. 107, 301 (1984).

#### 84HON/HEI

E. Honegger, E. Heilbronner, A. Dratva and C.A. Grob, "197. 'Lone Pair' and 'CI Bond' Ionization Energies of exo- and endo-2-Norbornyl Iodides," Helv. Chim. Acta 67, 1691 (1984).

#### 84HON/ZHO

E. Honegger, Y. Zhong-zhi, E. Heilbronner, W.v.E. Doering and J.C. Schmidhauser, "Photoelectron-Spectroscopic Characterization of 3,4-Dimethyl-2,4-hexadienes," Helv. Chim. Acta 67, 640 (1984).

## 84HOP/JAH

H.P. Hopkins, Jr., D.V. Jahagirdar, P.S. Moulik, D.H. Aue, H.M. Webb, W.R. Davidson and M.D. Pedley, "Basicities of the 2-, 4-, 2,4-Di and 2,6-Disubstituted t-Butyl Pryidines in the Gas Phase and Aqueous Phase: Steric Effects in the Solvation of tert-Butyl-Substituted Pyridines and Pyridinium Cations," J. Am. Chem. Soc. 106, 4341 (1984).

# 84HOW/GON

J.O. Howell, J.M. Goncalves, C. Amatore, L. Klasinc, R.M. Wightman and J.K. Kochi, "Electron Transfer from Aromatic Hydrocarbons and Their II-Complexes with Metals. Comparison of the Standard Oxidation Potentials and Vertical Ionization Potentials," J. Am. Chem. Soc. 106, 3968 (1984).

## 84JAC/JAC

T.C. Jackson, D.B. Jacobson and B.S. Freiser, "Gas Phase Reactions of FeO + with Hydrocarbons," J. Am. Chem. Soc. 106, 1252 (1984).

#### 84JEN/MOR

H.D.B. Jenkins and D.F.C. Morris, "Proton Affinity of Gaseous Ammonia," J. Chem. Soc. Faraday Trans. II 80, 1167 (1984).

#### 84JOR/THO

F.S. Jorgensen and T. Thomsen, "Synthesis and Structural Analysis of the Bridged peri-Naphthalene: 1,3-Dihydro-2-phenalenone," Acta Chem. Scan. **B38**, 113 (1984).

## 84KAT/SHI

S. Katsumata, H. Shiromaru and T. Kimura, "Photoelectron Angular Distribution and Assignment of Photoelectron Spectrum of Ozone," Bull. Chem. Soc. Jpn. 57, 1784 (1984).

## 84KIN/KRO

M.A. King and H.W. Kroto, "He I Photoelectron Study of Cyanogen Isothiocyanate, NCNCS, Produced by Thermal Isomerization of Sulfur Dicyanide, S(CN)₂," J. Am. Chem. Soc. 106, 7347 (1984).

# 84KIR/POP

K. Kirste, R. Poppek and P. Rademacher, "Photoelektronenspektren und Konformationsverhalten von Azinen," Chem. Ber. 117, 1061 (1984).

## 84KLA/KUH

D. Klapstein, R. Kuhn, J.P. Maier, L. Misev and M. Ochsner, "138. Spectroscopic Characterization of Open-Shell Cations: Emission and Laser Excitation Spectra of Rotationally Cooled CH₃ (-C=C-)₂X⁺, X = Cl, Br," Helv. Chim. Acta 67, 1222 (1984).

## 84KLA/MÁI

D. Klapstein, J.P. Maier, M. Ochsner and W. Zambach, "Emission and Laser Excitation Spectra of the  $A^2\Pi = X^2\Pi$  Transition of Rotationally Cooled Bromochloroacetylene Cation in the Gas Phase," J. Electron Spectrosc. Rel. Phenom. 34, 161 (1984).

### 84KOE

T. Kobayashi, "Angle-Resolved Photoelectron Spectroscopy of Intramolecular Hydrogen Bond Systems: 2-Chloroethanol and 2-Bromoethanol," Phys. Lett. 103A, 424 (1984).

## 84KOB/YOS

T. Kobayashi, Z. Yoshida, H. Awaji, T. Kawase and S. Yoneda, "Intramolecular Orbital Interaction in 6,6'-Bi(1,4-dithiafulvenyl) Studied by Photoelectron Spectroscopy," Bull. Chem. Soc. Jpn. 57, 2591 (1984).

#### 84KOR/CHI

M.V. Korobov, N.S. Chilingarov, N.A. Igolkina, M.I. Nikitin and L.N. Sidorov, "Molecules with a High Electron Affinity. Negative Ions in the Saturated Vapor of the Platinum-Manganese Trifluoride System," Russ. J. Phys. Chem. 58, 1368 (1984).

## 84KUH/MAI

R. Kuhn, J.P. Maier and F. Thommen, "Fluorescence Quantum Yields and Lifetimes of Fluorobenzene Cations in Selected Levels of Their B and C States Determined by Photoelectron-Photon Coincidence Spectroscopy," Chem. Phys. 57, 319 (1981).

#### 84LAN/LEE

K.R. Lane, R.E. Lee, L. Sallans and R.R. Squires, "Formation and Reactivity of Fe(CO)₄COOH⁻ in the Gas Phase. Implication for the Fe(CO)₅ Catalyzed Water Gas Shift Reaction," J. Am. Chem. Soc. 106, 5767 (1984).

#### 84LAR/MCM

J.W. Larson and T.B. McMahon, "Fluoride and Chloride Affinities of Main Group Oxides, Fluorides, Oxofluorides, and Alkyls. Quantitative Scales of Lewis Acidities from Ion Cyclotron Resonance Halide-Exchange Equilibria," J. Phys. Chem. 88, 1083 (1984).

#### 84LAR/MCM2

J.W. Larson and T.B. McMahon, "Hydrogen Bonding in Gas Phase Anions. An Experimental Investigation of the Interaction between Chloride Ion and Bronsted Acids from ICR Chloride Exchange Equilibria," J. Am. Chem. Soc. 106, 517 (1984).

## 84LAR/MCM3

J.W. Larson and T.B. McMahon, "Gas Phase Bihalide and Pseudohalide Ions. An ICR Determination of Hydrogen Bond Energies in XHY- Species (X,Y = F, Cl, Br, CN)," Inorg. Chem. 23, 2029 (1984).

## 84LAR/MCM4

J.W. Larson and T.B. McMahon, "Gas Phase Negative Ion Chemistry of Alkylchloroformates," Can. J. Chem. 62, 675 (1984).

## 84LEB/GUT

N.D. Lebedeva, N.M. Gutner, Y.A. Katin, N.M. Kozlova, N.N. Kiseleva, E.F. Makhina and S.K. Dobychin, Zh. Prikl. Khim. 57, 2297 (1984).

## 84LEW/GOL

K.E. Lewis, D.M. Golden and G.P. Smith, "Organometallic Bond Dissociation Energies: Laser Pyrolysis of Fe(CO)₅, Cr(CO)₆, Mo(CO)₆, and W(CO)₆," J. Am. Chem. Soc. 106, 3905 (1984).

## 84LIA/BUC

S.G. Lias and T.J. Buckley, "Structures and Reactions of  $C_3H_6$ ⁺ Ions Generated in Cyclopropane," Int. J. Mass Spectrom. Ion Proc. 56, 123 (1984).

### 84LIA/LIE

S.G. Lias, J.F. Liebman and R.D. Levin, "Evaluated Gas Phase Basicities and Proton Affinities of Molecules; Heats of Formation of Protonated Molecules," J. Phys. Chem. Ref. Data 13, 695 (1984).

## 84LIC/BLE

D.L. Lichtenberger and C.H. Blevins II, "Contribution of a  $\Sigma$ -Orbital Electron to a Quadruple Metal-Metal Bond. A Direct Experimental Measure from Vibrational Fine Structure in the  $\Sigma$  Ionization of Mo₂(O₂CCH₃)4," J. Am. Chem. Soc. 106, 1636 (1984).

## 84LIC/CAL

D.L. Lichtenberger, D.C. Calabro and G.E. Kellogg, "Electronic Structure and Bonding Characteristics of Cyclopentadienyl d⁸ Metal-Ligand Complexes. Core and Valence Ionization Study of CpM(CO)₂ Where M = Co and Rh and  $Cp = \eta 5$ -C₅H₅ and  $\eta 5$ -C₅(CH₃)₅," Organometall. 3, 1623 (1984).

#### 84LIF/MAL

C. Lifshitz and Y. Malinovich, "Time Resolved Photoionization Mass Spectrometry in the Millisecond Range," Int. J. Mass Spec. Ion Proc. 60, 99 (1984).

#### 84LIN/LIA

S.H. Linn, C.L. Liao, C.X. Liao, J.M. Brom, Jr. and C.Y. Ng, "Photoionization Study of Hg2," Chem. Phys. Lett. 105, 645 (1984).

#### 84LOS/HOL

F.P. Lossing and J.L. Holmes, "Stabilization Energy and Ion Size in Carbocations in the Gas Phase," J. Am. Chem. Soc. 106, 6917 (1984).

## 84LOU/HÈN

J.N. Louwen, R. Hengelmolen, D.M. Grove, A. Oskam and R.L. DeKock, "Ultraviolet Photoelectron Spectra of Square-Planar Complexes of Nickel Triad Metals. 3. He I and He II Spectra of trans-[(PEt₃)₂MXY] (M = Pd, Pt. X = Y = C≡CH, C≡CCH₃, C≡N. X = Cl, Y = C≡N) and Hartree-Fock-Slater Calculations on Model Compounds," Organometall. 3, 908 (1984).

# 84LOU/STU

J.N. Louwen, D.J. Stufkens and A. Oskam, "He(I) and He(II) Photoelectron Spectra of Some Organozinc and Organoaluminium Radicals Containing 1,2-Bis(t-butylimino)ethane," J. Chem. Soc. Dalton Trans. 2683 (1984).

## 84MAG/CAL

T.F. Magnera, G. Caldwell, J. Sumner, S. Ikuta and P. Kebarle, "Solvation of the Halide Anions in Dimethyl Sulfoxide. Factors Involved in Enhanced Reactivity of Negative Ions in Dipolar Aprotic Solvents," J. Am. Chem. Soc. 106, 6140 (1984).

#### 84MAI/THO

J.P. Maier and F. Thommen, "Relaxation Dynamics of Open-Shell Cations Studied by Photoelectron-Photon Coincidence Spectroscopy" Gas Phase Ion Chemistry, Vol. 3 (M. T. Bowers, editor), Academic Press, Inc., p. 357 (1984).

#### 84MAL/ROS

T.E. Mallouk, G.L. Rosenthal, G. Muller, R. Brusasco and N. Bartlett, "Fluoride Ion Affinities of GeF4 and BF4 from Thermodynamic and Structural Data for (SF2)₂GeF6, ClO₂GeF₅, and ClO₂BF₄," Inorg. Chem. 23, 3167 (1984).

## 84MAR/KAY

A.P. Marchand, R. Kaya and A.D. Baker, "A Photoelectron Spectroscopic Study of Proximity Effects in 8,11-Disubstituted Pentacyclo(5.4.0.02,6.03,10.05,9)undecanes," Tetrahedron Lett. 25, 795 (1984).

## 84MAÚ/NEĽ

M. Meot-Ner (Mautner), S.F. Nelsen, M.R. Willi and T.B. Frigo, "Special Effects of an Unusually Large Neutral to Radical Cation Geometry Change. Adiabatic Ionization Energies and Proton Affinities of Alkylhydrazines," J. Am. Chem. Soc. 106, 7384 (1984).

### 84MCA/HUD

D.J. McAdoo, C.E. Hudson, F.W. McLafferty and T.E. Parks, "The Reactions of Metastable [C₅H₁₀O] + Ions with the Oxygen on the Second Carbon," Org. Mass Spectrom. 19, 353 (1984).

## 84MCD/CHO

R.N. McDonald, A.K. Chowdhury and W.D. McGhee, "Gas-Phase Generation of 1,1,1,3,3,3-Hexafluoroisopropylidene Anion Radical: Proton Affinity and Heat of Formation of (CF₃)₂C⁻ and (CF₃)₂CH⁻," J. Am. Chem. Soc. **106**, 4112 (1984).

# 84MCD/ČHO2

R.N. McDonald, A.K. Chodhury and P.L. Schell, "Generations and Reactions of (OC)₃Fe⁻ in a Flowing Afterglow Apparatus," J. Am. Chem. Soc. 106, 6095 (1984).

### 84MCM/HAL

J.E. McMurry, G.J. Haley, J.R. Matz, J.C. Clardy and G. Van Duyne, "Tetracyclo[8.2.2.2⁵.2⁶,9]octadeca-1,5,9-triene," J. Am. Chem. Soc. 106, 5018 (1984).

### 84MEA/STE

R.D. Mead, A.E. Stevens and W.C. Lineberger, "Photodetachment in Negative Ion Beams," Gas Phase Ion Chemistry, Vol. 3 (M.T. Bowers, editor), Academic Press, NY, (1984), Ch. 22.

#### 84MEY/SCH

H.-J. Meyer, T. Schulze and U. Ross, "Molecular Beam Study of the Chemi-Ionization in the Reactive Scattering of Ca and Sr with Cl₂ and Br₂ at Collision Energies C(c.m.) < 4.5 eV," Chem. Phys. 90, 185 (1984).

#### 84MIL/BAE

B.E. Miller and T. Baer, "Kinetic Energy Release Distribution in the Fragmentation of Energy-Selected Vinyl and Ethyl Bromide Ions," Chem. Phys. 85, 39 (1984).

## 84MOM/BUŔ

A.A. Mommers, P.C. Burgers, J.L. Holmes and J.K. Terlouw, "Isomeric [C₃H₄] + Ions: Their Identification and Generation in Dissociative Ionizations," Org. Mass Spectrom. 19, 7 (1984).

#### 84MOR/POW

B.J. Morris-Sherwood, C.B. Powell and M.B. Hall, "Photoelectron Spectra and Molecular Orbital Calculations on Bis(cyclopentadienyldicarbonylchromium, -molybdenum, and -tungsten): Nature of the Bonding of Linear Semibridging Carbonyls," J. Am. Chem. Soc. 106, 5079 (1984).

## 84MOS/MOS

J. Moskal, A. Moskal and K. Nagraba, "Conjugated Schiff's Bases. 16 - Substituent Effect on Electron Impact Fragmentation of Some 1-Oxa-4-azabutadienes," Org. Mass Spectrom. 19, 87 (1984).

#### 84MOY/BRA

C.R. Moyland and J.I. Brauman, "Bond Dissociation Energies in Alcohols: Kinetic and Photochemical Evidence Regarding Ion Thermochemistry," J. Phys. Chem. 88, 3175 (1984).

## 84MUL/SAN

K. Muller-Dethlefs, M. Sander and E.W. Schlag, "Two-Colour Photoionization Resonance Spectroscopy of NO: Complete Separation of Rotational Levels of NO + at the Ionization Threshold," Chem. Phys. Lett. 112, 291 (1984).

## 84NAD/REI

I. Nadler, H. Reisler, M. Noble and C. Wittig, Chem. Phys. Lett. 108, 115 (1984).

# 84NEL

S.F. Nelsen, "Ionization from Nitrogen and Oxygen Lone Pairs: A Comparison of Trialkylamine, Dialkyl Ether, Tetraalkylhydrazine, and Dialkyl Peroxide Photoelectron Spectroscopic Ionization Potentials," J. Org. Chem. 49, 1891 (1984).

### 84NES/VER

T.N. Nesterova, S.P. Verekin, S.Y. Karaseva, A.M. Rozhnov and V.F. Tsyetkov, Russ. J. Phys. Chem. 58, 491 (1984).

## 84NIK/OVC

E.N. Nikolaev, K.V. Ovchinnikov and G.A. Semenov, "Composition of Vapor over Lead Molybdate and Tungstate," Zh. Obs. Khim. 54, 977 (1984). English trans.: J. Gen. Chem. (USSR) 54, 869 (1984).

## 84NOV/POT

I. Novak and A.W. Potts, "The UV Gas-Phase Photoelectron Spectra of Group IVB Tetraphenyl Derivatives," J. Organometall. Chem. 262, 17 (1984).

## 84NOV/POT2

I. Novak and A.W. Potts, "Ultraviolet Photoelectron Spectra of Gas Phase and Condensed Tin and Lead Dihalides (MX₂, M = Sn, Pb; X = Cl, Br, I)" J. Electron Spectrosc. Rel. Phenom. 33, 1 (1984).

### 84OAK/ELL

J.M. Oakes and G.B. Ellison, "Photoelectron Spectroscopy of the Allylic Anion, J. Am. Chem. Soc. 106, 7734 (1984).

### 840HN/MAT

K. Ohno, S. Matumoto, K. Imai and Y. Haraa, "Penning Ionization Electron Spectroscopy of Nitriles," J. Phys. Chem. 88, 206 (1984).

#### 840LI/FLE

J.A. Olivares, G.D. Flesch and H.J. Svec, "Mass Spectrometry of Five Ketene Dimers," Int. J. Mass Spectrom. Ion Proc. 56, 293 (1984).

#### 840LI/GUE

P.R. Olivato, S.A. Guerrero, A. Modelli, G. Granozzi, D. Jones and G. Distefano, "Electronic Interaction in Heterosubstituted Acetones Studied by Means of Ultraviolet Photoelectron and Electron Transmission Spectroscopy," J. Chem. Soc. Perkin Trans. II 1505 (1984).

## 84ORI/SRI

O.J. Orient and S.K. Srivastava, "Mass Spectrometric Determination of Partial and Total Electron Impact Ionization Cross Sections of SO₂ from Threshold up to 200 eV," J. Chem. Phys. 80, 140 (1984).

#### 84PAN/BAE

M. Panczel and T. Baer, "A Photoelectron Photoion Coincidence (PEPICO) Study of Fragmentation Rates and Kinetic Energy Release Distributions in Nitrobenzene," Int. J. Mass Spectrom. Ion Proc. 58, 43 (1984).

#### 84PAQ/DAN

L.A. Paquette, R.G. Daniels and R. Gleiter, "Synthesis, Reactivity, and Electronic Structure of (2-(Trimethylsilyl)-1,3-cyclohexadiene)iron Tricarbonyl Complexes," Organometall. 3, 560 (1984).

## 84PAR/WEX

E.K. Parks and S. Wexler, J. Phys. Chem. 88, 4492 (1984).

#### 84PAU/HEN

J.F. Paulson and M.J. Henchman, "On the Formation of H₃O in an Ion-Molecule Reaction," in "Ionic Processes in the Gas Phase," M.A. Almoster Ferreira, Ed., Reidel, Dordrecht, 1984, p.331.

#### 84PED/UND

A.H. Pedersen and K. Undheim, "N-Quaternary Compounds. Part LIX. Facile Synthesis of 3-Vinyl-4(3H)-pyrimidinethiones," J. Heterocyc. Chem. 21, 1149 (1984).

## 84PET/DAO

K.I. Peterson, P.D. Dao, R.W. Farley and A.W. Castleman, Jr., "Photoionization of Sodium Clusters," J. Chem. Phys. 80, 1780 (1984).

## 84PLA/SIM

V.A. Platonov and Y.N. Simulin, Russ. J. Phys. Chem. 58, 1630 (1984).

## 84POL/MUN

C.W. Polley, Jr. and B. Munson, "The Proton Affinity of Nitrogen Dioxide," Int. J. Mass Spectrom. Ion Proc. 59, 333 (1984).

## 84POL/TRE

J.E. Pollard, D.J. Trevor, J.E. Reutt, Y.T. Lee and D.A. Shirley, "Torsional Potential and Intramolecular Dynamics in the C₂H₄ + Photoelectron Spectra," J. Chem. Phys. 81, 5302 (1984).

## 84PYA/GOR

A.T. Pyatenko and L.N. Gorokhov, "Electron Affinities of the  $U_2F_n$  Molecules (8 < n < 12)," Chem. Phys. Lett. 105, 205 (1984). [Duplicates, Russ. J. Phys. Chem. 58, 1624 (1984).]

### 84PYA/GUS

A.T. Pyatenko, A.V. Gusarov and L.N. Gorokhov, "Thermochemistry of Negative Ions in the U-F System," Russ. J. Phys. Chem. 58, 1 (1984).

## 84RAU/SCH

H. Rau and E. Schnedler, J. Chem. Thermodyn. 16, 673 (1984). 84REE/MUJ

W.D. Reents, Jr. and A.M. Mujsce, "Ion/Molecule Reactions of Silicon Tetrafluoride," Int. J. Mass Spectrom. Ion Proc. 59, 65 (1984).

## 84ROH/CÓX

E.A. Rohlfing, D.M. Cox and A. Kaldor, "Production and Characterization of Supersonic Carbon Cluster Beams," J. Chem. Phys. 81, 3322 (1984).

#### 84ROH/COX2

E.A. Rohlfing, D.M. Cox, A. Kaldor and K.H. Johnson, "Photoionization Spectra and Electronic Structure of Small Iron Clusters," J. Chem. Phys. 81, 3846 (1984).

#### 84ROL/HOU

E. Rolli and R. Houriet, "Basicite en Phase Gaseuse et Site de Protonation des p-Nitroanilines R₂NC₆H₄NO₂ (R = H, CH₃)," Int. J. Spectrosc. 3, 177 (1984).

#### 84ROT

W.R. Roth, Personal communication.

## 84RUS/CUR

B.M. Ruscic, L.A. Curtiss and J. Berkowitz, "Photoelectron Spectrum and Structure of B₂O₂," J. Chem. Phys. 80, 3962 (1984).

#### 84SCH

B. Schaldach, "Chemistry of Gaseous Ions. Part VIII. Bond Strength and Mass Spectrometric Fragmentation of 2-Methoxycinnamic Acid," Int. J. Mass Spectrom. Ion Proc. 56, 237 (1984).

## 84SCH/HOU

J.C. Schultz, F.A. Houle and J.L. Beauchamp, "Photoelectron Spectroscopy of 1-Propyl, 1-Butyl, Isobutyl, Neopentyl and 2-Butyl Radicals: Free Radical Precursors to High Energy Carbonium Ion Isomers," J. Am. Chem. Soc. 106, 3917 (1984).

## 84SCH/HOU2

J.C. Schultz, F.A. Houle and J.L. Beauchamp, "Photoelectron Spectroscopy of Isomeric C₄H₇ Radicals. Implications for the Thermochemistry and Structures of the Radicals and Their Corresponding Carbonium Ions," J. Am. Chem. Soc. 106, 7336 (1984).

# 84SHA/URA

M. Shahbaz, S. Urano, P.R. LeBreton, M.A. Rossman, R.S. Hosmane and N.J. Leonard, "Tri-s-triazine: Synthesis, Chemical Behavior and Spectroscopic and Theoretical Probes of Valence Orbital Structure," J. Am. Chem. Soc. 106, 2805 (1984).

## 84SHI/GIN

I. Shin and K.A. Gingerich, J. Chem. Phys. 81, 5937 (1984).

## 84SMI/ADA

D. Smith, N.G. Adams and E.E. Ferguson, "The Heat of Formation of C₃H₂+," Int. J. Mass Spectrom Ion Proc. **61**, 15 (1984).

## 84SMI/HAG

M.A. Smith, J.W. Hager and S.C. Wallace, "Two Color Photoionization Spectroscopy of Jet Cooled Aniline: Vibrational Frequencies of the Aniline X²B₁ Radical Cation," J. Chem. Phys. **80**, 3097 (1984).

# 84SMI/HAG2

M.A. Smith, J.W. Hager and S.C. Wallace, "Two-Color Laser Photoionization Spectroscopy in a Collisionless Free-Jet Expansion: Spectroscopy and Excited-State Dynamics of Diazabicyclooctane," J. Phys. Chem. 88, 2250 (1984).

## 84STÀ/MÁQ

D. Stahl and F. Maquin, "Charge-Stripping Mass Spectrometry of Molecular Ions from Polyacenes and Molecular Orbital Theory," Chem. Phys. Lett. 108, 613 (1984).

## 84STÈ/MÁR

K. Stephen, T.D. Mark, J.H. Futrell and H. Helm, "Electron Impact Ionization of (N₂)₂: Appearance Energies of N₃ + and N₄ +," J. Chem. Phys. 80, 3185 (1984).

### 84STO/SPI

J.A. Stone and D.E. Splinter, "A High-Pressure Mass Spectrometric Study of the Binding of (CH₃)₃Sn + to Lewis Bases in the Gas Phase," Int. J. Mass Spectrom. Ion Proc. 59, 169 (1984).

#### 84SZE/BAE

L. Szepes and T. Baer, "Dissociation Dynamics of Energy Selected Hexamethyldisilane Ions and the Heats of Formation of (CH₃)₃Si⁺ and (CH₃)₃Si," J. Am. Chem. Soc. **106**, 273 (1984).

## 84SZE/BAE2

L. Szepes and T. Baer, "(CH3)3SiX tipusu vegyuletek vizsgalata fotoelectron-fotoion koincidenciaval, I. Meghatarozott belso energiaju hexametil-diszilan-ionok disszociaciojanak dinamikaja," Mag. Kem. Foly. 90, 104 (1984).

#### 84TER/LOU

A. Terpstra, J.N. Louwen, A. Oskam and J.H. Teuben, "The He(I) and He(II) Photoelectron Spectra of Some η5-Cyclopentadienyl-Titanium, -Zirconium and -Hafnium Trihalide Complexes," J. Organometall. Chem. 260, 207 (1984).

#### 84TOB/TAJ

S. Tobita, S. Tajima and T. Tsuchiya, "The Substituent Effect on the Single and Double Hydrogen Atom Transfer Reactions in para-Substituted Benzoic Acid Isobutyl Esters," Org. Mass Spectrom. 19, 326 (1984).

#### 84TOL/BEA

M.A. Tolbert and J.L. Beauchamp, "Activation of Carbon-Hydrogen and Carbon-Carbon Bonds by transition-Metal Ions in the Gas Phase. Exhibition of Unique Reactivity by Scandium Ions," J. Am. Chem. Soc. 106, 8117 (1984).

#### 84TRA

J.C. Traeger, "A Study of the Allyl Cation Thermochemistry by Photoionization Mass Spectrometry," Int. J. Mass Spectrom. Ion Proc. 58, 259 (1984).

#### 84TRE/POL

D.J. Trevor, J.E. Pollard, W.D. Brewer, S.H. Southworth, C.M. Truesdale, D.A. Shirley and Y.T. Lee, "Photoionization Mass Spectrometry of Ne Dimers," J. Chem. Phys. 80, 6083 (1984).

## 84TUM/FOS

W. Tumas, R.F. Foster and J.I. Brauman, "Unimolecular Decompositions of Gas-Phase Alkoxide Anions," J. Am. Chem. Soc. 106, 4053 (184).

#### 84TUR

F. Turecek, "2-Hydroxybutadiene: Preparation, Ionization Energy and Heat of Formation," Tetrahedron Lett. 25, 5133 (1984).

## 84TUR2

F. Turecek, "(E)- and (Z)-Prop-1-en-ol: Gas Phase Generation and Determination of Heats of Formation by Mass Spectrometry," J. Chem. Soc. Chem. Commun. 1374 (1984).

# 84TUR/HAN

F. Turecek and V. Hanus, "Loss of Methyl from [H₂C = C(OH)-CH₃] + Ions Prepared by Electron Impact Ionization of Unstable 2-Hydroxypropene," Org. Mass Spectrom. 19, 631 (1984).

# 84VAN/DEL

H. Van Lonkhuyzen and C.A. De Lange, "U. V. Photoelectron Spectroscopy of OH and OD Radicals," Molec. Phys. 51, 551 (1984).

## 84VAN/DÉL2

H. Van Lonkhuyzen and C.A. De Lange, "High-Resolution UV Photoelectron Spectroscopy of Diatomic Halogens," Chem. Phys. 89, 313 (1984).

## 84VES/HAR

T. Veszpremi, Y. Harada, K. Ohno and H. Mutoh, Jr., "Photoelectron and Penning Electron Spectroscopic Investigation of Phenylhalosilanes," Organometall. Chem. 266, 9 (1984).

# 84VIS/HIL

R. Viswanathan and K. Hilpert, "Mass Spectrometric Study of the Vaporization of Cesium Iodide and Thermochemistry of (CsI)₂(g) and (CsI)₃(g)," Ber. Bunsenges. Phys. Chem. 88, 125 (1984).

# 84WAN/CAP

H. Wankenne, G. Caprace and J. Momigny, "Unimolecular Decay of Metastable Ions in Formaldehyde," Int. J. Mass Spectrom. Ion Proc. 57, 149 (1984).

### 84WAN/DIL

R.-G. Wang, M.A. Dillon and D. Spence, "Electron Spectroscopy of Hydrogen Chloride from 5 to 19 eV," J. Chem. Phys. 80, 63 (1984).

#### 84WIB/LUP

K.B. Wiberg, E.C. Lupton, D.J. Wasserman, A. de Meijere and S.R. Kass, J. Am. Chem. Soc. 106, 1740 (1984).

### 84WIB/WAS

K.B. Wiberg, D.J. Wasserman and E. Martin, J. Phys. Chem. **88**, 3684 (1984).

#### 84ZHO/HEI

Y. Zhong-Zhi, E. Heilbronner, V. Boekelheide and J. Garbe, "The He(Ia) PE Spectra of Cyclophanes Containing a Cyclooctatetraene Ring," Int. J. Mass Spectrom. Ion Proc. 58, 233 (1984).

#### 84ZWI/HAR

J.J. Zwinselman and A.G. Harrison, "An Energy-resolved Study of the Fragmentation of Ionized 1-Penten-3-ol" Org. Mass Spectrom. 19, 573 (1984).

#### 85ADA/SMI

N.G. Adams and D. Smith, "A Study of the Nearly Thermoneutral Reactions of  $N^+$  with  $N_2$ , HD and  $D_2$ ," Chem. Phys. Lett. 117, 67 (1985).

#### 85AJO/CAS

D. Ajo, M. Casarin, R. Bertoncello, V. Busetti, H.C.J. Ottenheijm and R. Plate, "Molecular and Electronic Structure of the Dehydroalanine Derivatives: The Cyclic Dipeptide of Dehydrophenylalanine," Tetrahedron 41, 5543 (1985).

#### 85ALA/ATT

M. Alai, G.G. Attardo and R.T.B. Rye, "Formation Threshold Structures of Some [C₅H₇O] + Ions: Use of General Schemes for Estimation of Heats of Formation of Gas Phase Ions," Can. J. Chem. 63, 833 (1985).

## 85ALB/GEH

R.A. Alberty and C.A. Gehrig, J. Phys. Chem. Ref. Data 14, 803 (1985).

### 85ALB/HEL

B. Albert, C. Heller, R. Iden, G. Martin, H.-D. Martin, B. Mayer and A. Oftring, "Design and Synthesis of α-Diketones. The Cyclobutane-1,2-dione Chromophore: Synthesis, Dienophilic Reactivity and Electronic Properties of Cyclobutenedione and Polycyclic Cyclobutanediones," Israel J. Chem. 25, 74 (1985).

## 85AUD/MIL

H. Audier, A. Milliet and G. Sozzi, "Isomerisation des Cation Radicaux Acides Pentanoique et Methyl-3-butanoique in Phase Gazeuse," Bull. Soc. Chim. France 5, 833 (1985).

## 85AUS/LIA

P. Ausloos and S.G. Lias, unpublished results.

### 85BAI/MIS

V.N. Baidin, A.D. Misharev and V.V. Takhistov, "Effect of Alkyl Substituents on the Ionization Potentials of Halogenobenzenes," Zh. Org. Khim. 21, 817 (1985).

## 85BAI/MIS2

V.N. Baidin, A.D. Misharev and V.V. Takhistov, "Investigation of Substituted tert-Butylbenzenes by Photoelectron Spectroscopy," Zh. Org. Khim. 21, 1237 (1985).

# 85BAJ/HÚM

M. Bajic, K. Humski, L. Klasinc and B. Ruscic, "Substitution Effects on Electronic Structure of Thiophene," Z. Naturforsch. **40b**, 1214 (1985).

### 85BAK/KÎN

J. Baker, E.E. Kingston, W.J. Bouma, A.G. Brenton and L. Radom, "Is the Methylenemethonium Radical Cation (CH₂CH₄+·) a Stable Species?" J. Chem. Soc. Chem. Commun. 1625 (1985).

## 85BAL/GIG

G. Balducci, G. Gigli and M. Guido, "Mass Spectrometric Study of the Thermochemistry of Gaseous EuTiO₃ and TiO₂," J. Chem. Phys. 83, 1909 (1985).

## 85BAL/GIG2

G. Balducci, G. Gigli and M. Guido, "Identification and Stability Determinations for the Gaseous Titanium Oxide Molecules Ti₂O₃ and Ti₂O₄," J. Chem. Phys. 83, 1913 (1985).

#### 85BAL/HAS

T. Bally, D. Hasselmann and K. Loosen, "41. The Molecular Ion of 5-Methylene-1,3-cyclohexadiene: Electronic Absorption Spectrum and Revised Enthalpy of Formation," Helv. Chim. Acta 68, 345 (1985).

#### 85BAN/MTE

J.A. Bandy, V.S.B. Mtetwa, K. Prout, J.C. Green, C.E. Davies, M.L.H. Green, N.J. Hazel, A. Izquierdo and J.J. Martin-Polo, "Synthesis, Structure, and Bonding of Fulvene Complexes of Titanium, Molybdenum, and Tungsten," J. Chem. Soc. Dalton Trans. 2037 (1985).

## 85BIN/GRO

M. Binnewies, J. Grosse and D. Le Van, "Reaktive  $E=C(p-p)\pi$ -Systeme II: Massenspektrometrische Untersuchun von  $F_3CP=CF_2$ ,  $F_3CAs=CF_2$ ,  $S=CF_2$  und  $Se=CF_2$ ," Phosphorus and Sulfur 21, 349 (1985).

#### 85BIS/GLE

P. Bischof, R. Gleiter, R. Haider and C.W. Rees, "The Photoelectron Spectrum of 7b-Methyl-7bH-cyclopent[cd]indene," J. Chem. Soc. Perkin Trans. II 1001 (1985).

## 85BOL/HOU

J.C. Bollinger, R. Houriet, C.W. Kern, D. Perret, J. Weber and Y. Yvernault, "Experimental and Theoretical Studies of the Gas Phase Protonation of Aliphatic Phosphine Oxides and Phosphoramides," J. Am. Chem. Soc. 107, 5352 (1985).

# 85BRO/CHE

M. Broyer, J. Chevaleyre, G. Delacretaz, P. Fayet and L. Woste, "One- and Two-Photon Ionization of Alkaline Clusters," Surface Sci. 156, 342 (1985).

## 85BRO/COX

M. Brookhart, K. Cox, F.G.N. Cloke, J.C. Green, M.L.H. Green, P.M. Hare, J. Bashkin, A.E. Derome and P.D. Grebenik, "Hexakis(trimethylphosphine)molybdenum Chemistry: Dinitrogen, Ethylene, Butadiene, η-Cyclopentadienyl, and Related Derivatives," J. Chem. Soc. Dalton Trans. 423 (1985).

### 85BUR

P.C. Burgers, "Isotope Effects Associated With the Unimolecular Fragmentation of D-Labeled Formic Acid Radical Cations," Org. Mass Spectrom. 20, 426 (1985).

# 85BUR/HOL

P.C. Burgers, J.L. Holmes, J.K. Terlouw and B. van Baar, "Three New Isomers of [C₂H₆O] +: The Radical Cations [CH₃O(H)CH₂] +, [CH₃CHOH₂] + and a Low-energy Isomer of Unassigned Structure," Org. Mass Spectrom. 20, 202 (1985).

### 85BUT/LER

J.J. Butler, G.E. Leroi, A.C. Parr and R. Stockbauer, "The Rate Versus Energy Dependence of CH₃ Loss from t-Butylbenzene Cation," to be submitted.

### 85CAL/KEB

G. Caldwell and P. Kebarle, "The Hydrogen Bond Energies of the Bihalide Ions XHX⁻ and YHX⁻," Can. J. Chem. 63, 1399 (1985).

# 85CAL/MCM

G. Caldwell, T.B. McMahon, P. Kebarle, J.E. Bartmess and J.P. Kiplinger, "Methyl Substituent Effects in the Gas Phase Acidities of Halosubstituted Oxygen Acids. A Realignment with Substituent Effects in Solution," J. Am. Chem. Soc. 107, 80 (1985).

## 85CAN/HÁM

P.H. Cannington and N.S. Ham, "He(II) Photoelectron Spectra of Esters," J. Electron Spectrosc. Rel. Phenom. 36, 203 (1985).

#### 85CAU/FUR

C. Cauletti, C. Furlani, A. Palma, M.N. Piancastelli, K.D. Schleinitz and D. Gloyna, "Electronic Structure and Free-Energy Relationships for Some 4'-Substituted 4-Dimethylamino trans-Stilbenes by U. V. Photoelectron Spectroscopy," J. Prakt. Chem. 327, 829 (1985).

#### 85CLE/MUN

D. Clemens and B. Munson, "Selective Reagents in Chemical Ionization Mass Spectrometry: Trimethylsilyl Adduct Ions," Anal. Chem. 57, 2022 (1985).

#### 85COE/SNO

J.V. Coe, J.T. Snodgrass, C.B. Friedhoff, K.M. McHugh and K.H. Bowen, "Negative Ion Photoelectron Spectroscopy of the negative ion H-(NH₃)," J. Chem. Phys. 83, 3169 (1985).

## 85DAS/GRO

C. Dass and M.L. Gross, "The Question of Cyclic Versus Acyclic Ions: The Structure of  $[C_6H_{10}]^+$  Gas Phase Ions," Org. Mass Spectrom. 20, 34 (1985).

#### 85DAS/NIS

P.R. Das, T. Nishimura and G.G. Meisels, "Fragmentation of Energy-Selected Hexacarbonylchromium Ion," J. Phys. Chem. 89, 2808 (1985).

## 85DAV/ALL

H.E. Davis, N.L. Allinger and D.W. Rogers, J. Org. Chem. 50, 3601 (1985).

#### 85DAV/GAR

C.E. Davies, I.M. Gardiner, J.C. Green, M.L.H. Green, N.J. Hazel, P.D. Grebenik, V.S.B. Mtetwa and K. Prout, "Mono- $\eta$ -cycloheptatrienyltitanium Chemistry: Synthesis, Molecular and Electronic Structures, and Reactivity of the Complexes [Ti( $\eta$ -C $_7$ H $_7$ )L $_2$ X] (L = Tertiary Phosphine, O- or N-Donor Ligand. X = Cl or Alkyl)," J. Chem. Soc. Dalton Trans. 669 (1985).

#### 85DEL/PIG

E.W. Della, P.E. Pigou, M.K. Livett and J.B. Peel, "The Photoelectron Spectrum of 1-Bromotricyclene," Aust. J. Chem. 38, 69 (1985).

# 85DEP/BIE

C.H. DePuy, V.M. Bierbaum, R. Damrauer and J.A. Soderquist, "Gas-Phase Reactions of the Acetyl Anion," J. Am. Chem. Soc. 107, 3385 (1985).

### 85DEP/GRA

C.H. DePuy, J.J. Grabowski, V.M. Bierbaum, S. Ingemann and N.M.M. Nibbering, , "Gas-Phase Reactions of Anions with Methyl Formate and N,N-Dimethylformamide," J. Am. Chem. Soc. 107, 1093 (1985).

### 85DEW/GRA

M.J.S. Dewar, G.L. Grady, K.M. Merz, Jr. and J.J.P. Stewart, Organometallics 4, 1964 (1985).

## 85DEW/HOL

M.J.S. Dewar, M.K. Hollowar, G.L. Grady and J.J.P. Stewart, Organometallics 4, 1973 (1985).

# 85DEW/MER

M.J.S. Dewar and K.M. Merz, Jr., J. Am. Chem. Soc. 107, 6175 (1985).

## 85DEW/TÎE

M.J.S. Dewar and T.-P. Tien, "Photoelectron Spectrum of Benzyne," J. Chem. Soc. Chem. Commun. 1243 (1985).

## 85DIN/CÁS

A. Ding, R. Cassidy, L. Cordis and F. Lampe, "The Photoionization Spectra of Effusing and Supersonic Molecular Beams of Monosilane," J. Chem. Phys. 83, 3426 (1985).

# 85DIS/GIÚ

G. Distefano, A.G. Giumanini, A. Modelli and G. Poggi, "Reinvestigation of the Formaldehyde-Aniline Condensation. Part 4. Ultraviolet Photoelectron and Electron transmission Spectra of N-Methyleneaniline and its Symmetric Dimethyl Ring-Substituted Homologues and Semiempirical Theoretical Evaluation," J. Chem. Soc. Perkin Trans. II, 1623 (1985).

#### 85DOM/LAK

I.N. Domnin, A.M. Lakshin, A.D. Misharev, V.M. Orlov and V.V. Takhistov, "Thermochemical Investigation of Some Hydrocarbon Ions Generated By Photoionization," Zh. Org. Khim. 21, 1262 (1985).

#### 85DUN

R. Dunbar, "Collisional Quenching of Iodobenzene Ion One-Photon Photofragmentation," Chem. Phys. Lett. 155, 349 (1985).

# 85DYK/ELL

J. Dyke, A. Ellis, N. Jonathan and A. Morris, "Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species. Part 18. The Cyclopropyl, Isopropyl, an n-Propyl Radicals," J. Chem. Soc. Faraday II, 81, 1573 (1985).

#### 85DYK/GRA

J.M. Dyke, B.W.J. Gravenor, M.P. Hastings, G.D. Josland and A. Morris, "Gas Phase High Temperature Photoelectron Spectroscopy: An Investigation of the Transition Metals Scandium and Vanadium," J. Electron Spectrosc. Rel. Phenom. 35, 65 (1985).

# 85ELB/ELL

S. Elbel, A. Ellis, E. Niecke, H. Egsgaard and L. Carlsen, "A Photoelectron Spectroscopic Study of Di-t-butylphosphazene," J. Chem. Soc. Dalton Trans. 879 (1985).

## 85ELK/ARM

J. Elkind and P. Armentrout, "Effect of Kinetic and Electronic Energy on the Reaction of V + with H₂, HD and D₂," J. Phys. Chem. 89, 5626 (1985).

#### 85ELS/VER

C.J. Elsevier, P. Vermeer, A. Gedanken and W. Runge, "Excited States of the Allene Chromophore: Photoelectron, Circular Dichroism, and Absorption Spectroscopy of Alkyl- and Halogenoallenes," J. Am. Chem. Soc. 107, 2537 (1985).

# 85FAO/AKA

M. Faour and T.S. Akasheh, J. Chem. Soc. Perkin Trans. II 311 (1985).

#### 85FAR/SRI

M. Farber and R.D. Srivastava, "Electron Impact and Thermodynamic Studies of Potassium Metaborate," J. Chem. Soc. Faraday Trans. I 81, 913 (1985).

## 85FUC

R. Fuchs, Unpublished data, personal communication.

# 85FUK/MCI

E.K. Fukuda and R.T. McIver, Jr., "Relative Electron Affinities of Substituted Benzophenones, Nitrobenzenes, and Quinones. [Anchored to EA(SO₂) from 74CEL/BEN]," J. Am. Chem. Soc. 107, 2291 (1985).

## 85GAD/GUB

S.N. Gadzhiev, A.I. Gubareva and V.I. Khun, Izv. Vyssh. Uchebn. Zabed. Khim. Khim. Technol. 28, 48 (1984) CA 103:130117z (1985).

# 85GAL/GER

J.-F. Gal, S. Geribaldi, G. Pfister-Guillouzo and D.G. Morris, "Basicity of the Carbonyl Group. Part 12. Correlations between Ionization Potentials and Lewis Basicities in Aromatic Carbonyl Compounds," J. Chem. Soc. Perkin Trans. II 103 (1985).

## 85GAL/TÁM

G.L. Gal'chenko, N. Tamm, E.P. Brykina, D.B. Bekker, A.B. Petrunin and A.F. Zhigach, Russ. J. Phys. Chem. 59, 1610 (1985).

## 85GAR/GÓN

J.-L. Garcia, D. Gonbeau, G. Pfister-Guillouzo, M. Roch and J. Weber, "Germathione - silathione spectres photoelectroniques et structures electroniques par la methode MS Xα," Can. J. Chem. 63, 1518 (1985).

## **85GIB/GRE**

S. Gibson, J. Greene and J. Berkowitz, "Photoionization of the Amidogen Radical," J. Chem. Phys. 83, 4319 (1985).

#### 85GLE/DOB

R. Gleiter and W. Dobler, "Die Elektronenstruktur von 1,4-disubstituierten Butantetronen," Chem. Ber. 118, 1917 (1985).

#### 85GLE/JAH

R. Gleiter, G. Jahne, M. Oda and M. Iyoda, "Effect of Through Bond Interaction via Strained Σ Bonds in Cyclohexane-1,4-dione Derivatives," J. Org. Chem. 50, 678 (1985).

#### 85GLE/KRE

R. Gleiter, G. Krennrich, D. Cremer, K. Yamamoto and I. Murata, "Electronic Structure and Thermal Stability of Thiepins. Photoelectron Spectroscopic Investigations," J. Am. Chem. Soc. 107, 6874 (1985).

## 85GLE/SCH

R. Gleiter, P. Schang, M. Bloch, E. Heilbronner, J.-C. Bunzli, D.C. Frost and L. Weiler, "The  $He(I\alpha)$  PE Spectra and Electronic Absorption Spectra of Hexafluorocyclobutanone and of Tetrafluoro-1,2-cyclobutanedione," Chem. Ber. 118, 2127 (1985).

## 85GLE/ZIM

R. Gleiter, H. Zimmermann, W.-D. Fessner and H. Prinzbach, "Dominance of Through-Bond Interaction in a syn-Tricyclo[6.4.0.0^{2,7}]dodecatetraene Moiety," Chem. Ber. 118, 3856 (1985).

## 85GRA/BER

G. Granozzi, R. Bertoncello, E. Tondello and D. Ajo, "He(I)/He(II) Sn 5p Photoionization Cross Sections: Definitive Evidence from the Spectra of Sn₂(CH₃)₆," J. Electron Spectrosc. Rel. Phenom. 36, 207 (1985).

#### 85GRA/ROS

M. Grade and W. Rosinger, "Correlation of Electronic Structures and Stabilities of Gaseous FeI₂, Fe₂I₂ and Fe₂I₄ Molecules, Solid [FeI₂], and Iodine Adsorbed on [Fe]," Surface Sci. 156, 920 (1985).

### 85GRE/PAZ

J.C. Green, M. Paz-Sandoval and P. Powell, "He I and He II Photoelectron Spectra of Open-chain Pentadienyl Complexes of Manganese and Rhenium," J. Chem. Soc. Dalton Trans. 2677 (1985).

## 85GRI/CAL

E. Grimsrud, G. Caldwell and P. Kebarle, "Electron Affinities from Electron Transfer Equilibria:  $A^- + B = A + B^-$ ," J. Am. Chem. Soc. 107, 4627 (1985).

# 85GRI/CHO

E.P. Grimsrud, S. Chowdhury and P. Kebarle, "Electron Affinity of SF₆ and Perfluoromethylcyclohexane. The Unusual Kinetics of Electron Transfer Reactions  $A^- + B^- + A$ , where  $A = SF_6$  or Perfluorinated Cycloalkanes," J. Chem. Phys. 83, 1059 (1985).

## 85GRI/CHO2

E.P. Grimsrud, S. Chowdhury and P. Kebarle, "Thermal Energy Electron Detachment Rate Constants. The Electron Detachment from Azulene" and the Electron Affinity of Azulene," J. Chem. Phys. 83, 3983 (1985).

# 85GRU/SPI

H.-F. Grutzmacher and R. Spilker, "Loss of CO from 4,6-Dimethyl-2-pyrone and 2,6-Dimethyl-4-pyrone Radical Cations," Org. Mass Spectrom. 20, 258 (1985).

## 85GUI/PFI

C. Guimon, G. Pfister-Guillouzo, B. Chaudret and R. Poilblanc, "Application of Photoelectron Spectroscopy to Molecular Properties. Part 19. Electronic Structure of Tris(\alpha-di-imino) Complexes of Ruthenium(0)," J. Chem. Soc. Dalton Trans. 43 (1985).

## 85GUI/PFI2

G. Guimon, G. Pfister-Guillouzo, G. Rima, M. El Amine and J. Barrau, "Generation, Detection and Electronic Structure of Dimethyl Germanone by Photoelectron Spectroscopy and Quantum Calculations," Spectrosc. Lett. 18, 7 (1985).

#### 85GUI/PFI3

C. Guimon, G. Pfister-Guillouzo, J. Dubac, A. Laporterie, G. Manuel and H. Iloughmane, "Electronic Structure of Group 14 (n4-Metallole)tricarbonyliron Complexes," Organometall. 4, 636 (1985).

#### 85HAG/IVA

J. Hager, M. Ivanco, M.A. Smith and S.C. Wallace, "Solvation Effects in Jet-Cooled Van der Waals Clusters: Two-Color Threshold Photoionization Spectroscopy of Indole, Indole-Argon, Indole-Methane, Indole-Water and Indole-Methanol," Chem. Phys. Lett. 113, 503 (1985).

#### 85HAG/SMI

J. Hager, M. Smith and S. Wallace, "Autoionizing Rydberg Structure Observed in the Vibrationally Selective, Two-Color Threshold Photoionization Spectrum of Jet-Cooled Aniline," J. Chem. Phys. 83, 4820 (1985).

## 85HAR

P.W. Harland, unpublished results, cited in B.S. Knight, C.G. Freeman, M.J. McEwan, N.G. Adams and D. Smith, Int. J. Mass Spectrom. Ion Proc. 67, 317 (1985).

## 85HAŘ/MCI

P.W. Harland and B.J. McIntosh, "Enthalpies of Formation for the Isomeric Ions  $H_XCCN^+$  and  $H_XCNC^+$  (x = 0.3) by, "Monochromatic" Electron Impact on  $C_2N_2$ ,  $CH_3CN$  and  $CH_3NC$ ," Int. J. Mass Spectrom. Ion Proc. 67, 29 (1985).

#### 85HEI/BAF

T. Heinis, R. Bar, K. Borlin and M. Jungen, "Photoionization Mass Spectrometry of 1,1-Difluoroethane," Chem. Phys. 94, 235 (1985).

#### 85HEN/HIE

M. Henchman, P.M. Hierl and J.F. Paulson, "Nucleophilic Displacement vs. Proton Tranfer: The System OH-(H₂O)_{0,1,2} + CH₃Cl in the Relative Energy Range 0.03-5 eV," J. Am. Chem. Soc. 107, 2812 (1985).

### 85HEN/ILL

M. Heni and E. Illenberger, "The Stability of the Bifluoride Ion (HF₂-) in the Gas Phase," J. Chem. Phys. 83, 6056 (1985).

### 85HEN/VIG

M. Henchman, A.A. Viggiano, J.F. Paulson, A. Freedman and J. Wormhoudt, "Thermodynamic and Kinetic Properties of the Metaphosphate Anion, PO₃-, in the Gas Phase," J. Am. Chem. Soc. 107, 1453 (1985).

## 85HET/FRE

R. Hettich and B. Freiser, "Heteronuclear Transition-Metal Cluster Ions in the Gas Phase. Photodissociation and Reactivity of VFe⁺," J. Am. Chem. Soc. 107, 6222 (1985).

# 85HIL/BEN

K. Hilpert, L. Bencivenni and B. Saha, "Thermochemistry of the Molecule (ZnI₂)₂(g) and the Vaporization of ZnI₂(s)," J. Chem. Phys. 83, 5227 (1985).

# 85HIR/STR

C. Hirayama, R.D. Straw and H.M. Hobgood, "Equilibria Over GaAs in the Knudsen Cell Range," J. of the Less-Common Metals 109, 331 (1985).

## 85HOD/BEA

R.V. Hodges, J.L. Beauchamp, A.J. Ashe, III and W.-T. Chan, "Proton Affinities of Pyridine, Phosphabenzene and Arsabenzene," Organometall. 4, 457 (1985).

## 85HOL/MOM

J. Holmes, A. Mommers, C. DeKoster, W. Heerma and J. Terlouw, "Four Isomeric [C, H₃, O₂] Ions," Chem. Phys. Lett. 115, 437 (1985).

## 85HON/HEI

E. Honegger, E. Heilbronner, T. Urbanek and H.-D. Martin, "Inverted Hyperconjugation in Symmetrical 1,4-Dihalocubanes," Helv. Chim. Acta 68, 23 (1985).

## 85HON/HEI2

E. Honegger, E. Heilbronner, N. Hess and H.-D. Martin, "Photoelectron Spectra of Symmetrical 1,4-Dihalonorbornanes," Chem. Ber. 118, 2927 (1985).

#### 85HON/HUB

E. Honegger, H. Huber, E. Heilbronner, W.P. Dailey and K.B. Wiberg, "Photoelectron Spectrum of [1.1.1]Propellane: Evidence for a Nonbonding MO?," J. Am. Chem. Soc. 107, 7172 (1985).

# 85HON/SÈG

J. Honovich, J. Segall and R. Dunbar, "Fragmentation Thermochemistry of Gas-Phase Ions by Threshold Photodissociation and Charge-Exchange Ionization. Methylnaphthalene and Methylstyrene Ions," J. Phys. Chem. 89, 3617 (1985).

#### 85HON/YAN

E. Honegger, Z.-Z. Yang and E. Heilbronner, "Lone-Pair Ionization Energies of Diazabicycloalkanes," J. Electron Spectrosc. Rel. Phenom. 36, 297 (1985).

# 85HOT/LIN

H. Hotop and W.C. Lineberger, "Binding Energies in Atomic Negative Ions. II," J. Phys. Chem. Ref. Data 14, 731 (1985).

#### 85HOU/ROI

R. Houriet, E. Rolli, G. Bouchoux and Y. Hoppilliard, "215. Gas-Phase Basicities of Furan Compounds. The Role of Alkyl Substitution on Proton Affinity and on the Site of Protonation," Helv. Chim. Acta 68, 2037 (1985).

#### 85HOU/SCO

K.N. Houk, L.T. Scott, N.G. Rondan, D.C. Spellmeyer, G. Reinhardt, J.L. Hyun, G.J. DeCicco, R. Weiss, M.H.M. Chen, L.S. Bass, J. Clardy, F.S. Jorgensen, T.A. Eaton, V. Sarkozi, C.M. Petit, L. Ng and K.D. Jordan, "Pericyclynes:, 'Exploded Cycloalkanes' with Unusual Orbital Interactions and Conformational Properties. MM2 and STO-3G Calculations, X-ray Crystal Structures, Photoelectron Spectra, and Electron Transmission Spectra," J. Am. Chem. Soc. 107, 6556 (1985).

## 85ILL/COM

E. Illenberger, P. Comita, J.I. Brauman, H.-P. Fenzlaff, M. Heni, N. Heinrich, W. Koch and G. Frenking, "Experimental and Theoretical Investigation of the Azide Anion (N₃-) in the Gas Phase," Ber. Bunsen. 89, 1026 (1985).

## 85ING/NIB

S. Ingemann and N.M.M. Nibbering, "Gas Phase Chemistry of Alpha-Thio Carbanions," Can. J. Chem. 62, 2273 (1985).

## **85ING/NIB2**

S. Ingemann and N.M.M. Nibbering, "Gas-Phase Acidity of  $CH_3X$  [X =  $P(CH_3)_2$ ,  $SCH_3$ , F, Cl, Br, I] Compounds," J. Chem. Soc. Perkin Trans. II 837 (1985).

### 85ING/NIB

S. Ingemann and N.M.M. Nibbering, "Gas Phase Chemistry of Dipole Stabilized Carbanions Derived From N,N-Dimethylthioformamide and N,N-Dimethylnitrosamine," Acta Chem. Scand. B 39, 697 (1985).

### **85JANAF**

M.W. Chase, Jr., C.A. Davies, J.R. Downey, Jr., D.J. Frurip, R.A. McDonald and A.N. Syverud, "JANAF Thermochemical Tables (Third Edition) Suppl. 1," J. Phys. Chem. Ref. Data 14, (1985).

# 85JEO/RAK

S. Jeon, A. Raksit and G. Gellene, "Formation of Hypervalent Ammoniated Radicals by Neutralized Ion Beam Techniques," J. Am. Chem. Soc. 197, 4129 (1985).

### 85JOH/WII

C.L. Johlman and C.L. Wilkins, "Gas-Phase Reactions of Nucleophiles with Methyl Formate," J. Am. Chem. Soc. 107, 327 (1985).

## 85JOR/GAJ

F.S. Jorgensen, M. Gajhede and B. Frei, "227. Cyclic Acetals. Structural Analysis of 1,3-Dioxepine and Related Compounds," Helv. Chem. Acta 68, 2148 (1985).

#### **85KAI**

W. Kaim, "Electronic Structure of 1,4-Dihydro-1,2,4,5-tetrazines and of Related 1,4-Dihydroaromatic Compounds," J. Chem. Soc. Perkin Trans. II 1633 (1985).

## 85KAP/LEL

O. Kaposi, L. Lelik, G.A. Semenov and E.N. Nikolajev, "Gazfazisu indium-molibdenat kepzodeshojenek tomegspektrometrias meghatarozasa," Magy. Kem. Foly. 91, 31 (1985).

## 85KAP/RÁD

M.M. Kappes, P. Radi, M. Schar and E. Schumacher, "Photoionization Measurements on Dialkali Monohalides Generated in Supersonic Nozzle Beams," Chem. Phys. Lett. 113, 243 (1985).

## 85KAP/RAD2

M.M. Kappes, P. Radi, M. Schar and E. Schumacher, "Probes for Electronic and Geometrical Shell Structure Effects in Alkali-Metal Clusters. Photoionization Measurements on  $K_XLi$ ,  $K_XMg$  and  $K_XZn(x<25)$ ," Chem. Phys. Lett. 119, 11 (1985).

## 85KAP/SCĤ

M.M. Kappes and E. Schumacher, "Generation, Spectroscopic and Chemical Characterization of Metal Clusters (Mx, x < 65), A Progress Report," Surface Sci. 156, 1 (1985).

#### 85KAR

Z. Karpas, "The Proton Affinity of H₂Se, SeCO and H₂CSe and Reactions of Positive Ions with H₂Se," Chem. Phys. Lett. 120, 53 (1985).

#### 85KAR/STE

Z. Karpas, W.J. Stevens, T.J. Buckley and R. Metz, "The Proton Affinity and Gas Phase Ion Chemistry of Methyl Isocyanate, Methyl Isothiocyanate, and Methyl Thiocyanate," J. Phys. Chem. 89, 5274 (1985).

#### 85KAS/DEP

S.R. Kass and C.H. DePuy, "Gas Phase Ion Chemistry of Azides. The Generation of  $CH = N^-$  and  $CH_2 = NCH_2^-$ ," J. Org. Chem. 50, 2874 (1985).

## 85KIE/WEI

J.H. Kiefer, H.C. Wei, R.D. Kern and C.H. Wu, Int. J. Chem. Kinet. 17, 225 (1985).

### 85KIS/MOR

W. Kischlat and H. Morgner, "Comparative Study of He(2³S)-Penning Ionization and He(I) Photoionization of CF₄, CCl₄, and the Chlorofluoromethanes by Electron-Ion Coincidence," J. Electron Spectrosc. Rel. Phenom. 35, 273 (1985).

# 85KLE/WAR

P.D. Kleinschmidt, J.W. Ward, G.M. Matlack and R.G. Haire, High Temp. Sci. 19, 267 (1985).

# 85KNI/FRE

J.S. Knight, C.G. Freeman and M.J. McEwan, "Selected-Ion Flow Tube Studies of HC₃N," Int. J. Mass Spectrom. Ion Phys. 67, 317 (1985).

# 85KOL/MEI

H. Kolshornand and H. Meier, Chem. Ber. 118, 176 (1985).

### 85KRO/MCN

H.W. Kroto and D. McNaughton, "Photoelectron Spectra of the Aminodifluoroboranes NH₂BF₂, NHMeBF₂, and NMe₂BF₂," J. Chem. Soc. Dalton Trans. 1767 (1985).

## 85LAD/HAR

K.R. Laderoute and A.G. Harrison, "Cyclopropane Intermediates in the Rearrangement and Fragmentation of Olefinic Molecular Ions," Org. Mass. Spectrom. 20, 624 (1985).

## 85LAH/HAY

J. Lahnstein, R.N. Hayes and J.H. Bowie, "Gas Phase Ion Chemistry of Ambident Nucleophiles. Reactions of Alkoxide and Thiomethoxide Negative Ions with Hydrogen Free Molecules," Nouv. J. Chim. 9, 205 (1985).

### 85LAN/SAL

K.R. Lane, L. Sallans and R.R. Squires, "Anion Affinities of Transition Metal Carbonyls. A Thermochemical Correlation for Iron Tetracarbonyl Acyl Negative Ions," J. Am. Chem. Soc. 107, 5369 (1985).

## 85LAN/SQU

K.R. Lane and R.R. Squires, "Formation of HCr(CO)3⁻ from the Remarkable Reaction of Hydride Ion with Benzenechromium Tricarbonyl," J. Am. Chem. Soc. 107, 6403 (1985).

## 85LAR/MCM

J.W. Larson and T.B. McMahon, "Fluoride and Chloride Affinities of the Main Group Oxides, Fluorides, Oxofluorides, and Alkyls. Quantitative Scales of Lewis Acidities from ICR Halide Exchange Equilibria," J. Am. Chem. Soc. 107, 766 (1985).

#### 85LAU/BRI

K.H. Lau, R.D. Brittain and D.L. Hildenbrand, J. Phys. Chem. 89, 4369 (1985).

## 85LAU/WES

W.M. Lau, N.P.C. Westwood and M.H. Palmer, "A Photoelectron/Photoionisation and Ab Initio Study of the S₃N₃ Radical Produced by Vaporisation of (SN)_x," J. Chem. Soc. Chem. Commun. 752 (1985).

#### 85LEE/LIV

K.-J. Lee, P.D. Livant, M.L. McKee and S.D. Worley, "Photoelectron, Infrared, and Theoretical Study of 1-Aza-5-boratricyclo[3.3.3.0^{1,5}]undecane and Related Compounds," J. Am. Chem. Soc. 107, 5901 (1985).

#### 85LEO/MUR

D.G. Leopold, K.K. Murray, A.E.S. Miller and W.C. Lineberger, "Methylene: A Study of the X³B₁ and the ¹A₁ States by Photoelectron Spectroscopy of CH₂- and CD₂-," J. Chem. Phys. 83, 4849 (1985).

#### RST TA/ATIS

S.G. Lias and P. Ausloos, "Structures of C₆H₇⁺ Ions Formed in Unimolecular and Bimolecular Reactions," J. Chem. Phys. 82, 3613 (1985).

#### 85LIA/JAC

S.G. Lias, J.-A.A. Jackson, H. Argentar and J.F. Liebman, "Substituted N,N-Dialkylanilines: Relative Ionization Energies and Proton Affinities through Determinations of Ion-Molecule Reaction Equilibrium Constants," J. Org. Chem. 50, 333 (1985).

## 85LIA/KAR

S.G. Lias, Z. Karpas and J.F. Liebman, "Halomethylenes: Effects of Halogen Substitution on Absolute Heats of Formation," J. Am. Chem. Soc. 107, 6089 (1985).

### 85LIN/BRC

S.H. Linn, J.M. Brom, Jr., W.-B. Tzeng and C.Y. Ng, "Photoionization Study of HgAr," J. Chem. Phys. 82, 648 (1985).

## 85LOS/WIL

O. Losking and H. Willner, "Thermochemische Daten und Photoionisation-Massenspektren von SSF₂, FSSF, SF₃SF und SF₃SSF," Z. Anorg. Allg. Chem. 530, 169 (1985).

## 85MAL/ARA

Y. Malinovich, R. Arakawa, G. Haase and C. Lifshitz, "Time-Dependent Mass Spectra and Breakdown Graphs. VI. Slow Unimolecular Dissociation of Bromobenzene Ions at Near Threshold Energies," J. Phys. Chem. 89, 2253 (1985).

### 85MAR/COM

J. Marks, P.B. Comita and J.I. Brauman, "Threshold Resonances in Electron Photodetachment Spectra. Structural Evidence for Dipole-Supported States," J. Am. Chem. Soc. 107, 3718 (1985).

# 85MAR/MAN

K.N. Marsh and M. Mansson, J. Chem. Thermodyn. 17, 995 (1985).

### 85MAR/MAY

H.-D. Martin, B. Mayer, R.W. Hoffmann, A. Riemann and P. Rademacher, "PE- und ¹³C-NMR-spektroskopische Untersuchungen zur Homokonjugation in 7-Alkylidennorbornadienen," Chem. Ber. 118, 2514 (1985).

#### 85MAR/MOD

F. Marcuzzi, G Modena and C. Paradisi, "Gas Phase Basicity of Ring-Substituted Phenylacetylenes," J. Org. Chem. 50, 4973 (1985).

## 85MCM/KEB

T.B. McMahon and P. Kebarle, "Bridging the Gap. A Continuous Scale of Gas Phase Basicities from Methane to Water from Pulsed Electron Beam High Pressure Mass Spectrometric Equilibria Measurements," J. Am. Chem. Soc. 107, 2612 (1985).

# 85MCM/KEB2

T.B. McMahon and P. Kebarle, "The Formyl and Isoformyl Cations. A Pulsed Electron Beam High Pressure Mass Spectrometric Study of the Energetics of HCO + and HOC+," J. Chem. Phys. 83, 3919 (1985).

#### 85MCM/KEB3

T.B. McMahon and P. Kebarle, "Proton Affinities of the Hydrogen, Methyl and Trifluoromethyl Halides from Pulsed Electron Beam High Pressure Mass Spectrometric Equilibria Measurements," Can. J. Chem. 63, 3160 (1985).

#### 85MCN/SUF

D. McNaughton and R.J. Suffolk, "The Production and Photoelectron Spectrum of Propa-1,2-dien-3-one, C₃H₂O," J. Chem. Res. 32 (1985).

## 85MEA/HEF

R.D. Mead, U. Hefter, P.A. Schulz and W.C. Lineberger, "Ultrahigh Resolution Spectroscopy of C₂": The A²II_u State Characterized by Deperturbation Methods," J. Chem. Phys. 82, 1723 (1985).

#### 85MEE/SEK

J.T. Meek, E. Sekreta, W. Wilson, K.S. Viswanathan and J.P. Reilly, "The Laser Photoelectron Spectrum of Gas Phase Aniline," J. Chem. Phys. 82, 1741 (1985).

# 85MEI/KON

H. Meier, P. Konig, T. Molz, R. Gleiter and W. Schafer, "Untersuchungen zur Konformation und elektronischen Struktur von Cyclooctadieninen," Chem. Ber. 118, 210 (1985).

## 85MIC/GIÚ

 H.A. Michelsen, R.P. Giugliano and J.J. BelBruno,
 "Photochemistry and Photophysics of Small Heterocyclic Molecules: 1. Multiphoton Ionization and Dissociation of N-Isopropyldimethyloxaziridine," J. Phys. Chem. 89, 3034 (1985).
 85MOC/WOR

K. Mochida, S. Worley and J. Kochi, "UV Photoelectron Spectra of Peralkylated Catenates of Group 4B Elements (Silicon, Germanium, and Tin)," Bull. Chem. Soc. Jpn. 58, 3389 (1985).

## 85MOY/DOD

C.R. Moylan, J.A. Dodd and J.I. Brauman, "Electron Photodetachment Spectroscopy of Solvated Anions. A Probe of Structure and Energetics, Chem. Phys. Lett. 118, 38 (1985).

## 85NAC/PRO

E. Nachbaur and P. Prossegger, "HeI-Photoelektronen-Spektrum von Cl-NSO," Mon. Chem. 116, 1385 (1985).

## 85NEU

A. Neubert, "Investigation of Gaseous LiBO by Knudsen Effusion Mass Spectrometry," J. Chem. Phys. 82, 939 (1985).

# 85NEU/LYŘ

D.M. Neumark, K.R. Lykke, T. Andersen and W.C. Lineberger, "Laser Photodetachment Measurement of the Electron Affinity of Atomic Oxygen," Phys. Rev. A 32, 1890 (1985).

## 85NOV/POT

I. Novak, A.W. Potts, F. Quinn, G.V. Marr, B. Dobson, I.H. Hillier and J.B. West, "Photoelectron Asymmetry Measurements for CHF3 and CF4 in the Photon Energy Range 19 to 80 eV," J. Phys. B: At. Mol. Phys. 18, 1581 (1985).

# 85OAK/HAR

J.M. Oakes, L.B. Harding and G.B. Ellison, "The Photoelectron Spectroscopy of HO₂", J. Chem. Phys. 83, 5400 (1985).

#### 850HN/IMA

K. Ohno, K. Imai and Y. Harada, "Variations in Reactivity of Lone-Pair Electrons due to Intramolecular Hydrogen Bonding as Observed by Penning Ionization Electron Spectroscopy," J. Am. Chem. Soc. 107, 8078 (1985).

## 850HN/ISH

K. Ohno, T. Ishide, Y. Naitoh and Y. Izumi, "Study of Stereochemical Properties of Molecular Orbitals by Penning Ionization Electron Spectroscopy," J. Am. Chem. Soc. 107, 8082 (1985).

#### 850IK/ABE

A. Oikawa, H. Abe, N. Mikami and M. Ito, "Electronic Spectra and Ionization Potentials of Rotational Isomers of Several Disubstituted Benzenes," Chem. Phys. Letters 116, 50 (1985).

## 85OKU/TO

J. Okubo, H. Ito, T. Hishi and T. Kobayashi, "Intramolecular Orbital Interactions in and Conformation of N,N'-Diphenylcarbodiimide Studied by Photoelectron Spectroscopy," Tetrahedron Lett. 26, 643 (1985).

## 85ORL/BOG

V.M. Orlov, A.M. Boganov, T.V. Siretskaya, V.V. Takhistov, "Thermochemical Characteristics of the Molecular and Fragmentation Ions of Substituted tert-Butylacetylenes," Izv. Akad. Nauk SSSR Ser. Khim. 12, 2795 (1985).

## 85PAN/BAE

M. Panczel and T. Baer, "A nitro-benzol bomlasanak vizsgalata fotoelektron-fotoion koincidenciaval, I. A bomlas dinamikaja," Magy. Kem. Foly. 91, 136 (1985).

#### 85PAN/BAE2

M. Panczel and T. Baer, "A nitro-benzol bomlasanak vizsgalata fotoelektron-fotoion koincidenciaval, II. A bomlas termokimiaja," Magy. Kem. Foly. 91, 153 (1985).

#### 85PAP/KOL

T.S. Papina and V.P. Kolesov, Zh. Fiz. Khim. 59, 2169 (1985).

## 85PFI/GUÍ

G. Pfister-Guillouzo and C. Guimon, "Studies by P.E.S. of Highly Reactive Sulfur Species," Phosph. and Sulfur 23, 197 (1985).

## 85PIM/NES

A.A. Pimerzin, T.N. Nesterova and A.M. Rozhnov, J. Chem. Thermodyn. 17, 641 (1985).

## 85PLA/SIM

V.A. Platonov and Y.N. Simulin, Russ. J. Phys. Chem. 59, 179 (1985).

## 85PLA/SIM2

V.A. Platonov, Y. N. Simulin and M.M. Rozenberg, Russ. J. Phys. Chem. 59, 814 (1985).

### 85PRA/DEH

S. Pratt, P. Dehmer and J. Dehmer, "The Photoelectron Spectrum of ArXe Obtained Using Resonantly Enhanced Multiphoton Ionization," J. Chem. Phys. 82, 5758 (1985).

## 85PRA/DEH2

S. Pratt, P. Dehmer and J. Dehmer, "Electron Spectra of NeXe, ArXe, and KrXe Using Resonantly Enhanced Multiphoton Ionization," J. Chem. Phys. 83, 5380 (1985).

# 85ROD/CHI

A.A. Rodin, A.B. Chistyakov, Y.S. Sarkisov, Y.L. Sergeev, K.A. V'yunov and A.V. Golovin, "Electronic Structure and Geometric Structure of Three-Member Heterocycles. I. Photoelectron Spectra of Glycidyl and Thioglycidyl Ethers," Zh. Fiz. Khim. 59, 764 (1985); English trans.: Russ. J. Phys. Chem. 59, 444 (1985).

### 85ROS/LEO

M.A. Rossman, N.J. Leonard, S. Urano and P.R. LeBreton, "Synthesis and Valence Orbital Structures of Azacycl[3.3.3]azines in a Systematic Series," J. Am. Chem. Soc. 107, 3884 (1985).

#### 85ROT/BOC

B. Roth, H. Bock and H. Gotthardt, "Radikalionen 66. Thioparabansaure-Derivate: Ionisation zum Radikalkation und Reduktion zum Radikalanion," Phosphorus and Sulfur 22, 109 (1985).

#### 85RUD/SID

E.B. Rudny, L.N. Sidirov, L.A. Kuligina and G.A. Semenov, "Heterolytic Dissociation of Potassium Chromate in the Gas Phase and the Electron Affinity of Chromium Oxides," Int. J. Mass Spectrom. Ion Phys. 64, 95 (1985).

#### 85RUD/SID2

E.B. Rudny, L.N. Sidirov and O.M. Voyk, "Heterolytic Dissociation of Potassium Sulfate in the Gas Phase and Heats of Formation for Trioxosulfate(1-), Tetraoxosulfate(1-), and Potassium Sulfate (KSO₄-) Ions," Teplofiz. Vys. Temp. 23, 291 (1985).

# 85SAL/LAN

L. Sallans, K.R. Lane, R.R. Squires and B.S. Freiser, "Generation and Reactions of Atomic Metal Anions in the Gas Phase. Determination of the Heterolytic and Homolytic Bond Energies of VH, CrH, FeH, CoH, and MoH," J. Am. Chem. Soc. 107, 4379 (1985).

#### 85SCH/WEI

T. Scheuring and K.G. Weil, "Intermetallic Species in the Vapour above Alkali Metal-Antimony Mixtures," Surface Sci. 156, 457 (1985).

# 85SEE/MOL

 R. Seefeldt, W. Moller and M. Schmidt, "Zur Elektronenstossionisierung des Hexamethyldisiloxans (HMDS),"
 Z. Phys. Chemie, Leipzig 266, 797 (1985).

#### SSHA/HO

D.K.S. Sharma, S.M. De Hojer and P. Kebarle, "Stabilities of Halonium Ions from a Study of Gas Phase Equilibria R⁺ + XR' = (RXR') +," J. Am. Chem. Soc. 107, 3557 (1985).

#### 85SHA/SHA

R.B. Sharma, D.K.S. Sharma, K. Hiraoka and P. Kebarle, "Kinetics and Equilibria of Chloride Transfer Reactions. Stabilities of Carbocations Based on Chloride and Hydride Transfer Equilibria Measurements," J. Am. Chem. Soc. 107, 3747 (1985).

## 85SHU/BEN

L.G.S. Shum and S.W. Benson, Int. J. Chem. Kinet. 17, 749 (1985).

# 85SMI/ADA

D. Smith and N.G. Adams, "The Proton Affinity of CS," J. Phys. Chem. 89, 3964 (1985).

# 85SNO/COE

J.T. Snodgrass, J.V. Coe, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "Negative Ion Photoelectron Spectroscopy of P₂-," Chem Phys. Lett. 122, 352 (1985).

## 85SPY/HUN

S.M. Spyrou, S.R. Hunter and L.G. Christophorou, "A Study of the Isomeric Dependence of Low-Energy (<10 eV) Electron Attachment: Perfluoroalkanes," J. Chem. Phys. 83, 641 (1985).

## 85STE/FAH

S.E. Stein and A. Fahr, J. Phys. Chem. 89, 3714 (1985).

### 85STE/GAM

W.V. Steele, B.E. Gammon, N.K. Smith, J.S. Chickos, A. Greenberg and J.F. Liebman, J. Chem. Thermodyn. 14, 505 (1985).

## 85SVY/IOF

V.A. Svyatkin, A.I. Ioffe and D.M. Nefedov, Izv. Akad. Nauk, SSSR Ser. Khim. 578 (1985).

## 85TAJ/TOB

S. Tajima, S. Tobita and T. Tsuchiya, "A Kinetic Energy Release Study of CO Loss from C₆H₅CO + Ions Generated from Benzoic Acid Alkyl Esters," Mass Spectrosc. 33, 39 (1985).

### 85TRA

J.C. Traeger, "Heat of Formation for the Propanoyl Cation by Photoionization Mass Spectrometry," Org. Mass Spectrom. 20, 223 (1985).

#### **85TRA2**

J.C. Traeger, "Heat of Formation for the Formyl Cation by Photoionization Mass Spectrometry," Int. J. Mass Spectrom. and Ion Proc. 66, 271 (1985).

## 85TRE/RAD

L. Treschanke and P. Rademacher, "Electronic Structure and Conformational Properties of the Amide Linkage," J. Molec. Str. (Theochem) 122, 47 (1985).

#### 85TSA

W. Tsang, "The Stability of Alkyl Radicals," J. Am. Chem. Soc. 107, 2872 (1985).

#### 85TUR/PAN

F. Turecek, J. Pancir, D. Stahl and T. Gaumann, "Stereoelectronic Effects on the Retro-Diels-Alder Fragmentation of Ionized Bicyclo[4.3.0]nona-3,7-dienes," Org. Mass Spectrom. 20, 360 (1985).

#### 85VAN/LEA

V.J. Vandiver, C.S. Leasure and G.A. Eiceman, "Proton Affinity for Polycyclic Aromatic Hydrocarbons at Atmospheric Pressure in Ion Mobility Spectrometry," Int. J. Mass Spectrom. Ion Proc. 66, 223 (1985).

#### 85VEK/TAM

K. Vekey, J. Tamas, E. Berenyi and P. Benko, "Mass Spectrometric Study on 2-Amino-as-triazino[6,5-c]quinoline and Some of Its Derivatives," Org. Mass Spectrom. 20, 416 (1985).

#### 85VIG/PAU

A.A. Viggiano, J.F. Paulson, F. Dale, M. Henchman, N.G. Adams and D. Smith, "Ion Chemistry and Electon Affinity of WF₆," J. Phys. Chem. 89, 2264 (1985).

#### 85WAG/KEN

W. Wagner-Redeker, P.R. Kemper, M.F. Jarrold and M.T. Bowers, "The Formation and Reactivity of HOC+: Interstellar Implications," J. Chem. Phys. 83, 1121 (1985).

## 85WEI/PLA

D.A. Weil, I. Platzner, L.L. Miller and D.A. Dixon, "Positive Ion-Molecule Reactions in OCS/Hydrocarbon Mixtures," Org. Mass Specrom. 20, 115 (1985).

## 85WIB/DAI

K.B. Wiberg, W.P. Dailey, F.H. Walker, S.T. Waddell, L.S. Crocker and M. Newton, J. Am. Chem. Soc. 107, 7247 (1985).

## 85WIB/WAS

K.B. Wiberg, D.V. Wasserman, E.J. Martin and M.A. Murcko, J. Am. Chem. Soc. 107, 6019 (1985).

### 85WOD/LEE

A.M. Wodtke and Y.T. Lee, "Photodissociation of Acetylene at 193.3 nm," J. Phys. Chem. 89, 4744 (1985).

## 85YAM/HIG

H. Yamaguchi, M. Higashi, J.A.H. MacBride and R. Gleiter, "Photoelectron Spectra of Diazabiphenylenes," J. Chem. Soc. Faraday Trans. II 81, 1831 (1985).

# 85ZAY/PER

A.Yu. Zayats, A.A. Perov and A.P. Simonov, "Formation of Long-lived Rydberg Atoms Upon Excitation of NF₃ and CF₂Cl₂ Molecules by Electron Impact," Sov. J. Chem. Phys. 2, 1906 (1985).

## 86ADA/SMI

N.G. Adams, D. Smith, A.A. Viggiano, J.F. Paulson and M.J. Henchman, "Dissociative Attachment Reactions of Electron with Strong Acid Molecules," J. Chem. Phys. 84, 6728 (1986).

## 86AND/TER

R.R. Andrea, A. Terpstra, A. Oskam, P. Bruin and J.H. Teuben, "He(I) and He(II) Photoelectron Spectra of Some Mixed Sandwich Compounds of Titanium, Zirconium and Hafnium," J. Organomet. Chem. 307, 307 (1986).

# 86ARI/ARM

N. Aristov and P. Armentrout, "Reaction Mechanisms and Thermochemistry of V  $^+$  +  $C_2H_p$  (p = 1-3)," J. Am. Chem. Soc. 108, 1806 (1986).

#### 86ARM

P. Armentrout, "Laser Application in Chemistry and Biochemistry," Proc. SPIE 620, 38 (1986).

## 86BAA/WEI

B. Van Baar, T. Weiske, J. Terlouw and H. Schwarz, "Hydroxyacetylene: Generation and Characterization of the Neutral Molecule, Radical Cation and Dication in the Gas Phase," Angew. Chem. Int. Ed. 25, 282 (1986).

## 86BAL/JON

R.E. Ballard, J. Jones, E. Sutherland, D. Read and A. Inchley, "The He(I) Photoelectron Spectrum of Benzyl Alcohol - Liquid Surface and Gas Phase," Chem. Phys. Lett. 126, 311 (1986).

## 86BAR/KIP

J.E. Bartmess and J.P. Kiplinger, "'Kinetic' vs. Thermodynamic Acidities of Enones in the Gas Phase," J. Org. Chem. 51, 2173 (1986).

#### 86BEC/HUN

K. Beck, S. Hunig, R. Poppek, F. Prokschy and P. Rademacher, "Photoelektronenspektroscopische Untersuchungen an Hexahydro-1,3,5-triazinen," Chem. Ber. 119, 554 (1986).

## 86BEC/HUN2

K. Beck, S. Hunig, G. Kleefeld, H.-D. Martin, K. Peters, F. Prokschy and H.G. von Schnering, "Photoelectron and UV Spectroscopic Investigations of Homoconjugative Interactions between Parallel C=C and N=N Bonds," Chem. Ber. 119, 543 (1986).

#### 86BER/CUR

J. Berkowitz, L. Curtiss, S. Gibson, J. Greene, G. Hillhouse and J. Pople, "Photoionization Mass Spectrometric Study and Ab Initio Calculation of Ionization and Bonding in P-H Compounds. Heats of Formation, Bond Energies, and the ³B₁-¹A₁ Separation in PH₂ +," J. Chem. Phys. 84, 375 (1986).

# 86BOC/BAN

H. Bock and M. Bankmann, "H₃C-P = CH₂: An Ylide with Two-Coordinate Phosphorus?" Angew. Chem. Int. Ed. 25, 265 (1986).

## 86BOU/DJA

G. Bouchoux, F. Djazi, Y. Hoppilliard, R. Houriet and E. Rolli, "Gas Phase Protonation of Unsaturated Ethers - Experimental and Theoretical Study of 2,3-and 2,5-Dihydrofuran and Related Compounds," Org. Mass Spectrom. 21, 209 (1986).

# 86BOU/HAN

G. Bouchoux, I. Hanna, R. Houriet and E. Rolli, "Gas Phase Basicity of Dihydropyran and Dihydro-1,4-dioxin," Can. J. Chem. 64, 1345 (1986).

### 86BOW/DEP

J.H. Bowie, C.H. DePuy, S.A. Sullivan and V.M. Bierbaum, "Gas Phase Reactions of the Hydroperoxide and Peroxyformate Anions," Can. J. Chem. 64, 1046 (1986).

## 86BRO/LIG

M. Brouard, P.D. Lightfoot and M.J. Pilling, "Observation of Equilibration in the System  $H + C_2H_4 = C_2H_5$ . The Determination of the Heat of Formation of  $C_2H_5$ ," J. Phys. Chem. 90, 445 (1986).

# 86BUD/KRA

P.H.M. Budzelaar, E. Kraka, D. Cremer and P.v.R. Schleyer, J. Am. Chem. Soc. 108, 561 (1986).

## 86BUR/FAW

J. Burgess, J. Fawcett and R.D. Peacock, J. Fluor. Chem. 31, 25 (1986).

# 86BUR/HOL

P.C. Burgers, J.L. Holmes, C.E.C.A. Hop and J.K. Terlouw, "Gas Phase Ion Chemistry of Methyl Acetate, Methyl Propanoate and Their Enolic Tautomers," Org. Mass Spectrom. 21, 549 (1986).

# 86CAS/KEE

A.W. Castleman, Jr. and R.G. Keesee, "Ionic Clusters," Chem. Rev. 86, 589 (1986).

# 86CAU/DIV

C. Cauletti, M.L. Di Vona, P. Gargano, F. Grandinetti, C. Galli and C. Lillocci, "Ring-size Effects on the Ionization Potentials of N-Substituted Azacycloalkanes," J. Chem. Soc. Perkin Trans. II 667 (1986).

# 86CHI/ANN

J.S. Chickos, R. Annunziata, L.H. Ladon, A.S. Hyman and J.F. Liebman, J. Org. Chem. 51, 4311 (1986).

#### 86CHO/GR

S. Chowdury, E.P. Grimsrud, T. Heinis and P. Kebarle, "Electron Affinities of Perfluorobenzene and Perfluorophenyl Compounds," J. Am. Chem. Soc. 108, 3630 (1986).

## 86CHO/KEB

S. Chowdhury and P. Kebarle, "Electron Affinities of Diand Tetracyanoethylene and Cyanobenzenes Based on Measurements of Gas-Phase Electron Transfer Equilibria," J. Am. Chem. Soc. 108, 5453 (1986).

#### 86COE/SNO

J.V. Coe, J.T. Snodgrass, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "Negative Ion Photoelectron Spectroscopy of N₂O⁻ and (N₂O)₂-," Chem. Phys. Lett. 124, 274 (1986).

#### 86COE/SNO2

J.V. Coe, J.T. Snodgrass, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "Photoelectron Spectroscopy of the Negative Ion SeO-," J. Chem. Phys. 84, 618 (1986).

#### 86DAM/DEP

R. Damrauer, C.H. DePuy, I.M.T. Davidson and K.J. Hughes, "Gas Phase Ion Chemistry of Dimethylsilene," Organomet. 5, 2050 (1986).

## 86DAM/DEP2

R. Damrauer, C.H. DePuy, I.M.T. Davidson and K.J. Hughes, "Gas Phase Ion Chemistry of Dimethylsilylene," Organomet. 5, 2054 (1986).

#### 86DAS/GIL

P.R. Das, J.P. Gilman and G.G. Meisels, "Unimolecular Decomposition of Energy-Selected Anisole Ions. Breakdown Graph and Metastable Decay Rates," Int. J. Mass Spectrom. Ion Proc. 68, 155 (1986).

## 86DON/WAL

A.M. Doncaster and R. Walsh, J. Chem. Soc. Faraday Trans. II 82, 707 (1986).

#### 86ECK/GLE

M. Eckert-Maksic and R. Gleiter, "Photoelectron Spectra of N-substituted 1,4-Dihydro-4,4-dimethylpyridines," Chem. Ber. 119, 2381 (1986).

# 86ELK/ARI

J. Elkind, N. Aristov, R. Georgiadis, L. Sunderlin and P. Armentrout to be published. Referred to in, "Structure, Reactivity and Thermochemistry of Ions" (P. Ausloos and S.G. Lias, editors), D. Reidel Publ. Co. (1986).

### 86ELK/ARM

J. Elkind and P. Armentrout, "Transition-Metal Hydride Bond Energies: First and Second Row," Inorg. Chem. 25, 1078 (1986).

## 86ELK/ARM2

J. Elkind and P. Armentrout, "Effect of Kinetic and Electronic Energy on the Reactions of Mn + with H₂, HD, and D₂," J. Chem. Phys. **84**, 4862 (1986).

## 86ELK/ARM3

J. Elkind and P. Armentrout, "Effect of Kinetic and Electronic Energy on the Reactions of Fe + with H₂, HD, and D₂: State-Specific Cross Sections for Fe + (⁶D) and Fe + (⁴F)," J. Phys. Chem. **90**, 5736 (1986).

## 86ELK/ARM4

J. Elkind and P. Armentrout, "Effect of Kinetic and Electronic Energy on the Reactions of Co⁺, Ni⁺, and Cu⁺ with H₂, HD, and D₂," J. Phys. Chem. 90, 6576 (1986).

### 86FRE/COE

C.B. Freidhoff, J.V. Coe, J.T. Snodgrass, K.M. McHugh and K.H. Bowen, "Negative Ion Photoelectron Spectroscopy of TeO-," Chem Phys. Lett. 124, 268 (1986).

### 86FRE/SNC

C.B. Freidhoff, J.T. Snodgrass, J.V. Coe, K.M. McHugh and K.H. Bowen, "Negative Ion Photoelectron Spectroscopy of TeH-," J. Chem. Phys. 84, 1051 (1986).

#### 86FRO/FRE

S.W. Froelicher, B.S. Freiser and R.R. Squires, "The C₃H₅- Isomers. Experimental and Theoretical Studies of the Tautomeric Propenyl Ions and the Cyclopropyl Anion in the Gas Phase," J. Am. Chem. Soc. **108**, 2853 (1986).

#### 86FUJ/OHN

S. Fujisawa, K. Ohno, S. Masuda and Y. Harada, "Penning Ionization Electron Spectroscopy of Monohalogenobenzenes: C₆H₅F, C₆H₅Cl, C₆H₅Br, and C₆H₅I," J. Am. Chem. Soc. 108, 6505 (1986).

#### 86GEO/ARM

R. Georgiadis and P. Armentrout, "Neutral and Ionic Metal Methyl Bond Energies: Zn," J. Am. Chem. Soc. 108, 2119 (1986).

## 86GLE/BIS

R. Gleiter, P. Bischof and M. Christl, "Electronic Structure of Octavalene. Photoelectron Spectroscopic Investigations," J. Org. Chem. 51, 2895 (1986).

#### 86GLE/KRE

R. Gleiter, G. Krennrich and U.H. Brinker, "Electronic Structure of Spiropentane and Some Derivatives," J. Org. Chem. 51, 2899 (1986).

## 86GLE/KRE2

R. Gleiter, G. Krennrich, P. Bischof, T. Tsuji and S. Nishida, "103. PE Spectra of Dewar Benzenes, Bridged by a Cyclohexadiene or a Butadiene Unit," Helv. Chim. Acta 69, 962 (1986).

## 86GLE/UŚC

R. Gleiter, J. Uschmann and M. Baudler, "The Electronic Structure of Substituted 1,2,4,5-Tetraphosphaspiro[2.2]pentanes and 1,2,4,5-Tetraphospha-3-silaspiro[2.2]pentanes," J. Chem. Soc. Dalton Trans. 1659 (1986).

#### 86GLE/USC2

R. Gleiter and J. Uschmann, "Electronic Structure of Heterospirenes - PE Spectroscopic Investigations," J. Org. Chem. 51, 370 (1986).

## 86HAJ/SQU

D.J. Hajdasz and R.R. Squires, "Hypervalent Silicon Hydrides: SiH5-," J. Am. Chem. Soc. 108, 3139 (1986).

## 86HAW/GRI

J.A. Hawari, D. Griller and F.P. Lossing, "Thermochemistry of Perthiyl Radicals," J. Am. Chem. Soc. 108, 3273 (1986).

## 86HAY/KRU

K. Hayashibara, G.H. Kruppa and J.L. Beauchamp, "Photoelectron Spectroscopy of the o-, m-, and p-Methylbenzyl Radicals. Implications for the Thermochemistry of the Radicals and Ions," J. Am. Chem. Soc. 108, 5441 (1986).

### 86HEN/ILL

M. Heni, E. Illenberger and D. Lentz, "The Isomers CF₃CN and CF₃NC. Formation and Dissociation of the Anions Formed on Electron Attachment," Int. J. Mass Spectrom. Ion Proc. 71, 199 (1986).

# 86HEN/ILL2

M. Heni and E. Illenberger, "Electron Attachment by Saturated Nitriles. Acrylonitrile (CH₂H₃CN), and Benzonitrile (C₆H₅CN)," Int. J. Mass Spectrom. Ion Phys. 73, 127 (1986).

# 86HET/FRE

R.L. Hettich and B.S. Freiser, "Gas-Phase Photodissociation of FeCH₂+ and CoCH₂+: Determination of the Carbide, Carbyne, and Carbene Bond Energies," J. Am. Chem Soc. 108, 2537 (1986).

### 86HIR/SHO

K. Hiraoka, T. Shoda, K. Morise, S. Yamabe, E. Kawai and K. Hirao, "Stability and Structure of Cluster Ions in the Gas Phase: Carbon Dioxide with Cl⁻, H₃O⁺, HCO₂⁺ and HCO⁺," J. Chem. Phys. **84**, 2091 (1986).

## 86HOL/LOS

J.L. Holmes and F.P. Lossing, Unpublished result.

#### 86HOU/SCH

R. Houriet, T. Schwitzguebel, P.-A. Carrupt and P. Vogel, "Experimental and Theoretical Studies on the Homoconjugation in the Bicyclic Carbenium and Oxonium Ions in the Gas Phase," Tetrahedron Lett. 27, 37 (1986).

#### 86HOV/MCM

J.K. Hovey and T.B. McMahon, "C-Xe Bond Strength in the Methylxenonium Cation Determined from Ion Cyclotron Resonance Methyl Cation Exchange Equilibria," J. Am. Chem. Soc. 108, 528 (1986).

#### 86HUS/WIL

N.S. Hush, G.D. Willett, M.N. Paddon-Row, H.K. Patney and J.B. Peel, "Orbital Interactions. Part 13. The Observation of Through-bond Orbital Interactions between Benzene and Double Bonds in Some Dimethanoanthracenes," J. Chem. Soc. Perkin Trans. II 827 (1986).

#### 86IGE/WED

G. Igel-Mann, U. Wedig, P. Fuentealba and H. Stoll, J. Chem. Phys. 84, 5007 (1986).

#### 86KAM/BOS

J. Kamphuis, H.J.T. Bos, C.W. Worrell and W. Runge, "The Molecular Structure of Allenes and Ketenes. Part 19. Photoelectron Spectra and Conformations of Donorsubstituted Allenes," J. Chem. Soc. Perkin Trans. II 1509 (1986).

## 86KAM/YOU

A. Kamar, A.B. Young and R.E. March, "Experimentally Determined Proton Affinities of 4-Methyl-3-Penten-2-one, 2-Propyl Ethanoate and 4-Hydroxy-4-methyl-2-pentanone in the Gas Phase," Can. J. Chem., in press.

#### 86KAR/JAS

Z. Karpas and P. Jasien, "The Proton Affinity of Hydrogen Telluride," Int. J. Mass Spectrom. Ion Proc. 69, 115 (1986).

S.R. Kass, J. Filley, J.M. Van Doren and C.H. DePuy, "Nitrous Oxide in Gas-Phase Ion-Molecule Chemistry: A Versatile Reagent for the Determination of Carbanion Structure," J. Am. Chem. Soc. 108, 2849 (1986).

# 86KAT/ELI

A. Katrib, B.D. El-Issa and A.W. Potts, "The He(I) and X-Ray Photoelectron Spectra of p-N,N-dimethylaminobenzalmalonitrile," Can. J. Chem. 64, 528 (1986).

R.G. Keesee and A.W. Castleman, Jr., "Thermochemical Data on Gas-Phase Ion-Molecule Association and Clustering Reactions," J. Phys. Chem. Ref. Data 15, 1011 (1986).

## 86KIN/NAG

J.E. Kingcade, H.M. Nagarathna-Naik, I. Shim and K.A. Gingerich, J. Phys. Chem. 90, 2830 (1986).

# 86KIR/ACR

J.E. Kirchner, W.E. Acree, Jr., G. Pilcher and L. Shofeng, J. Chem. Thermodyn. 18, 793 (1986).

# 86KNI/FRE

J.S. Knight, C.G. Freeman and M.J. McEwan, "Isomers of C₂H₄N⁺ and the Proton Affinities of CH₃CN and CH₃NC," J. Am. Chem. Soc. 108, 1404 (1986).

## 86KOB/YOS

T. Kobayashi, Z. Yoshida, Y. Asako, S. Miki and S. Kato, "Avoided Crossing Between the Ground and First Excited ²A' Cation States of Dicyanobicycloalkadiene Series Revealed by Photoelectron Spectroscopy," Chem. Phys. Lett. 125, 586 (1986).

## 86KOL/KOZ

V.P. Kolesov and M.P. Kozina, "Thermochemistry of Organic and Organohalogen Compounds" Russian Chem. Revs. 55, 912 (1986).

## 86KOR/NIK

M.V. Korobov, V.V. Nikulin, N.S. Chilingarov, L.N. Sidorov, J. Chem. Thermo. 18, 235 (1986).

### 86KRU/BEA

G.H. Kruppa and J.L. Beauchamp, "Energetics and Structure of the 1- and 2-Adamantyl Radicals and Their Corresponding Carbonium Ions by Photoelectron Spectroscopy," J. Am. Chem. Soc. 108, 2162 (1986).

## 86KUZ/KOR

S.V. Kuznetsov, M.V. Korobov, L.N. Savinova and L.N. Sidirov, "Enthalpy of the Addition of the F- Ion to Copper and Iron Difluorides," Russ. J. Phys. Chem. 60, 766 (1986).

C. Lafon, D. Gonbeau, G.Pfister-Guillouzo, M. Lasne, J. Ripoll and J. Denis, "Etheneamine: Spectre Photoelectronique," Nouv. J. Chem./New J. Chem. 10, 70 (1986).

#### 86LAN/SAL

K.R. Lane, L. Sallans and R.R. Squires, "Gas-Phase Nucleophilic Addition Reactions of Negative Ions with Transition Metal Carbonyls, J. Am. Chem. Soc. 108, 4368 (1986).

#### 86LAU/WES

W.M. Lau, N.P.C. Westwood and M.H. Palmer, "Vaporization of (SN)_x: He I Photoelectron Spectrum and ab Initio Calculations for the S₃N₃ Radical," J. Am. Chem. Soc. 108, 3229 (1986).

### 86LEB/URA

P.R. LeBreton, S. Urano, M. Shahbaz, S.L. Emery and J.A. Morrison, "He I Photoelectron Spectra, Valence Electronic Structure, and Back Bonding in the Deltahedral Boron Chlorides, B₄Cl₄, B₈Cl₈, and B₉Cl₉," J. Am. Chem. Soc. 108, 3937 (1986).

## 86LEE/SQU

R.E. Lee and R.R. Squires, "Anionic Homoaromaticity: a Gas Phase Experimental Study," J. Am. Chem. Soc. 105, 5078 (1986).

#### 86LEO/LIN

D.G. Leopold and W.C. Lineberger, "A Study of the Low-Lying Electronic States of Fe₂ and Co₂ by Negative Ion Photoelectron Spectroscopy," J. Chem. Phys. 85, 51 (1986).

# 86LEO/MIL

D.G. Leopold, A.G. Miller and W.C. Lineberger, "Determination of the Singlet-Triplet Splitting and Electron Affinity of, o-Benzyne by Negative Ion Photoelectron Spectroscopy," J. Am. Chem. Soc. 108, 1379 (1986).

## 86LEO/MIL2

D.G. Leopold, T.M. Miller and W.C. Lineberger, "Flowing Afterglow Negative Ion Photoelectron Spectroscopy of Dirhenium: Evidence for Multiple Bonding in Re2 and Re2," J. Am. Chem. Soc. 108, 178 (1986).

## 86LEU/MAG

W. Leupin, D. Magde, G. Persy and J. Wirz, "1,4,7-Triazacycl[3.3.3]azine: Basicity, Photoelectron Spectrum, Photophysical Properties," J. Am. Chem. Soc. 108, 17 (1986). 86LIA/NG

C. Liao and C. Ng, "Molecular Beam Photoionization Study of S₂," J. Chem. Phys. 84, 788 (1986).

## 86LIC/KEL

D.L. Lichtenberger and G.E. Kellogg, "Electronic Structure Factors of Carbon-Hydrogen Bond Activation. The Photoelectron Spectroscopy of (Cyclohexenyl)manganese Tricarbonyl," J. Am. Chem. Soc. 108, 2560 (1986).

## 86LIE/PAQ

J.F. Liebman, L.A. Paquette, J.L. Peterson and D.W. Rogers, J. Am. Chem. Soc. 108, 8267 (1986).

# 86MAI/OLE

J. Main-Bobo, S. Loesik, W. Gase, T. Baer, A. Mommers and J. Holmes, "The Thermochemistry and Dissociation Dynamics of Internal-Energy Selected Pyrazole and Imidazole Ions," J. Am. Chem. Soc. 108, 677 (1986).

## 86MAL/LIF

Y. Malinovich and C. Lifshitz, "Time-Dependent Mass Spectra and Breakdown Graphs. 7. Time-Resolved Photoionization Mass Spectrometry of Iodobenzene. The Heat of Formation of C₆H₅ f," J. Phys. Chem. 90, 2200 (1986).

#### 86MAR/TOP

S. Marriott, R.D. Topsom, C.B. Lebrilla, I. Koppel, M. Mishima and R.W. Taft, "Proton Affinities of Substituted Cyanides," J. Molec. Str. (Theochem) 137, 133 (1986).

#### 86MAR/WET

J. Marks, D.M. Wetzel, P.B. Comita and J.I. Brauman, "A Dipole Supported State in Cyanomethyl Anion, the Conjugate Base of Acetonitrile. Rotational Band Assignments in the Electron Photodetachment Spectrum of -CH₂CN," J. Chem. Phys. 84, 5284 (1986).

#### 86MAT/AKA

H. Matsumoto, K. Akaiwa, Y. Nagai, K. Ohno, K. Imai, S. Masuda and Y. Harada, "Analysis of Stereochemical Properties of Molecular Orbitals of (Trimethylsilyl)acetylenes by Penning Ionization Electron Spectroscopy," Organomet. 5, 1526 (1986).

#### 86MAU

M. Meot-Ner (Mautner), Personal communication.

#### 86MAU/KAR

M. Meot-Ner (Mautner), Z. Karpas and C. A. Deakyne, "Ion Chemistry of Cyanides and Isocyanides. I. The Carbon Lone Pair as Proton Acceptor: Proton Affinities of Isocyanides," J. Am. Chem. Soc., in press.

#### 86MAU/LIE

M. Meot-Ner (Mautner), J.F. Liebman and J.E. Del Bene, "Proton Affinities of Azoles. Experimental and Theoretical Studies," J. Org. Chem., in press.

#### 86MCE/ALL

S.W. McElvaney and J. Allison, "Gas-Phase Chemistry of Transition-Metal-Containing Anions with Alcohols, Chloroalkanes, and Bifunctional Organic Molecules," Organomet. 5, 416 (1986).

#### 86MCM/HAL

J.E. McMurry, G.J. Haley, J.R. Matz, J.C. Clardy, G. Van Duyne, R. Gleiter, W. Schafer and D.H. White, "Synthesis and Chemistry of Tetracyclo[8.2.2.2^{2,5}.2^{2,9}]-1,5,9-octadecatriene," J. Am. Chem. Soc. 108, 2932 (1986).

#### 86MCM/KEB

T.B. McMahon and P. Kebarle, "Strong Hydrogen Bonding in Gas-Phase Ions: A High Pressure Mass Spectrometric Study of Formation and Energetics of Methyl Fluoride Proton Bound Dimer," J. Am. Chem. Soc. 108, 6502 (1986).

#### 86MEO/SIE

M. Meot-ner and L.W. Sieck, "Relative Acidities of Water and Methanol, and the Stabilities of the Dimer Adducts," J. Phys. Chem. 90, 6687 (1986).

#### 86MEO/SIE2

M. Meot-Ner and L.W. Sieck, "The Ionic Hydrogen Bond and Ion Solvation. 5. OH...O Bonds. Gas Phase Solvation and Clustering of Alkoxide and Carboxylate Anions," J. Am. Chem. Soc. 108, 7525 (1986).

#### 86MIL/FEI

A.E.S. Miller, C.S. Feigerle and W.C. Lineberger, "Laser Photoelectron Spectrocopy of MnH₂-, FeH₂-, CoH₂-, and NiH₂-: Determination of the Electron Affinities for the Metal Dihydrides," J. Chem. Phys. 84, 4127 (1986).

#### 86MIL/FE12

A.E.S. Miller, C.S. Feigerle and W.C. Lineberger, "Laser Photoelectron Spectroscopy of CrH-, CoH-, and NiH-: Periodic Trends in the Electronic Structure of the Transition-Metal Hydrides," J. Chem. Phys. 84, (1986).

#### 86MIL/MIL

T.M. Miller, A.E.S. Miller and W.C. Lineberger, "Electron Affinities of Ge and Sn," Phys. Rev. A, Spring 1986.

#### 86MUR/MIL

K.K. Murray, T.M. Miller, D.G. Leopold and W.C. Lineberger, "Laser Photoelectron Spectroscopy of the Formyl Anion," J. Chem. Phys. 84, 2520 (1986).

#### 86NIK/IGÓ

M.I. Nikitin, N.A. Igolkina, E.V. Skokan, I.D. Sorokin and L.N. Sidirov, "Enthalpies of Formation of the AlF₄⁻ Ion," Russ. J. Phys. Chem. **60**, 22 (1986).

#### 86NIM/ELL

M.R. Nimlos and G.B. Ellison, "Photoelectron Spectroscopy of SO₂-, S₃-, and S₂O-," J. Phys. Chem. **90**, 2574 (1986).

#### 86NIM/ELL2

M.R. Nimlos and G.B. Ellison, "Photoelectron Spectroscopy of SiH₃- and SiD₃-", J. Am. Chem. Soc. 108, 6522 (1986).

#### 86NIS/DAS

T. Nishimura, P.R. Das and G.G. Meisels, "On the Dissociation Dynamics of Energy-Selected Nitrobenzene Ion," J. Chem. Phys. 84, 6190 (1986).

#### 86NOT/PRI

H. Noth and H. Prigge, "Kernresonanz- und He(I)-Photoelektronenspektroskopische Untersuchung an Diisopropyl- und Di-tert-butylboranen," Chem. Ber. 119, 338 (1986).

#### 86NUN/BAR

L. Nunez, L. Barral, S.G. Largo and S. Pilcher, J. Chem. Thermo. 18, 575 (1986).

#### 860AK/ELL

J.M. Oakes and G.B. Ellison, "Photoelectron Spectroscopy of Radical Anions," Tetrahedron 42, 6263 (1986).

#### 86ORL/MIS

V. Orlov, A. Misharev and V. Takhistox, "Determination of the Enthalpy of Formation of para-Substituted α,α-Dimethyl Cations in the Gas Phase," Izv. Akad. Nauk SSSR, Ser. Khim. 9, 2006 (1986).

#### 86POS/RUT

R. Postma, P. Ruttink, J. Terlouw and J. Holmes, "The Ketene-Water Radical Cation Dipole Complex [CH₂CO·H₂O] +," J. Chem. Soc. Chem. Commun. 683 (1986).

#### 86REU/WAN

J.E. Reutt, L.S. Wang, Y.T. Lee and D.A. Shirley, "Molecular Beam Photoelectron Spectroscopy of Ni(CO)4," Chem. Phys. Lett. 126, 399 (1986).

#### 86ROT/LEN

W.R. Roth, H.W. Lennartz, I. Vogel, M. Leiendecker, M. Oda, Chem. Ber. 19, 837 (1986).

#### 86RUD/VOV

E.B. Rudnyi, O.M. Vovk, L.N. Sidirov, I.D. Sorokin and A.S. Alikhanyan, "Enthalpy of Formation of PO₂-, PO₃-, and NaPO₂," High Temp. 24, 56 (1986).

#### 86RUM

D. Rumack, Personal communication.

#### 86SAN/BAL

I. Santos, D.W. Balogh, C.W. Doecke, A.G. Marshall and L.A. Paquette, "Gas-Phase Basicities of Cubane, Dodecahedrane, Methyl- and 1,16-Dimethyldodecahedrane as Measured by Fourier Transform Ion Cyclotron Resonance Mass Spectrometry," J. Am. Chem. Soc. 108, 8183 (1986).

#### 86SHI/BEA

S.K. Shin and J.L. Beauchamp, "Proton Affinity and Heat of Formation of Silylene," J. Phys. Chem. 90, 1507 (1986).

#### 86SHI/VOR

C.S. Shiner, P.E. Vorner and S.R. Kass, "Gas Phase Acidities and Heats of Formation of 2,4- and 2,5- Cyclohexadien-1-one, the Keto Tautomers of Phenol," J. Am. Chem. Soc. 108, 5699 (1986).

#### 86SID/BOR

L.N. Sidirov, A.Ya. Borshchevsky, O.V. Boltalina, I.D. Sorokin and E.V. Skokan, "Electron Affinities of Gaseous Iron Fluorides and Dimers," Int. J. Mass Spectrom. Ion Proc. 73, 1 (1986).

#### 86SIM/BEA

J.A. Martinho-Simoes and J.L. Beauchamp, Chem. Rev. review article in preparation.

#### 86SMA

B. Smart, in "Molecular Structures and Energetics" Vol. 3 (ed. J.F. Liebman and A. Greenberg, VCH Publishers, Deerfield Beach, FL. 1986).

860 LIAS ET AL.

#### 86SPA/RAD

G. Spanka and P. Rademacher, "Transannular Interactions in Difunctional Medium Rings. 1.  $n/\pi$  Interactions in Cyclic Amino Ketones and Aminoalkenes Studied by Photoelectron Spectroscopy," J. Org. Chem. 51, 592 (1986).

#### 86SPI/GRÚ

R. Spilker and H.-F. Grutzmacher, "Isomerization and Fragmentation of Methylfuran Ions and Pyran Ions in the Gas Phase," Org. Mass. Spectrom. 21, 459 (1986).

#### 86SPI/PER

T.A. Spiglanin, R.A. Perry and D.W. Chandler, J. Phys. Chem. **90**, 6184 (1986).

#### 86STE/BEA

A.E. Stevens and J.L. Beauchamp, "Gas-Phase Acidities of (CO)₅MnH, (CO)₄FeH₂, and (CO)₄CoH," J. Am. Chem. Soc., in press.

#### 86STO/LAR

R.C. Stoneman and D.J. Larson, "Photodetachment Spectroscopy of SeH⁻ in a Magnetic Field," J. Phys. B **19**, L405 (1986).

#### 86TAF

R.W. Taft, Personal communication of unpublished data, 1986.

#### 86TAF/ANV

R.W. Taft, F. Anvia, M. Taagepera, J. Catalan and J. Elgueroy, "Electrostatic Proximity Effects in the Relative Basicities of Pyrazole, Imidazole, Pyridazine, and Pyrimidine," J. Am. Chem. Soc. 108, 3237 (1986).

#### 86TAF/GAL

R.W. Taft, J.-F. Gal, S. Geribaldi and P.-C. Maria, "Unique Basicity Properties of Conjugated Amino Cyclohexenone Derivatives. The Effects of Molecular Structure on the Disparate Basicities toward H Acids," J. Am. Chem. Soc. 108, 861 (1986).

#### 86TRA

J.C. Traeger, "Heat of Formation for the 1-Methylallyl Cation," by Photoionization Mass Spectrometry," J. Phys. Chem. **90**, 4114 (1986).

#### 86TRA/MCA

J.C. Traeger and D.J. McAdoo, "Decomposition Thresholds and Associated Translational Energy Releases for Eight C₄H₈O ⁺· Isomers," Int. J. Mass Spectrom. Ion Proc. 68, 35 (1986).

#### 86TRA/MUN

V.T. Tran and B. Munson, "Proton Affinities by Reactant Ion Monitoring: Triphenyl Group Va Compounds," Org. Mass Spectrom. 21, 41 (1986).

#### 86TSA

W. Tsang, "Single Pulse Shock Tube Study on the Stability of Perfluorobromomethane" to be published.

#### 86TUR/HAV

F. Turecek, Z. Havlas, F. Maquin, N. Hill and T. Gaumann, "(E)- and (Z)-1-Hydroxy-1,3-butadiene: New Kinetically Unstable C₄H₆O Isomers," J. Org. Chem. **51**, 4061 (1986).

#### 86TUR/HAV2

F. Turecek, Z. Havlas, F. Maquin and T. Gaumann, "72. The Mass Spectra of Organic Compounds 1-Buten-3-yn-2-ol. A New Kinetically Unstable C₄H₄O Isomer," Helv. Chim. Acta 69, 683 (1986).

#### 86TUR/HAV3

F. Turecek and Z. Havlas, "Energy Barriers to the Diels-Alder Cycloadditions and Cycloreversions of Cation-radicals in the Gas Phase," J. Chem. Soc. Perkin Trans. II 1011 (1986).

#### 86VIG

A.A. Viggiano, Personal communication (1986).

#### 86VON

T. Vondrak, "Electronic Structure of Ferrocene Derivatives Studied by He(I) Photoelectron Spectroscopy and CNDO/2 Method," J. Organomet. Chem. 306, 89 (1986).

#### 86VOR/BRO

M.G. Voronkov, E.I. Brodskaya, V.V. Belyaeva, D.D. Chuvashev, D.D. Toryashinova, A.F. Ermikov and V.P. Baryshok, "Through-Bond Interaction in Compounds Containing an Si-O-C-C-N Group," J. Organomet. Chem. 311, 9 (1986).

#### 86WAL

R. Walsh, "Thermochemical Kinetics: A Success Story," J. Phys. Chem. 90, 389 (1986).

#### 86WER

N.H. Werstiuk, "Thermolysis of N-alkylated Ethylenediamines: An Ultraviolet Photoelectron Spectroscopy Study," Can. J. Chem. 64, 2175 (1986).

#### 86YAM/FUR

S. Yamabe, Y. Furumiya, K. Hiraoka and K. Morise, "Theoretical Van't Hoff Plots of Gas Phase Ion Equilibria of Cl- Ion in Water, Methanol and Acetonitrile," Chem Phys. Lett. 131, 261 (1986)

#### 86ZHÈ/KÁR

L.-S. Zheng, C.M. Karner, P.J. Brucat, S.H. Yang, C.L. Pettiette, M.J. Craycraft and R.E. Smalley, "Photodetachment Studies of Metal Clusters: Electron Affinity Measurements for Cu_x," J. Chem. Phys. 85, 1681 (1986).

#### 87BOO/ARM

B.H. Boo and P.B. Armentrout, "Reaction of Silicon Ion ( 2 P) with Silane (SiH₄, SiD₄). Heats of Formation of SiH_n, SiH_n + (n = 1,2,3), and Si₂H_n + (n = 0,1,2,3). Remarkable Isotope Exchange Reaction Involving Four Hydrogen Shifts," J. Am. Chem. Soc. 109, 3549 (1987).

#### 87CHI

J.S. Chickos, "Molecular Structure and Energetics," Vol. 2 (ed. J.F. Liebman and A. Greenberg, VCH Publishers, Inc. Deerfield Beach, FL, 1987).

#### 87COE/SNO

J.V. Coe, J.T. Snodgrass, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "Photoelectron Spectroscopy of the Negative Cluster Ions, NO-(N₂O)n = 1,2," J. Chem. Phys. 87, 4302 (1987).

#### 87DEA/MAU

C.A. Deakyne, M. Meot-Ner (Mautner), T.J. Buckley and R. Metz, "Proton Affinities of Diacetylene, Cyanoacetylene, and Cyanogen," J. Chem. Phys. 86, 2334 (1987).

#### 87FER/RON

E.E. Ferguson, J. Roncin and L. Bonazzola, "Heats of Formation and Bond Energies of H₃CO + and H₃COOH + Ions," Int. J. Mass Spectrom. Ion Proc., 79, 215 (1987).

#### 87GAR/PAR

D. Garvin, V.B. Parker and H.J. White, Jr., "CODATA Thermodynamic Tables: Selections for Some Compounds of Calcium and Related Mixtures: A Prototype Set of Tables" Hemisphere Publ. Corp. (1987).

#### 87GRA/MEL

J.J. Grabowski and S.J. Melly, "Formation of Carbene Radical Anions: Gas Phase Reaction of the Atomic Oxygen Anion with Organic Neutrals," Int. J. Mass Spectrom. Ion Proc. xx,xxx (1987).

#### 87HER

J.T. Herron, "Thermochemical Data on Gas Phase Compounds of Sulfur, Fluorine, and Oxygen Related to Pyrolysis and Oxidation of Sulfur Hexafluoride," J. Phys. Chem. Ref Data 16, 1 (1987).

#### 87JOH/SPE

C.L. Johlman, L. Spencer, D.T. Sawyer and C.L. Wilkins, "Hydroxide Initiated Gas Phase Chemistry of Anthraquinone and Related Quinones," J. Org. Chem. 52, 3027 (1987).

#### 87КЕВ/СНО

P. Kebarle and S. Chowdhury, "Electron Affinities and Electron Transfer Reactions," Chem. Rev. 87, 513 (1987).

#### 87LAR/MCM

J.W. Larson and T.B. McMahon, "Hydrogen Bonding in Gas Phase Anions. The Energetics of Interaction Between Cyanide Ion and Bronsted Acids," J. Am. Chem. Soc. 109, 6230 (1987).

#### 87LIA/AUS

S.G. Lias and P. Ausloos, "Structures and Heats of Formation of  $C_4H_7^+$  Ions in the Gas Phase," Int. J. Mass Spectrom. Ion Proc., in press.

#### 87MAS/FER

R. Mason, M.T. Fernandez and K.R. Jennings, J. Chem. Soc. Faraday Trans. II 83, 89 (1987).

#### **87MEO**

M. Meot-ner, Personal communication of unpublished results.

#### 87MIL/FEI

A.E.S. Miller, C.S. Feigerle and W.C. Lineberger, "Laser Photoelectron Spectroscopy of CrH-, CoH-, and NiH-: Periodic Trends in the Electronic Structure of the Transition-Metal Hydrides," J. Chem. Phys. 86, 1549 (1987).

#### 87MOR/ELL

S. Moran and G.B. Ellison, "Electron Spectroscopy of CH₂S-," Int. J. Mass Spectrom. Ion Proc. xx, xxx (1987).

#### 87MOR/ELL2

S. Moran, H.B. Ellis, Jr., D.J. DeFrees, A.D. McLean, S.E. Paulson and G.B. Ellison, "Carbanion Spectroscopy: CH₂NC-," J. Am. Chem. Soc. 109, xxxx (1987).

#### 87MOR/ELL3

S. Moran, H.B. Ellis, Jr., D.J. DeFrees, A.D. McLean and G.B. Ellison, "Carbanion Spectroscopy: CH₂CN-," J. Am. Chem. Soc. 109, xxxx (1987).

#### 87SNO/COP

J.T. Snodgrass, J.V. Coe, K.M. McHugh, C.B. Freidhoff and

K.H. Bowen, "Photoelectron Spectroscopy of the Selenium and Tellurium Containing Negative Ions: SeO₂-, Se₂- and Te₂-," Chem. Phys. 87, xxxx (1987).

#### 87SNO/COE2

J.T. Snodgrass, J.V. Coe, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "Photoelectron Spectroscopy of the Negative Cluster Ions,  $NH_2$ -( $NH_3$ )n = 1,2," J. Chem. Phys. 87, xxxx (1987).

#### 87SNO/COE3

J.T. Snodgrass, J.V. Coe, C.B. Freidhoff, K.M. McHugh and K.H. Bowen, "The Negative Ion Photoelectron Spectroscopy of H-(NH₃), D-(ND₃), and H-(NH₃)₂," J. Chem. Phys. 87, xxxx (1987).

#### 87STA/NOR

S.W. Staley and T.D. Norden, Personal communication.

#### 87STE/BEA

A.E. Stevens and J.L. Beauchamp, "Gas Phase Acidities of (CO)₅MnH, (CO)₄FeH₂, and (CO)₄CoH," J. Am. Chem. Soc. 109, xxxx (1987).

#### 87SUN/ARI

L. Sunderlin, N. Aristov and P. Armentrout, "Reaction of Scandium Ions with Ethane. First and Second Hydride-Scandium Ion Bond Energies," J. Am. Chem. Soc. 109, 78 (1987).

#### 87THO/BAR

D. Thomas and J.E. Bartmess, Unpublished work.

# Journal of Physical and Chemical Reference Data Cumulative Listing of Reprints and Supplements

Reprints from Volume 1			ra of Molecules of Astrophysical	
1.Gaseous Diffusion Coefficients, <i>T.R. Marrero and E.A. Mason,</i> Vol. 1, No. 1, pp. 1–118 (1972)	\$7.00	hyde, Donald R.	hyde, Formamide, and Thioform <i>Johnson, Frank J. Lovas, and W.</i> . 1, No. 4, pp. 1011–1046 (1972	illiam
<ol> <li>Selected Values of Critical Supersaturation for Nucleation of Liquids from the Vapor, G.M. Pound, Vol. 1, No. 1, pp. 119–134 (1972)</li> </ol>	\$3.00	Uni-univalent Ele <i>Hamer and Yun</i>	ents and Mean Activity Coefficien ctrolytes in Water at 25° C, <i>Walt</i> <i>g-Chi Wu,</i> Vol. 1, No. 4, pp. 1	<i>er J.</i> 1047-
<ol> <li>Selected Values of Evaporation and Condensation Co- efficients for Simple Substances, G.M. Pound, Vol. 1, No. 1, pp. 135–146 (1972)</li> </ol>	\$3.00		d Thermal Conductivity Coefficien quid Fluorine, <i>H.J.M. Hanley an</i>	
4.Atlas of the Observed Absorption Spectrum of Carbon Monoxide between 1060 and 1900 Å, S.G. Tilford and		•	o. 4, pp. 1101-1113 (1972)	\$3.00
J.D. Simmons, Vol. 1, No. 1, pp. 147–188 (1972)	\$4.50	Reprints from	Volume 2	
5.Tables of Molecular Vibrational Frequencies, Part 5, <i>T. Shimanouchi,</i> Vol. 1, No. 1, pp. 189–216 (1972) (superseded by No.103)	\$4.00	est, II. Methyleni	ra of Molecules of Astrophysical imine, <i>William H. Kirchhoff, Dona</i> ank J. Lovas, Vol. 2, No. 1, pp.	ld R.
6.Selected Values of Heats of Combustion and Heats of Formation of Organic Compounds Containing the Ele- ments C, H, N, O, P, and S, Eugene S. Domalski, Vol. 1, No. 2, pp. 221–278 (1972)	\$5.00	18.Analysis of Spec	cific Heat Data in the Critical Reds, F.J. Cook, Vol. 2, No. 1, pp	egion
7.Thermal Conductivity of the Elements, <i>C.Y. Ho, R.W. Powell, and P.E. Liley,</i> Vol. 1, No. 2, pp. 279–422 (1972)	\$7.50		cal Kinetic Rate Constants for Vactions, <i>Keith Schofield</i> , Vol. 2, N	
8.The Spectrum of Molecular Oxygen, Paul H. Krupenie, Vol. 1, No. 2, pp. 423–534 (1972)	\$6.50	the Iron Group	n Probabilities for Forbidden Line Elements. (A Critical Data Compil	lation
9.A Critical Review of the Gas-Phase Reaction Kinetics of the Hydroxyl Radical, <i>Wm. E. Wilson, Jr.</i> , Vol. 1,	\$4.50	2, No. 1, pp. 89	es), <i>M.W. Smith and W.L. Wiese,</i> 5–120 (1973) _{Ular Vibrational Frequencies, Part}	\$4.50
No. 2, pp. 535–574 (1972)  10.Molten Salts: Volume 3, Nitrates, Nitrites, and Mixtures, Electrical Conductance, Density, Viscosity, and	\$ <del>4</del> .50	Shimanouchi, Vo (superseded by	l. 2, No. 1, pp. 121–162 (1973) No. 103)	\$4.50
Surface Tension Data, <i>G.J. Janz, Ursula Krebs, H.F. Siegenthaler, and R.P.T. Tomkins,</i> Vol. 1, No. 3, pp. 581–746 (1972)	\$8.50	Binary Compou	Energy Band Gaps in Elemental nd Semiconductors and Insula and E.L. Cook, Vol. 2, No. 1,	ators,
11.High Temperature Properties and Decomposition of Inorganic Salts—Part 3. Nitrates and Nitrites, Kurt H. Stern, Vol. 1, No. 3, pp. 747–772 (1972)	\$4.00	est, III. Methano	ra of Molecules of Astrophysical I, R.M. Lees, F.J. Lovas, W.H. F. Johnson, Vol. 2, No. 2, pp. 205	(irch-
12.High-Pressure Calibration: A Critical Review, <i>D.L. Decker, W.A. Bassett, L. Merrill, H.T. Hall, and J.D. Barnett,</i> Vol. 1, No. 3, pp. 773–836 (1972)	\$5.00		ra of Molecules of Astrophysical len Sulfide, <i>Paul Helminger, Fran</i>	
13.The Surface Tension of Pure Liquid Compounds, <i>Joseph J. Jasper</i> , Vol. 1, No. 4, pp. 841–1009 (1972)	\$8.50	De Lucia, and V 215–224 (1973)		
Journal of Physical and Chemical Reference Data Reprint and Supplement Orders		Please ship the f	ollowing reprints and suppler	nents:
To: American Chemical Society		Reprint No./Packa	ge,copies	\$
Distribution Office 1155 Sixteenth Street, N.W.		Reprint No./Packa	ge,copies	\$
Washington, DC 20036		Reprint No./Packa	ge,copies	\$
Name:		Val 0 Connl 4		
Title:		Vol. 2, Suppl. 1	Hardcovercopies	\$
Organization:		Vol. 3, Suppl. 1	Hardcovercopies	\$
Address:	_	Vol. 6, Suppl. 1	☐ Softcover ☐ Hardcover	
City:State:		Voi. 6, Suppi. 1	Softcovercopies	\$
Country: Zip:	•	Vol. 10, Suppl. 1	Hardcovercopies	
I am a member of		Vol. 11, Suppl. 1	Hardcovercopies	
(ACS, AIP, or Affiliated Society)		Vol. 11, Suppl. 2	Hardcovercopies	
ORDERS FOR REPRINTS AND SUPPLEMENTS MUST BE	PREPAIR	Vol. 13, Suppl. 1 Vol. 14, Suppl. 1	Hardcovercopies	
*Foreign orders for Reprints, add \$2.50 for each reprint for pos-	stage and	Vol. 14, Suppl. 1 Vol. 14, Suppl. 2	Hardcovercopies	
handling. Foreign orders for Reprint Packages, add \$5.00 for each Package for postage and handling. Make checks payable to the		Vol. 14, Suppl. 2	Hardcovercopies	

Other Suppl.:

BULK RATES: Subtract 20% from the listed price for orders of

50 or more of any one item.

Hardcover ____copies \$ ____ _____copies \$ _____

\$ _____

Total Enclosed

(Continuation of Cumulative Listing of Reprints	s)		
25.Tables of Molecular Vibrational Frequencies, Part 7, <i>T. Shimanouchi,</i> Vol. 2, No. 2, pp. 225–256 (1973) (superseded by No. 103)	\$4.00	44.Critical Analysis of Heat-Capacity Data and Evaluation of Thermodynamic Properties of Ruthenium, Rhodium, Palladium, Iridium, and Platinum from 0 to 300 K. A	
26.Energy Levels of Neutral Helium ( ⁴ He I), W.C. Martin, Vol. 2, No. 2, pp. 257–266 (1973)	\$3.00	Survey of the Literature Data on Osmium, <i>George T. Furukawa, Martin L. Reilly, and John S. Gallagher,</i> Vol. 3, No. 1, pp. 163–209 (1974)	\$4.50
27.Survey of Photochemical and Rate Data for Twenty- eight Reactions of Interest in Atmospheric Chemis- try, R.F. Hampson, Editor, W. Braun, R.L. Brown, D. Garvin, J.T. Herron, R.E. Huie, M.J. Kurylo, A.H. Laufer, J.D. McKinley, H. Okabe, M.D. Scheer, W.		45.Microwave Spectra of Molecules of Astrophysical Interest, V. Water Vapor, <i>Frank C. De Lucia, Paul Helminger, and William H. Kirchhoff,</i> Vol. 3, No. 1, pp. 211–219 (1974)	\$3.00
Tsang, and D.H. Stedman, Vol. 2, No. 2, pp. 267–312 (1973)	\$4.50	46.Microwave Spectra of Molecules of Astrophysical Interest, VI. Carbonyl Sulfide and Hydrogen Cyanide, <i>Arthur G. Maki</i> , Vol. 3, No. 1, pp. 221–244 (1974)	\$4.00
<ul><li>28.Compilation of the Static Dielectric Constant of Inorganic Solids, K.F. Young and H.P.R. Frederikse, Vol. 2, No. 2, pp. 313–410 (1973)</li></ul>	\$6.50	47.Microwave Spectra of Molecules of Astrophysical Interest, VII. Carbon Monoxide, Carbon Monosulfide, and	Ψ1.00
29.Soft X-Ray Emission Spectra of Metallic Solids: Critical Review of Selected Systems, A.J. McAlister, R.C. Dobbyn, J.R. Cuthill, and M.L. Williams, Vol. 2, No. 2, pp.		Silicon Monoxide, <i>Frank J. Lovas and Paul H. Kru-</i> penie, Vol. 3, No. 1, pp. 245–257 (1974) 48.Microwave Spectra of Molecules of Astrophysical Inter-	\$3.00
411–426 (1973) 30.Ideal Gas Thermodynamic Properties of Ethane and	\$3.00	est, VIII. Sulfur Monoxide, <i>Eberhard Tiemann</i> , Vol. 3, No. 1, pp. 259–268 (1974)	\$3.00
Propane, <i>J. Chao, R.C. Wilhoit, and B.J. Zwolinski,</i> Vol. 2, No. 2, pp. 427–438 (1973)  31.An Analysis of Coexistence Curve Data for Several Bi-	\$3.00	49.Tables of Molecular Vibrational Frequencies, Part 8, <i>T. Shimanouchi,</i> Vol. 3, No. 1, pp. 269–308 (1974) (superseded by No. 103)	\$4.50
nary Liquid Mixtures Near Their Critical Points, A. Stein and G.F. Allen, Vol. 2, No. 3, pp. 443–466 (1973)	\$4.00	50.JANAF Thermochemical Tables, 1974 Supplement, M.W. Chase, J.L. Curnutt, A.T. Hu, H. Prophet, A.N. Syverud, and L.C. Walker, Vol. 3, No. 2, pp. 311–480 (1974)	\$8.50
32.Rate Constants for the Reactions of Atomic Oxygen (O 3P) with Organic Compounds in the Gas Phase, John T. Herron and Robert E. Huie, Vol. 2, No. 3, pp. 467–518 (1973)	\$5.00	51.High Temperature Properties and Decomposition of Inorganic Salts, Part 4. Oxy-Salts of the Halogens, Kurt H. Stern, Vol. 3, No. 2, pp. 481–526 (1974)	\$4.50
33.First Spectra of Neon, Argon, and Xenon 136 in the 1.2-4.0 μm Region, <i>Curtis J. Humphreys</i> , Vol. 2, No. 3, pp. 519-530 (1973)	\$3.00	52.Diffusion in Copper and Copper Alloys, Part II. Copper-Silver and Copper-Gold Systems, <i>Daniel B. Butrynowicz, John R. Manning, and Michael E. Read,</i>	<b>Φ</b> Ε <b>Ε</b> Ω
34.Elastic Properties of Metals and Alloys, I. Iron, Nickel, and Iron-Nickel Alloys, H.M. Ledbetter and R.P. Reed, Vol. 2, No. 3, pp. 531–618 (1973)	\$6.00	Vol. 3, No. 2, pp. 527–602 (1974) 53.Microwave Spectral Tables I. Diatomic Molecules, Frank J. Lovas and Eberhard Tiemann, Vol. 3, No. 3,	\$5.50
35.The Viscosity and Thermal Conductivity Coefficients of Dilute Argon, Krypton, and Xenon, <i>H.J.M. Hanley</i> , Vol. 2, No. 3, pp. 619–642 (1973)	\$4.00	<ul><li>pp. 609–770 (1974)</li><li>54.Ground Levels and Ionization Potentials for Lanthanide and Actinide Atoms and Ions, W.C. Martin, Lucy Ha-</li></ul>	\$8.50
36.Diffusion in Copper and Copper Alloys, Part I. Volume and Surface Self-Diffusion in Copper, <i>Daniel B. Butrymowicz, John R. Manning, and Michael E. Read,</i>		gan, Joseph Reader, and Jack Sugar, Vol. 3, No. 3, pp. 771–780 (1974)	\$3.00
Vol. 2, No. 3, pp. 643–656 (1973)  37.The 1973 Least-Squares Adjustment of the Fundamen-	\$3.00	55.Behavior of the Elements at High Pressures, <i>John Francis Cannon</i> , Vol. 3, No. 3, pp. 781–824 (1974)  56.Reference Wavelengths from Atomic Spectra in the	\$4.50
tal Constants, E. Richard Cohen and B.N. Taylor, Vol. 2, No. 4, pp. 663–734 (1973)	\$5.50	Range 15 Å to 25000 Å, <i>Victor Kaufman and Bengt Edlén</i> , Vol. 3, No. 4, pp. 825–895 (1974)	\$5.50
38.The Viscosity and Thermal Conductivity Coefficients of Dilute Nitrogen and Oxygen, <i>H.J.M. Hanley and James F. Ely</i> , Vol. 2, No. 4, pp. 735–756 (1973)	\$4.00	57.Elastic Properties of Metals and Alloys. II. Copper, H.M. Ledbetter and E.R. Naimon, Vol. 3, No. 4, pp.897–935 (1974)	\$4.50
39.Thermodynamic Properties of Nitrogen Including Liquid and Vapor Phases from 63 K to 2000 K with Pressures to 10,000 Bar, <i>Richard T. Jacobsen and Richard B. Stewart</i> , Vol. 2, No. 4, pp. 757–922 (1973)	\$8.50	58.A Critical Review of H-Atom Transfer in the Liquid Phase: Chlorine Atom, Alkyl, Trichloromethyl, Alkoxy, and Alkylperoxy Radicals, <i>D.G. Hendry, T. Mill, L. Piszkiewicz, J.A. Howard, and H.K. Eigenmann,</i> Vol. 3,	
40.Thermodynamic Properties of Helium 4 from 2 to 1500 K at Pressures to 10 ⁸ Pa, <i>Robert T. McCarty</i> , Vol. 2, No. 4, pp. 923–1042 (1973)	\$7.00	<ul> <li>No. 4, pp. 937–978 (1974)</li> <li>59.The Viscosity and Thermal Conductivity Coefficients for Dense Gaseous and Liquid Argon, Krypton, Xenon, Nitrogen, and Oxygen, H.J.M. Hanley, R.D. McCarty,</li> </ul>	\$4.50
Reprints from Volume 3		and W.M. Haynes, Vol. 3, No. 4, pp. 979–1017 (1974)	\$4.50
41.Molten Salts: Volume 4, Part 1, Fluorides and Mixtures, Electrical Conductance, Density, Viscosity, and Surface Tension Data, G.J. Janz, G.L. Gardner, Ursula Krebs, and R.P.T. Tomkins, Vol. 3, No. 1, pp. 1–115	<b>#7.00</b>	Reprints from Volume 4	
<ul> <li>(1974)</li> <li>42.Ideal Gas Thermodynamic Properties of Eight Chloro- and Fluoromethanes, A.S. Rodgers, J. Chao, R. C. Wilhoit, and B.J. Zwolinski, Vol. 3, No. 1, pp. 117–140</li> </ul>	\$7.00	<ul> <li>60.JANAF Thermochemical Tables, 1975 Supplement, M.W. Chase, J.L. Curnutt, H. Prophet, R.A. McDonald, and A.N. Syverud, Vol. 4, No. 1, pp. 1–175 (1975)</li> <li>61.Diffusion in Copper and Copper Alloys, Part III. Diffusion</li> </ul>	\$8.50
<ul> <li>(1974)</li> <li>43.Ideal Gas Thermodynamic Properties of Six Chloroeth-anes, J. Chao, A.S. Rodgers, R.C. Wilhoit, and B.J. Zwolinski, Vol. 3, No. 1, pp. 141–162 (1974)</li> </ul>	\$4.00 \$4.00	sion in Systems Involving Elements of the Groups IA, IIA, IIIB, IVB, VB, VIB, and VIIB, Daniel B. Butrymowicz, John R. Manning, and Michael E. Read, Vol. 4, No. 1, pp. 177–249 (1975)	\$6.00

(Continuation of Cumulative Listing of Reprin	ts)	•	
62.Ideal Gas Thermodynamic Properties of Ethylene and Propylene, <i>Jing Chao and Bruno J. Zwolinski</i> , Vol. 4, No. 1, pp. 251–261 (1975)	\$3.00	82. Tables of Critically Evaluated Oscillator Strengths for the Lithium Isoelectronic Sequence, G.A. Martin and W.L. Wiese, Vol. 5, No. 3, pp. 537–570 (1976)	\$4.50
63.Atomic Transition Probabilities for Scandium and Titanium (A Critical Data Compilation of Allowed Lines), W.L. Wiese and J.R. Fuhr, Vol. 4, No. 2, pp. 263–352		83.Ideal Gas Thermodynamic Properties of Six Chloro- fluoromethanes, <i>S.S. Chen, R. C. Wilhoit, and B.J. Zwolinski</i> , Vol. 5, No. 3, pp. 571–580 (1976)	\$3.00
(1975) 64.Energy Levels of Iron, Fe I through Fe xxvI, <i>Joseph Reader and Jack Sugar,</i> Vol. 4, No. 2, pp. 353–440	\$6.00	84.Survey of Superconductive Materials and Critical Evaluation of Selected Properties, <i>B.W. Roberts,</i> Vol. 5, No. 3, pp. 581–821 (1976)	\$12.50
<ul><li>(1975)</li><li>65.Ideal Gas Thermodynamic Properties of Six Fluoroeth- anes, S.S. Chen, A.S. Rodgers, J. Chao, R.C. Wilhoit,</li></ul>	\$6.00	85. Nuclear Spins and Moments, <i>Gladys H. Fuller</i> , Vol. 5, No. 4, pp. 835–1092 (1976)	\$11.50
and B.J. Zwolinski, Vol. 4, No. 2, pp. 441–456 (1975) 66.Ideal Gas Thermodynamic Properties of the Eight Bro-	\$3.00	86.Nuclear Moments and Moment Ratios as Determined by Mössbauer Spectroscopy, <i>J.G. Stevens and B.D. Dunlap</i> , Vol. 5, No. 4, pp. 1093–1121 (1976)	\$4.00
mo- and lodomethanes, <i>S.A. Kudchadker and A.P. Kudchadker</i> , Vol. 4, No. 2, pp. 457–470 (1975)	\$3.00	87.Rate Coefficients for Ion-Molecule Reactions, I. Ions Containing C and H, L. Wayne Sieck and Sharon G.	\$4.00
67.Atomic Form Factors, Incoherent Scattering Functions, and Photon Scattering Cross Sections, <i>J.H. Hubbell, Wm.J. Veigele, E.A. Briggs, R.T. Brown, D.T. Cromer, and R.J. Howerton,</i> Vol. 4, No. 3, pp. 471–538 (1975)	\$5.50	Lias, Vol. 5, No. 4, pp. 1123-1146 (1976)  88.Microwave Spectra of Molecules of Astrophysical Interest, XI. Silicon Sulfide, Eberhard Tiemann, Vol. 5, No. 4, pp. 1147-1156 (1976)	\$3.00
68.Binding Energies in Atomic Negative Ions, <i>H. Hotop</i> and W.C. Lineberger, Vol. 4, No. 3, pp. 539–576 (1975)	\$4.50	89.Property index and Author index to Volumes 1–5 (1972–1976), Vol. 5, No. 4, pp. 1161–1183	\$4.00
69.A Survey of Electron Swarm Data, <i>J. Dutton,</i> Vol. 4, No. 3, pp. 577–856 (1975)	\$12.00		
70.Ideal Gas Thermodynamic Properties and Isomerization		Reprints from Volume 6	
of n-Butane and Isobutane, S.S. Chen, R.C. Wilhoit, and B.J. Zwolinski, Vol. 4, No. 4, pp. 859–869 (1975)	\$3.00	90.Diffusion in Copper and Copper Alloys, Part V. Diffusion in Systems Involving Elements of Group VA,	
71.Molten Salts: Volume 4, Part 2, Chlorides and Mixtures, Electrical Conductance, Density, Viscosity, and Surface Tension Data, G.J. Janz, R.P.T. Tomkins, C.B.		Daniel B. Butrymowicz, John R. Manning, and Michael E. Read, Vol. 6, No. 1, pp. 1–50 (1977)	\$5.00
Allen, J.R. Downey, Jr., G.L. Gardner, U. Krebs, and S.K. Singer, Vol. 4, No. 4, pp. 871–1178 (1975) 72.Property Index to Volumes 1–4 (1972–1975), Vol. 4,	\$13.00	91.The Calculated Thermodynamic Properties of Superfluid Helium-4, <i>James S. Brooks and Russell J. Donnelly</i> , Vol. 6, No. 1, pp. 51–104 (1977)	\$5.00
No. 4, pp. 1179–1192 (1975)	\$3.00	92.Thermodynamic Properties of Normal and Deuterated Methanols, S.S. Chen, R.C. Wilhoit, and B.J. Zwolinski, Vol. 6, No. 1, pp. 105–112 (1977)	\$3.00
Reprints from Volume 5		93.The Spectrum of Molecular Nitrogen, Alf Lofthus and Paul H. Krupenie, Vol. 6, No. 1, pp. 113-307 (1977)	\$9.50
73.Scaled Equation of State Parameters for Gases in the Critical Region, <i>J.M.H. Levelt Sengers, W.L. Greer,</i>		94.Energy Levels of Chromium, Cr I through Cr xxIV, Jack Sugar and Charles Corliss, Vol. 6, No. 2, pp. 317–383 (1977)	\$5.50
<ul> <li>and J.V. Sengers, Vol. 5, No. 1, pp. 1–51 (1976)</li> <li>74.Microwave Spectra of Molecules of Astrophysical Interest, IX. Acetaldehyde, A. Bauder, F.J. Lovas, and D.R.</li> </ul>	\$5.00	95.The Activity and Osmotic Coefficients of Aqueous Calcium Chloride at 298.15 K, <i>Bert R. Staples and Ralph L. Nuttall,</i> Vol. 6, No. 2, pp. 385–407 (1977)	\$4.00
Johnson, Vol. 5, No. 1, pp. 53-77 (1976) 75.Microwave Spectra of Molecules of Astrophysical Inter-	\$4.00	96.Molten Salts: Volume 4, Part 3, Bromides and Mixtures; lodides and Mixtures-Electrical Conductance,	•
est, X. Isocyanic Acid, <i>G. Winnewisser, W.H. Hocking,</i> and M.C.L. Gerry, Vol. 5, No. 1, pp. 79–101 (1976)  76.Diffusion in Copper and Copper Alloys, Part IV. Diffu-	\$4.00	Density, Viscosity, and Surface Tension Data, G.J. Janz, R.P.T. Tomkins, C.B. Allen, J.R. Downey, Jr., and S.K. Singer, Vol. 6, No. 2, pp. 409–596 (1977)	\$9.00
sion in Systems Involving Elements of Group VIII, Daniel B. Butrymowicz, John R. Manning, and Michael E. Read, Vol. 5, No. 1, pp. 103–200 (1976)	\$6.50	97.The Viscosity and Thermal Conductivity Coefficients for Dense Gaseous and Liquid Methane, <i>H.J.M. Hanley, W.M. Haynes, and R.D. McCarty,</i> Vol. 6, No. 2, pp. 597–609 (1977)	\$3.00
77.A Critical Review of the Stark Widths and Shifts of Spectral Lines from Non-Hydrogenic Atoms, <i>N. Konjevic and J.R. Roberts</i> , Vol. 5, No. 2, pp. 209–257 (1976)	\$5.00	98.Phase Diagrams and Thermodynamic Properties of Ternary Copper-Silver Systems, <i>Y. Austin Chang, Daniel Goldberg, and Joachim P. Neumann</i> , Vol. 6, No. 3,	
78.Experimental Stark Widths and Shifts for Non-Hydro- genic Spectral Lines of Ionized Atoms (A Critical Re- view and Tabulation of Selected Data), <i>N. Konjevic</i> and W.L. Wiese, Vol. 5, No. 2, pp. 259–308 (1976)	\$5.00	pp. 621–673 (1977)  99.Crystal Data Space-Group Tables, <i>Alan D. Mighell, Helen M. Ondik, and Bettijoyce Breen Molino,</i> Vol. 6, No. 3, pp. 675–829 (1977)	\$5.00 \$8.00
79.Atlas of the Absorption Spectrum of Nitric Oxide (NO) between 1420 and 1250 Å, E. Miescher and F. Al-		100.Energy Levels of One-Electron Atoms, <i>Glen W. Erickson</i> , Vol. 6, No. 3, pp. 831–869 (1977)	\$4.50
berti, Vol. 5, No. 2, pp. 309–317 (1976)  80.Ideal Gas Thermodynamic Properties of Propanone and 2-Butanone, <i>Jing Chao and Bruno J. Zwolinski</i> ,	\$3.00	101.Rate Constants for Reactions of $CIO_x$ of Atmospheric Interest, <i>R.T. Watson</i> , Vol. 6, No. 3, pp. 871–917 (1977)	\$4.50
Vol. 5, No. 2, pp. 319–328 (1976)	\$3.00	102.NMR Spectral Data: A Compilation of Aromatic Proton	

\$9.50

81.Refractive Index of Alkali Halides and Its Wavelength and Temperature Derivatives, *H.H. Li,* Vol. 5, No. 2, pp. 329–528 (1976)

102.NMR Spectral Data: A Compilation of Aromatic Proton Chemical Shifts in Mono- and Di-Substituted Benzenes, B.L. Shapiro and L.E. Mohrmann, Vol. 6, No.

\$5.50

3, pp. 919–991 (1977)

(Continuation of Cumulative Lieting of Bonrin	to)		
(Continuation of Cumulative Listing of Reprin	(5)		
103.Tables of Molecular Vibrational Frequencies. Consolidated Volume II. <i>T. Shimanouchi,</i> Vol. 6, No. 3, pp. 993–1102 (1977) (supersedes Nos. 5, 21, 25, 49)	\$6.50	123.Thermal Conductivity of Ten Selected Binary Alloy Systems, C.Y. Ho, M.W. Ackerman, K.Y. Wu, S.G. Oh, and T.N. Havill, Vol. 7, No. 3, pp. 959–1177 (1978)	\$10.00
104.Effects of Isotopic Composition, Temperature, Pressure, and Dissolved Gases on the Density of Liquid Water, George S. Kell, Vol. 6, No. 4, pp. 1109–1131 (1977)	\$4.00	124.Semi-Empirical Extrapolation and Estimation of Rate Constants for Abstraction of H from Methane by H, O, HO, and O ₂ , Robert Shaw, Vol. 7, No. 3, pp. 1179– 1190 (1978)	\$3.00
105.Viscosity of Water Substance-New International Formulation and Its Background, A. Nagashima, Vol. 6, No. 4, pp. 1133–1166 (1977)	\$4.50	125.Energy Levels of Vanadium, V _I through V _{XXIII} , <i>Jack Sugar and Charles Corliss</i> , Vol. 7, No. 3, pp. 1191–1262 (1978)	\$5.50
106.A Correlation of the Existing Viscosity and Thermal Conductivity Data of Gaseous and Liquid Ethane, H.J.M. Hanley, K.E. Gubbins, and S. Murad, Vol. 6, No. 4, pp. 1167–1180 (1977)	\$3.00	126.Recommended Atomic Electron Binding Energies, 1s to $6p_{3/2}$ , for the Heavy Elements, $Z=84$ to 103, F.T. Porter and M.S. Freedman, Vol. 7, No. 4, pp. 1267–1284 (1978)	\$4.00
107.Elastic Properties of Zinc: A Compilation and a Review, <i>H.M. Ledbetter</i> , Vol. 6, No. 4, pp. 1181–1203 (1977)	\$4.00	127.Ideal Gas Thermodynamic Properties of CH _{4-(a+b+c+d)} F _a Cl _b Br _c l _d Halomethanes, <i>Shanti A. Kudchadker and Arvind P. Kudchadker</i> , Vol. 7, No. 4,	<b>V</b>
108.Behavior of the AB-Type Compounds at High Pressures and High Temperatures, <i>Leo Merrill,</i> Vol. 6, No. 4, pp. 1205–1252 (1977)	\$4.50	pp. 1285-1307 (1978) 128.Critical Review of Vibrational Data and Force Field	\$4.00
109.Energy Levels of Manganese, Mn I through Mn xxv, Charles Corliss and Jack Sugar, Vol. 6, No. 4, pp. 1253–1329 (1977)	\$5.50	Constants for Polyethylene, John Barnes and Bruno Fanconi, Vol. 7, No. 4, pp. 1309–1321 (1978)  129.Tables of Molecular Vibrational Frequencies, Part 9, Takehiko Shimanouchi, Hiroatsu Matsuura, Yoshiki Ogawa, and Issei Harada, Vol. 7, No. 4, pp. 1323–1442 (1979)	\$3.00
Reprints from Volume 7		1443 (1978)  130.Microwave Spectral Tables. II. Triatomic Molecules,  Frank J. Lovas, Vol. 7, No. 4, pp. 1445–1750 (1978)	\$7.00 \$13.00
110.Tables of Atomic Spectral Lines for the 10 000 Å to 40 000 Å Region, <i>Michael Outred</i> , Vol. 7, No. 1, pp.		77am 0. 20vas, 401. 7, 140. 4, pp. 1445-1750 (1970)	φ13.00
1–262 (1978)	\$11.50		
111.Evaluated Activity and Osmotic Coefficients for Aqueous Solutions: The Alkaline Earth Metal Halides, <i>R.N. Goldberg and R.L. Nuttall</i> , Vol. 7, No. 1, pp. 263–310 (1978)	\$4.50	Reprints from Volume 8	
112.Microwave Spectra of Molecules of Astrophysical Interest XII. Hydroxyl Radical, Robert A. Beaudet and Rob-		131.Energy Levels of Titanium, Ti I through Ti xxII, <i>Charles Corliss and Jack Sugar</i> , Vol. 8, No. 1, pp. 1–62 (1979)	\$5.00
<ul> <li>ert L. Poynter, Vol. 7, No. 1, pp. 311–362 (1978)</li> <li>113.Ideal Gas Thermodynamic Properties of Methanoic and Ethanoic Acids, Jing Chao and Bruno J. Zwolinski,</li> </ul>	\$5.00	132.The Spectrum and Energy Levels of the Neutral Atom of Boron (B I), G.A. Odintzova and A.R. Striganov, Vol. 8, No. 1, pp. 63–67 (1979)	\$3.00
Vol. 7, No. 1, pp. 363-377 (1978) 114.Critical Review of Hydrolysis of Organic Compounds in	\$3.00	133.Relativistic Atomic Form Factors and Photon Coherent Scattering Cross Sections, <i>J.H. Hubbell and I. Øverbø</i> , Vol. 8, No. 1, pp. 69–105 (1979)	\$4.50
Water Under Environmental Conditions, W. Mabey and T. Mill, Vol. 7, No. 2, pp. 383–415 (1978)	\$4.50	134.Microwave Spectra of Molecules of Astrophysical Inter-	φ4.50
115.Ideal Gas Thermodynamic Properties of Phenol and Creosols, S.A. Kudchadker, A.P. Kudchadker, R.C. Wilhoit, and B.J. Zwolinski, Vol. 7, No. 2, pp. 417–423		est. XIV. Vinyl Cyanide (Acrylonitrile), M.C.L. Gerry, K. Yamada, and G. Winnewisser, Vol. 8, No. 1, pp. 107–123 (1979)	\$4.00
(1978)  116.Densities of Liquid $CH_{4-a}X_a$ (X = Br,I) and $CH_{4-(a+b+c+d)}F_aCl_bBr_cl_d$ Halomethanes, A.P. Kud-	\$3.00	135.Molten Salts: Volume 4, Part 4, Mixed Halide Melts. Electrical Conductance, Density, Viscosity, and Surface Tension Data, G.J. Janz, R.P.T. Tomkins, and C.B. Al-	
shadker CA Kudehedker D.D. Detneik and D.D.		/on Vol 9 No 1 no 105 200 (1070)	<b>60.00</b>
chadker, S.A.Kudchadker, P.R. Patnaik, and P.P. Mishra, Vol. 7, No. 2, pp. 425–439 (1978)	\$3.00	len, Vol. 8, No. 1, pp. 125–302 (1979)  136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327	\$9.00
	\$3.00 \$5.00	<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray</li> </ul>	\$9.00 \$4.00
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of</li> </ul>		<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray Lines and Several KLL Auger Lines, M.O. Krause and J.H. Oliver, Vol. 8, No. 2, pp. 329–338 (1979)</li> </ul>	
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromi-</li> </ul>		<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray Lines and Several KLL Auger Lines, M.O. Krause and</li> </ul>	\$4.00
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of Allowed Lines), S.M. Younger, J.R. Fuhr, G.A. Martin,</li> </ul>	\$5.00	<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray Lines and Several KLL Auger Lines, M.O. Krause and J.H. Oliver, Vol. 8, No. 2, pp. 329–338 (1979)</li> <li>138.Electrical Resistivity of Alkali Elements, T.C. Chi, Vol. 8, No. 2, pp. 339–438 (1979)</li> <li>139.Electrical Resistivity of Alkaline Earth Elements, T.C. Chi, Vol. 8, No. 2, pp. 439–497 (1979)</li> </ul>	\$4.00 \$3.00
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of Allowed Lines), S.M. Younger, J.R. Fuhr, G.A. Martin, and W.L. Wiese, Vol. 7, No. 2, pp. 495–629 (1978)</li> <li>119.Thermodynamic Properties of Ammonia, Lester Haar and John S. Gallagher, Vol. 7, No. 3, pp. 635–792</li> </ul>	\$5.00 \$7.50	<ul> <li>136.Atomic Radiative and Radiationless Yields for <i>K</i> and <i>L</i> Shells, <i>M.O. Krause</i>, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic <i>K</i> and <i>L</i> Levels, <i>Kα</i> X-ray Lines and Several <i>KLL</i> Auger Lines, <i>M.O. Krause and J.H. Oliver</i>, Vol. 8, No. 2, pp. 329–338 (1979)</li> <li>138.Electrical Resistivity of Alkali Elements, <i>T.C. Chi</i>, Vol. 8, No. 2, pp. 339–438 (1979)</li> <li>139.Electrical Resistivity of Alkaline Earth Elements, <i>T.C.</i></li> </ul>	\$4.00 \$3.00 \$6.50
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of Allowed Lines), S.M. Younger, J.R. Fuhr, G.A. Martin, and W.L. Wiese, Vol. 7, No. 2, pp. 495–629 (1978)</li> <li>119.Thermodynamic Properties of Ammonia, Lester Haar and John S. Gallagher, Vol. 7, No. 3, pp. 635–792 (1978)</li> <li>120.JANAF Thermochemical Tables, 1978 Supplement, M.W. Chase, Jr., J.L. Curnutt, R.A. McDonald, and A.N. Syverud, Vol. 7, No. 3, pp. 793–940 (1978)</li> <li>121.Viscosity of Liquid Water in the Range — 8°C to 150°C, Joseph Kestin, Mordechai Sokolov, and William</li> </ul>	\$5.00 \$7.50 \$8.00 \$8.00	<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray Lines and Several KLL Auger Lines, M.O. Krause and J.H. Oliver, Vol. 8, No. 2, pp. 329–338 (1979)</li> <li>138.Electrical Resistivity of Alkali Elements, T.C. Chi, Vol. 8, No. 2, pp. 339–438 (1979)</li> <li>139.Electrical Resistivity of Alkaline Earth Elements, T.C. Chi, Vol. 8, No. 2, pp. 439–497 (1979)</li> <li>140.Vapor Pressures and Boiling Points of Selected Halomethanes, A.P. Kudchadker, S.A. Kudchadker, R.P. Shukla, and P.R. Patnaik, Vol. 8, No. 2, pp. 499–517 (1979)</li> <li>141.Ideal Gas Thermodynamic Properties of Selected Bromoethanes and Iodoethane, S.A. Kudchadker and A.P.</li> </ul>	\$4.00 \$3.00 \$6.50 \$5.00
<ul> <li>Mishra, Vol. 7, No. 2, pp. 425–439 (1978)</li> <li>117.Microwave Spectra of Molecules of Astrophysical Interest XIII. Cyanoacetylene, W.J. Lafferty and F.J. Lovas, Vol. 7, No. 2, pp. 441–493 (1978)</li> <li>118.Atomic Transition Probabilities for Vanadium, Chromium, and Manganese (A Critical Data Compilation of Allowed Lines), S.M. Younger, J.R. Fuhr, G.A. Martin, and W.L. Wiese, Vol. 7, No. 2, pp. 495–629 (1978)</li> <li>119.Thermodynamic Properties of Ammonia, Lester Haar and John S. Gallagher, Vol. 7, No. 3, pp. 635–792 (1978)</li> <li>120.JANAF Thermochemical Tables, 1978 Supplement, M.W. Chase, Jr., J.L. Curnutt, R.A. McDonald, and A.N. Syverud, Vol. 7, No. 3, pp. 793–940 (1978)</li> <li>121.Viscosity of Liquid Water in the Range — 8°C to</li> </ul>	\$5.00 \$7.50 \$8.00	<ul> <li>136.Atomic Radiative and Radiationless Yields for K and L Shells, M.O. Krause, Vol. 8, No. 2, pp. 307–327 (1979)</li> <li>137.Natural Widths of Atomic K and L Levels, Kα X-ray Lines and Several KLL Auger Lines, M.O. Krause and J.H. Oliver, Vol. 8, No. 2, pp. 329–338 (1979)</li> <li>138.Electrical Resistivity of Alkali Elements, T.C. Chi, Vol. 8, No. 2, pp. 339–438 (1979)</li> <li>139.Electrical Resistivity of Alkaline Earth Elements, T.C. Chi, Vol. 8, No. 2, pp. 439–497 (1979)</li> <li>140.Vapor Pressures and Boiling Points of Selected Halomethanes, A.P. Kudchadker, S.A. Kudchadker, R.P. Shukla, and P.R. Patnaik, Vol. 8, No. 2, pp. 499–517 (1979)</li> <li>141.Ideal Gas Thermodynamic Properties of Selected Bro-</li> </ul>	\$4.00 \$3.00 \$6.50 \$5.00

(Continuation of Cumulative Listing of Reprint	ts)		
143.Microwave Spectra of Molecules of Astrophysical Interest. XV. Propyne, <i>A. Bauer, D. Boucher, J. Burie, J. Demaison, and A. Dubrulle,</i> Vol. 8, No. 2, pp.	£4.00	161.A Compilation of Kinetic Parameters for the Thermal Degradation of <i>n</i> -Alkane Molecules, <i>D.L. Allara and Robert Shaw</i> , Vol. 9, No. 3, pp. 523–559 (1980)	\$5.50
537–558 (1979)  144.A Correlation of the Viscosity and Thermal Conductivity Data of Gaseous and Liquid Propane, <i>P.M. Holland, H.J.M. Hanley, K.E. Gubbins, and J.M. Haile,</i>	\$4.00	<ul> <li>162.Refractive Index of Silicon and Germanium and Its Wavelength and Temperature Derivatives, H.H. Li, Vol. 9, No. 3, pp. 561–658 (1980)</li> <li>163.Microwave Spectra of Molecules of Astrophysical Inter-</li> </ul>	\$7.50
<ul> <li>Vol. 8, No. 2, pp. 559–575 (1979)</li> <li>145.Microwave Spectra of Molecules of Astrophysical Interest. XVI. Methyl Formate, A. Bauder, Vol. 8, No. 3, pp. 583–618 (1979)</li> </ul>	\$4.00 \$4.50	est XIX. Methyl Cyanide, D. Boucher, J. Burie, A. Bauer, A. Dubrulle, and J. Demaison, Vol. 9, No. 3, pp. 659–719 (1980).	\$6.00
146.Molecular Structures of Gas-Phase Polyatomic Molecules Determined by Spectroscopic Methods, <i>Marlin D. Harmony, Victor W. Laurie, Robert L. Kuczkowski, R.H. Schwendeman, D.A. Ramsay, Frank J. Lovas, Walter</i>		164.A Review, Evaluation, and Correlation of the Phase Equilibria, Heat of Mixing, and Change in Volume on Mixing for Liquid Mixtures of Methane + Propane, R.C. Miller, A.J. Kidnay, and M.J. Hiza, Vol. 9, No. 3, pp. 721–734 (1980)	\$4.00
J. Lafferty, and Arthur G. Maki, Vol. 8, No. 3, pp. 619–721 (1979)	\$6.50	165.Saturation States of Heavy Water, P.G. Hill and R.D. Chris MacMillan, Vol. 9, No. 3, pp. 735-749 (1980)	\$4.00
<ul> <li>147.Critically Evaluated Rate Constants for Gaseous Reactions of Several Electronically Excited Species, <i>Keith Schofield</i>, Vol. 8, No. 3, pp. 723–798 (1979)</li> <li>148.A Review, Evaluation, and Correlation of the Phase</li> </ul>	\$5.50	166.The Solubility of Some Sparingly Soluble Lead Salts: An Evaluation of the Solubility in Water and Aqueous Electrolyte Solution, <i>H. Lawrence Clever and Francis</i> <i>J. Johnston</i> , Vol. 9, No. 3, pp. 751–784 (1980)	\$5.50
Equilibria, Heat of Mixing, and Change in Volume on Mixing for Liquid Mixtures of Methane + Ethane, <i>M.J. Hiza, R.C. Miller, and A.J. Kidnay,</i> Vol. 8, No. 3, pp. 799–816 (1979)	\$4.00	167.Molten Salts Data as Reference Standards for Density, Surface Tension, Viscosity, and Electrical Conductance: KNO ₃ and NaCl, George J. Janz, Vol. 9, No. 4,	
149.Energy Levels of Aluminum, Al I through Al XIII, W.C. Martin and Romuald Zalubas, Vol. 8, No. 3, pp. 817–864 (1979)	\$4.50	<ul> <li>pp. 791–829 (1980)</li> <li>168.Molten Salts: Volume 5, Part 1, Additional Single and Multi-Component Salt Systems. Electrical Conductance, Density, Viscosity, and Surface Tension Data, G.J.</li> </ul>	\$5.50
150.Energy Levels of Calcium, Ca I through Ca xx, <i>Jack Sugar and Charles Corliss</i> , Vol. 8, No. 3, pp. 865–916	<b>0</b> 5.00	Janz and R.P. Tomkins, Vol. 9, No. 4, pp. 831–1021 (1980)	\$10.50
(1979) 151.Evaluated Activity and Osmotic Coefficients for Aqueous Solutions: Iron Chloride and the Bi-univalent Compounds of Nickel and Cobalt, R.N. Goldberg, R.L. Nutall, and B.R. Staples, Vol. 8, No. 4, pp. 923–1003	\$5.00	169.Pair, Triplet, and Total Atomic Cross Sections (and Mass Attenuation Coefficients) for 1 MeV-100 GeV Photons in Elements $Z=1$ to 100, J.H. Hubbell, H.A. Gimm, and I. Øverbø, Vol. 9, No. 4, pp. 1023-1147 (1980)	\$8.00
(1979) 152.Evaluated Activity and Osmotic Coefficients for Aqueous Solutions: Bi-univalent Compounds of Lead, Copper, Manganese, and Uranium, R.N. Goldberg, Vol.	\$6.00	170.Tables of Molecular Vibrational Frequencies, Part 10, Takehiko Shimanouchi, Hiroatsu Matsuura, Yoshiki Ogawa, and Issei Harada, Vol. 9, No. 4, pp. 1149– 1254 (1980)	\$7.50
<ol> <li>No. 4, pp. 1005–1050 (1979)</li> <li>153.Microwave Spectra of Molecules of Astrophysical Interest. XVII. Dimethyl Ether, F.J. Lovas, H. Lutz, and H. Dreizler, Vol. 8, No. 4, pp. 1051–1107 (1979)</li> </ol>	\$4.50 \$5.00	171.An Improved Representative Equation for the Dynamic Viscosity of Water Substance, <i>J.T.R. Watson, R.S. Basu, and J.V. Sengers</i> , Vol. 9, No. 4, pp. 1255–1290 (1980)	\$5.50
154.Energy Levels of Potassium, Kı through Kxıx, <i>Charles Corliss and Jack Sugar</i> , Vol. 8, No. 4, pp. 1109–1145 (1979)	\$4.50	172.Static Dielectric Constant of Water and Steam, <i>M. Uematsu and E. U. Franck</i> , Vol. 9, No. 4, pp. 1291–1306 (1980)	\$4.00
155.Electrical Resistivity of Copper, Gold, Palladium, and Silver, <i>R.A. Matula</i> , Vol. 8, No. 4, pp. 1147–1298 (1979)	\$8.00	173.Compilation and Evaluation of Solubility Data in the Mercury (I) Chloride-Water System, <i>Y. Marcus</i> , Vol. 9, No. 4, pp. 1307–1329 (1980)	\$5.00
		:	
Bandala for a Mal		Reprints from Volume 10	
Reprints from Volume 9  156.Energy Levels of Magnesium, Mg I through Mg XII,  W.C. Martin and Romuald Zalubas, Vol 9, No. 1, pp. 1–58(1980)	\$6.00	174.Evaluated Activity and Osmotic Coefficients for Aqueous Solutions: Bi-Univalent Compounds of Zinc, Cadmium, and Ethylene Bis(Trimethylammonium) Chloride and Iodide, <i>R. N. Goldberg</i> , Vol. 10, No. 1, pp. 1–55 (1981)	\$6.00
157.Microwave Spectra of Molecules of Astrophysical Interest. XVIII. Formic Acid, Edmond Willemot, Didier Dangoisse, Nicole Monnanteuil, and Jean Bellet, Vol. 9, No. 1, pp. 59–160 (1980)	\$7.50	175.Tables of the Dynamic and Kinematic Viscosity of Aqueous KCl Solutions in the Temperature Range 25–150 °C and the Pressure Range 0.1–35 MPa, <i>Joseph Kestin, H. Ezzat Khalifa, and Robert J. Correia,</i> Vol.	ψ0.00
158.Refractive Index of Alkaline Earth Halides and Its Wavelength and Temperature Derivatives, H.H. Li, Vol.		10, No. 1, pp. 57–70 (1981)  176.Tables of the Dynamic and Kinematic Viscosity of	\$4.00
<ol> <li>No. 1, pp. 161–289 (1980).</li> <li>Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry, D.L. Baulch, R.A. Cox, R.F. Hampson, Jr., J.A. Kerr, J. Troe, and R.L. Watson, Vol. 9,</li> </ol>	\$8.50	Aqueous NaCl Solutions in the Temperature Range 20–150 °C and the Pressure Range 0.1–35 MPa, <i>Joseph Kestin, H. Ezzat Khalifa, and Robert J. Correia,</i> Vol. 10, No. 1, pp. 71–87 (1981)	<b>PE 00</b>
No. 2, pp. 295–471 (1980)  160.Energy Levels of Scandium, Sc I through Sc XXII, Jack Sugar and Charles Corliss, Vol. 9, No. 2, pp. 473–511	\$10.00	177.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. I. Selenium, <i>Umesh Gaur, Hua-Cheng Shu, Aspy Mehta, and Bernhard Wunder-</i>	\$5.00
(1980)	\$5.50	lich, Vol. 10, No. 1, pp. 89–117 (1981)	\$5.00

\$5.00

(Continuation of Cumulative Listing of Reprint	s)		
178.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. II. Polyethylene, <i>Umesh Gaur</i> and Bernhard Wunderlich, Vol. 10, No. 1, pp. 119–152 (1981)	\$5.50	197.Ideal Gas Thermodynamic Properties of CH ₃ , CD ₃ , CD ₄ , C ₂ D ₂ , C ₂ D ₄ , C ₂ D ₆ , C ₂ H ₆ , CH ₃ N ₂ CH ₃ , and CD ₃ N ₂ CD ₃ , <i>Krishna M. Pamidimukkala, David Rogers, and Gordon B. Skinner,</i> Vol. 11, No. 1, pp. 83–99 (1982)	\$6.00
179.Energy Levels of Sodium, Na I through Na XI, W. C. Martin and Romuald Zalubas, Vol. 10, No. 1, pp. 153–195 (1981)	\$5.50	<ul> <li>(1982)</li> <li>198.Peak Absorption Coefficients of Microwave Absorption Lines of Carbonyl Sulphide, Z. Kisiel and D. J. Millen, Vol. 11, No. 1, pp. 99–116 (1982)</li> </ul>	\$6.00
180.Energy Levels of Nickel, Ni I through Ni xxvIII, Charles Corliss and Jack Sugar, Vol. 10, No. 1, pp. 197–289 (1981)	\$7.00	199.Vibrational Contributions to Molecular Dipole Polarizabilities, <i>David M. Bishop and Lap M. Cheung</i> , Vol. 11, No. 1, pp. 119–133 (1982)	\$5.00
181.lon Product of Water Substance, 0–1000 °C, 1–10,000 bars New International Formulation and Its Background, <i>William L. Marshall and E. U. Franck</i> , Vol. 10, No. 2, pp. 295–304 (1981)	\$4.00	200.Energy Levels of Iron, Fe I through Fe xxvI, <i>Charles Corliss and Jack Sugar</i> , Vol. 11, No. 1, pp. 135–241 (1982)	\$11.00
182.Atomic Transition Probabilities for Iron, Cobalt, and Nickel (A Critical Data Compilation of Allowed Lines), J. R. Fuhr, G. A. Martin, W. L. Wiese, and S. M.		201.Microwave Spectra of Molecules of Astrophysical Interest. XXI. Ethanol(C ₂ H ₅ OH) and Propionitrile (C ₂ H ₅ CN), Frank J. Lovas, Vol. 11, No. 2, pp. 251–312 (1982)	\$8.00
Younger, Vol. 10, No. 2, pp. 305–565 (1981)  183.Thermodynamic Tabulations for Selected Phases in the System CaO-Al ₂ O ₃ SiO ₂ -H ₂ O at 101.325 kPa (1 atm) between 273.15 and 1800 K, <i>John L. Haas, Jr.</i> ,	\$12.50	202.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules, V. Polystyrene, <i>Umesh Gaur and Bernhard Wunderlich</i> , Vol. 11, No. 2, pp. 313–325 (1982)	\$5.00
Gilpin R. Robinson, Jr., and Bruce S. Hemingway, Vol. 10, No. 3, pp. 575–669 (1981)  184.Evaluated Activity and Osmotic Coefficients for	\$7.00	203.Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry: Supplement 1, CODATA Task Group on Chemical Kinetics, <i>D. L. Baulch, R. A. Cox</i> ,	
Aqueous Solutions: Thirty-Six Uni-Bivalent Electrolytes, R. N. Goldberg, Vol. 10, No. 3, pp. 671–764 (1981)  185.Activity and Osmotic Coefficients of Aqueous Alkali	\$7.00	P. J. Crutzen, R. F. Hampson, Jr., J. A. Kerr (Chairman), J. Troe, and R. T. Watson, Vol. 11, No. 2, pp. 327–496 (1982)	\$15.00
Metal Nitrites, <i>Bert R. Staples,</i> Vol. 10, No. 3, pp. 765–778 (1981)  186.Activity and Osmotic Coefficients of Aqueous Sulfuric	\$4.00	204.Molten Salts Data: Diffusion Coefficients in Single and Multi-Component Salt Systems, <i>G. J. Janz and N. P. Bansal</i> , Vol. 11, No. 3, pp. 505–693 (1982)	\$16.00
Acid at 298.15 K, <i>Bert R. Staples</i> , Vol. 10, No. 3, pp. 779–798 (1981)  187.Rate Constants for the Decay and Reactions of the	\$5.00	205.JANAF Thermochemical Tables, 1982 Supplement, M. W. Chase, Jr., J. L. Curnutt, J. R. Downey, Jr., R. A. McDonald, A. N. Syverud, and E. A. Valenzuela, Vol.	
Lowest Electronically Excited Singlet State of Molecular Oxygen in Solution, <i>Francis Wilkinson and James G. Brummer</i> , Vol. 10, No. 4, pp. 809–999 (1981)	\$10.00	11, No. 3, pp. 695–940 (1982) 206.Critical Evaluation of Vapor-Liquid Equilibrium, Heat of Mixing, and Volume Change of Mixing Data. General	\$20.00
188.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. III. Polyoxides, <i>Umesh Gaur and Bernhard Wunderlich</i> , Vol. 10, No. 4, pp. 1001–	45.50	Procedures, Buford D. Smith, Ol Muthu, Ashok Dewan, and Matthew Gierlach, Vol. 11, No. 3, pp. 941–951 (1982)	\$5.00
1049 (1981)  189.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. IV. Polypropylene, <i>Umesh</i>	\$5.50	207.Rate Coefficients for Vibrational Energy Transfer Involving the Hydrogen Halides, Stephen R. Leone, Vol. 11, No. 3, pp. 953–996 (1982)	\$7.00
Gaur and Bernhard Wunderlich, Vol. 10, No. 4, pp. 1051–1064 (1981)  190.Tables of N ₂ O Absorption Lines for the Calibration of	\$4.00	208.Behavior of the AB ₂ -Type Compounds at High Pressures and High Temperatures, <i>Leo Merrill</i> , Vol. 11, No. 4, pp. 1005–1064 (1982)	\$8.00
Tunable Infrared Lasers from 522 cm ⁻¹ to 657 cm ⁻¹ and from 1115 cm ⁻¹ to 1340 cm ⁻¹ , <i>W. B. Olson, A. G. Maki, and W. J. Lafferty</i> , Vol. 10, No. 4, pp. 1065–1084 (1981)	\$5.00	209.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. VI. Acrylic Polymers, Umesh Gaur, Suk-fai Lau, Brent B. Wunderlich, and Bernhard Wunderlich, Vol. 11, No. 4, pp. 1065–1089 (1982)	\$6.00
191.Microwave Spectra of Molecules of Astrophysical Interest. XX. Methane, <i>I. Ozier, M. C. L. Gerry, and A. G. Robiette,</i> Vol. 10, No. 4, pp. 1085–1095 (1981)	\$4.00	210.Molecular Form Factors and Photon Coherent Scattering Cross Sections of Water, L. R. M. Morin, Vol. 11, No. 4, pp. 1091–1098 (1982)	\$5.00
192.Energy Levels of Cobalt, Co I through Co xxvII., Jack Sugar and Charles Corliss, Vol. 10, No. 4, pp. 1097– 1174 (1981)	\$6.50	211.Evaluation of Binary <i>PTxy</i> Vapor–Liquid Equilibrium Data for C ₆ Hydrocarbons. Benzene + Cyclohexane, <i>Buford D. Smith, Ol Muthu, Ashok Dewan, and</i>	
193.A Critical Review of Henry's Law Constants for Chemicals of Environmental Interest, <i>Donald Mackay and Wan Ying Shiu</i> , Vol. 10, No. 4, pp. 1175–1199 (1981)	\$5.00	Matthew Gierlach, Vol. 11, No. 4, pp. 1099–1126 (1982)  212.Evaluation of Binary Excess Enthalpy Data for C ₆ Hydrographene Reprene - Cycloboxane Rytord D. Smith	\$6.00
194.Property, Materials, and Author Indexes to the Journal of Physical and Chemical Reference Data, Vol. 1–10, pp. 1205–1225 (1972–1981)	\$5.00	drocarbons. Benzene + Cyclohexane, Butord D. Smith, Ol Muthu, Ashok Dewan, and Matthew Gierlach, Vol. 11, No. 4, pp. 1127–1149 (1982)  213.Evaluation of Binary Excess Volume Data for C ₆ Hy-	\$6.00
Reprints from Volume 11	<del>-</del>	drocarbons. Benzene + Cyclohexane, <i>Buford D. Smith, Ol Muthu, Ashok Dewan, and Matthew Gierlach</i> , Vol. 11, No. 4, pp. 1151–1169 (1982)	\$6.00
195.A Fundamental Equation of State for Heavy Water, P.			
G. Hill, R. D. Chris MacMillan, and V. Lee, Vol. 11, No. 1, pp. 1–14 (1982)	\$5.00	Reprints from Volume 12	
196.Volumetric Properties of Aqueous Sodium Chloride Solutions, <i>P. S. Z. Rogers and Kenneth S. Pitzer</i> , Vol. 11, No. 1, pp. 15–81 (1982)	\$9.00	214.Thermodynamic Properties of Steam in the Critical Region, <i>J. M. H. Levelt Sengers, B. Kamgar-Parsi, F. W. Balfour, and J. V. Sengers,</i> Vol. 12, No. 1, pp. 1–28 (1983)	\$6.00

(Continuation of Cumulative Listing of Reprint	ts)		
215.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. VII. Other Carbon Backbone Polymers, <i>Umesh Gaur, Brent B. Wunderlich, and Bernhard Wunderlich,</i> Vol. 12, No. 1, pp. 29–63 (1983)	\$7.00	233.Evaluated Theoretical Cross Section Data for Charge Exchange of Multiply Charged Ions with Atoms. II. Hydrogen Atom-Partially Stripped Ion Systems, <i>J. W. Gallagher, B. H. Bransden, and R. K. Janev</i> , Vol. 12, No. 4, pp. 873–890 (1983)	\$6.00
216.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. VIII. Polyesters and Polya- mides, Umesh Gaur, Suk-fai Lau, Brent B. Wunderlich, and Bernhard Wunderlich, Vol. 12, No. 1, pp. 65–89 (1983)	\$6.00	234.Recommended Data on the Electron Impact Ionization of Light Atoms and Ions, K. L. Bell, H. B. Gilbody, J. G. Hughes, A. E. Kingston, and F. J. Smith, Vol. 12, No. 4, pp. 891–916 (1983)	\$6.00
217.Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. IX. Final Group of Aromatic and Inorganic Polymers, <i>Umesh Gaur, Suk-fai Lau, and Bernhard Wunderlich,</i> Vol. 12, No. 1, pp. 91–108 (1983)	\$6.00	235.A Correlation of the Viscosity and Thermal Conductivity Data of Gaseous and Liquid Ethylene, <i>P. M. Holland, B. E. Eaton, and H. J. M. Hanley</i> , Vol. 12, No. 4, pp. 917-932 (1983)	\$5.00
218.An Annotated Compilation and Appraisal of Electron Swarm Data in Electronegative Gases, <i>J. W. Gallagher, E. C. Beaty, J. Dutton, and L. C. Pitchford,</i> Vol. 12, No. 1, pp. 109–152 (1983)	\$7.00	<ul> <li>236.Transport Properties of Liquid and Gaseous D₂O over a Wide Range of Temperature and Pressure, <i>N. Matsunaga and A. Nagashima</i>, Vol. 12, No. 4, pp. 933–966 (1983)</li> </ul>	\$7.00
219.The Solubility of Oxygen and Ozone in Liquids, <i>Rubin Battino, Timothy R. Rettich, and Toshihiro Tominaga</i> , Vol. 12, No. 2, pp. 163–178 (1983)	\$5.00	237.Thermochemical Data for Gaseous Monoxides, <i>J. B. Pedley and E. M. Marshall</i> , Vol. 12, No. 4, pp. 967–1031 (1983)	\$9.00
220.Recommended Values for the Thermal Expansivity of Silicon from 0 to 1000 K, C. A. Swenson, Vol. 12, No. 2, pp. 179–182 (1983)	\$5.00	238.Vapor Pressure of Coal Chemicals, <i>J. Chao, C. T. Lin,</i> and <i>T. H. Chung</i> , Vol. 12, No. 4, pp. 1033–1063 (1983)	\$6.00
221.Electrical Resistivity of Ten Selected Binary Alloy Sys-		Reprints from Volume 13	
tems, C. Y. Ho, M. W. Ackerman, K. Y. Wu, T. N. Havill, R. H. Bogaard, R. A. Matula, S. G. Oh, and H. M. James, Vol. 12, No. 2, pp. 183–322 (1983)  222.Energy Levels of Silicon, Si I through Si xiv, W. C.	\$13.00	239.Thermodynamic Properties of Aqueous Sodium Chloride Solutions, <i>Kenneth S. Pitzer, J. Christopher Peiper, and R. H. Busey,</i> Vol. 13, No. 1, pp. 1–102 (1984)	\$11.00
Martin and Romuald Zalubas, Vol. 12, No. 2, pp. 323–380 (1983)  223.Evaluation of Binary PTxy Vapor-Liquid Equilibrium	\$8.00	240.Refractive Index of ZnS, ZnSe, and ZnTe and Its Wavelength and Temperature Derivatives, <i>H. H. Li</i> , Vol. 13, No. 1, pp. 103–150 (1984)	\$7.00
Data for C ₆ Hydrocarbons. Benzene + Hexane, <i>Buford D. Smith, Ol Muthu, and Ashok Dewan</i> , Vol. 12, No. 2, pp. 381–387 (1983)	\$5.00	241.High Temperature Vaporization Behavior of Oxides. I. Alkali Metal Binary Oxides, R. H. Lamoreaux and D. L. Hildenbrand, Vol. 13, No. 1, pp. 151–173 (1984)	\$6.00
224.Evaluation of Binary Excess Enthalpy Data for C ₆ Hydrocarbons. Benzene + Hexane, <i>Buford D. Smith, Ol Muthu, and Ashok Dewan,</i> Vol. 12, No. 2, pp, 389–393 (1983)	\$5.00	242.Thermophysical Properties of Fluid H ₂ O, <i>J. Kestin, J. V. Sengers, B. Kamgar-Parsi, and J. M. H. Levelt Sengers</i> , Vol. 13, No. 1, pp. 175–183 (1984)	\$5.00
225.Evaluation of Binary Excess Volume Data for C ₆ Hydrocarbons. Benzene + Hexane, <i>Buford D. Smith, Ol Muthu, and Ashok Dewan,</i> Vol. 12, No. 2, pp. 395–	25.00	243.Representative Equations for the Viscosity of Water Substance, <i>J. V. Sengers and B. Kamgar-Parsi</i> , Vol. 13, No. 1, pp. 185–205 (1984)	\$6.00
401 (1983)  226.Atlas of the High-Temperature Water Vapor Spectrum in the 3000 to 4000 cm ⁻¹ Region, <i>A. S. Pine, M. J. Coulombe, C. Camy-Peyret, and J-M. Flaud</i> , Vol. 12,	\$5.00	244.Atlas of the Schumann-Runge Absorption Bands of O ₂ in the Wavelength Region 175-205 nm, <i>K. Yo-shino, D. E. Freeman, and W. H. Parkinson</i> , Vol. 13, No. 1, pp. 207-227 (1984)	\$6.00
No. 3, pp. 413–465 (1983)  227.Small-Angle Rayleigh Scattering of Photons at High Energies: Tabulations of Relativistic HFS Modified Atomic Form Factors, <i>D. Schaupp, M. Schumacher, F.</i>	\$8.00	245.Equilibrium and Transport Properties of the Noble Gases and Their Mixtures at Low Density, <i>J. Kestin, K. Knierim, E. A. Mason, B. Najafi, S. T. Ro, and M. Waldman</i> , Vol. 13, No. 1, pp. 229–303 (1984)	\$9.00
Smend, P. Rullhusen, and J. H. Hubbell, Vol. 12, No. 3, pp. 467-512 (1983)  228.Thermodynamic Properties of D ₂ O in the Critical Re-	\$7.00	246.Evaluation of Kinetic and Mechanistic Data For Modeling of Photochemical Smog, <i>Roger Atkinson and Alan C. Lloyd</i> , Vol. 13, No. 2, pp. 315–444 (1984)	\$13.00
gion, <i>B. Kamgar-Parsi, J. M. H. Levelt Sengers, and J. V. Sengers,</i> Vol. 12, No. 3, pp. 513–529 (1983)	\$6.00	247.Rate Data for Inelastic Collision Processes in the Diatomic Halogen Molecules, <i>J. I. Steinfeld</i> , Vol. 13, No. 2, pp. 445–553 (1984)	\$11.00
229.Chemical Kinetic Data Sheets for High-Temperature Chemical Reactions, <i>N. Cohen and K. R. Westberg</i> , Vol. 12, No. 3, pp. 531–590 (1983)	\$8.00	248.Water Solubilities of Polynuclear Aromatic and Heteroaromatic Compounds, Robert S. Pearlman, Samuel H. Yalkowsky, and Sujit Banerjee, Vol. 13, No. 2, pp.	•
230.Molten Salts: Volume 5, Part 2. Additional Single and Multi-Component Salt Systems. Electrical Conductance, Density, Viscosity and Surface Tension Data, G. J. Janz and R. P. T. Tomkins, Vol. 12, No. 3, pp. 591–815 (1983)	\$19.00	555–562 (1984)  249.The Solubility of Nitrogen and Air in Liquids, <i>Rubin Battino, Timothy R. Rettich, and Toshihiro Tominaga,</i> Vol. 13, No. 2, pp. 563–600 (1984)	\$5.00 \$7.00
231.International Tables of the Surface Tension of Water, N. B. Vargaftik, B. N. Volkov, and L. D. Voljak, Vol. 12, No. 3, pp. 817–820 (1983)	\$5.00	250.Thermophysical Properties of Fluid D ₂ O, <i>J. Kestin, J. V. Sengers, B. Kamgar-Parsi, and J. M. H. Levelt Sengers,</i> Vol. 13, No. 2, pp. 601–609 (1984)	\$5.00
232.Evaluated Theoretical Cross Section Data for Charge Exchange of Multiply Charged Ions with Atoms. I. Hydrogen Atom-Fully Stripped Ion Systems, <i>R. K. Janev, B. H. Bransden, and J. W. Gallagher</i> , Vol. 12, No. 4, pp. 829–872 (1983)	\$7.00	251.Experimental Stark Widths and Shifts for Spectral Lines of Neutral Atoms (A Critical Review of Selected Data for the Period 1976 to 1982), <i>N. Konjević, M. S. Dimitrijević, and W. L. Wiese,</i> Vol. 13, No. 3, pp. 619–647 (1984)	\$6.00

(Continuation of Cumulative Listing of Reprin	ts)		
252.Experimental Stark Widths and Shifts for Spectral Lines of Positive Ions (A Critical Review and Tabulation of Selected Data for the Period 1976 to 1982), N. Konjević, M. S. Dimitrijević, and W. L. Wiese, Vol. 13, No. 3, pp. 649–686 (1984)	\$7.00	<ul> <li>271.Microwave Spectra of Molecules of Astrophysical Interest. XXII. Sulfur Dioxide (SO₂), F. J. Lovas, Vol. 14, No. 2, pp. 395–488 (1985)</li> <li>272.Evaluation of the Thermodynamic Functions for Asyrana Colorida.</li> </ul>	\$10.00
253.A Review of Deuterium Triple-Point Temperatures, L. A. Schwalbe and E. R. Grilly, Vol. 13, No. 3, pp. 687–693 (1984)	\$5.00	Aqueous Sodium Chloride from Equilibrium and Calorimetric Measurements below 154 °C, <i>E. Colin W. Clarke and David N. Glew</i> , Vol. 14, No. 2, pp. 489–610 (1985)	\$12.00
254.Evaluated Gas Phase Basicities and Proton Affinities of Molecules; Heats of Formation of Protonated Molecules, <i>Sharon G. Lias, Joel F. Liebman, and Rhoda D. Levin</i> , Vol. 13, No. 3, pp. 695–808 (1984)	\$12.00	273.The Mark-Houwink-Sakurada Equation for the Viscosity of Linear Polyethylene, <i>Herman L. Wagner</i> , Vol. 14, No. 2, pp. 611–617 (1985)	\$5.00
255.Isotopic Abundances and Atomic Weights of the Elements, <i>Paul De Bièvre, Marc Gallet, Norman E. Holden, and I. Lynus Barnes</i> , Vol. 13, No. 3, pp. 809–891	\$10.00	274.The Solubility of Mercury and Some Sparingly Soluble Mercury Salts in Water and Aqueous Electrolyte Solu- tions, H. Lawrence Clever, Susan A. Johnson, and M. Elizabeth Derrick, Vol. 14, No. 3, pp. 631–680 (1985)	\$8.00
(1984)  256.Representative Equations for the Thermal Conductivity of Water Substance, <i>J. V. Sengers, J. T. R. Watson, R. S. Basu, B. Kamgar-Parsi, and R. C. Hendricks,</i> Vol. 13, No. 3, pp. 893–933 (1984)	\$7.00	275.A Review and Evaluation of the Phase Equilibria, Liquid-Phase Heats of Mixing and Excess Volumes, and Gas-Phase <i>PVT</i> Measurements for Nitrogen + Methane, <i>A. J. Kidnay, R. C. Miller, E. D. Sloan, and M. J. Hiza,</i> Vol. 14, No. 3, pp. 681–694 (1985)	<b>\$5.00</b>
257.Ground-State Vibrational Energy Levels of Polyatomic Transient Molecules, <i>Marilyn E. Jacox</i> , Vol. 13, No. 4,	Ψ1.00	276.The Homogeneous Nucleation Limits of Liquids, <i>C. T. Avedisian</i> , Vol. 14, No. 3, pp. 695–729 (1985)	\$5.00 \$7.00
pp. 945–1068 (1984) 258.Electrical Resistivity of Selected Elements, <i>P. D. De-</i>	\$12.00	277.Binding Energies in Atomic Negative Ions: II, <i>H. Hotop</i> and <i>W. C. Lineberger</i> , Vol. 14, No. 3, pp. 731–750	Ψ1.00
sai, T. K. Chu, H. M. James, and C. Y. Ho, Vol. 13, No. 4, pp. 1069–1096 (1984)	\$6.00	(1985)  278.Energy Levels of Phosphorus, P I through P xv, W.	\$6.00
259.Electrical Resistivity of Vanadium and Zirconium, <i>P. D. Desai, H. M. James, and C. Y. Ho</i> , Vol. 13, No. 4, pp. 1097–1130 (1984)	\$7.00	C. Martin, Romuald Zalubas, and Arlene Musgrove, Vol. 14, No. 3, pp. 751–802 (1985)	\$8.00
260.Electrical Resistivity of Aluminum and Manganese, <i>P. D. Desai, H. M. James, and C. Y. Ho</i> , Vol. 13, No. 4,	\$7.00	279.Standard Chemical Thermodynamic Properties of Al- kene Isomer Groups, Robert A. Alberty and Catherine A. Gehrig, Vol. 14, No. 3, pp. 803–820 (1985)	\$6.00
<ul> <li>pp. 1131–1172 (1984)</li> <li>261.Standard Chemical Thermodynamic Properties of Alkane Isomer Groups, <i>Robert A. Alberty and Catherine A. Gehrig</i>, Vol. 13, No. 4, pp. 1173–1197 (1984)</li> </ul>	\$6.00	280.Standard Chemical Thermodynamic Properties of Alkylnaphthalene Isomer Groups, <i>Robert A. Alberty and Theodore M. Bloomstein</i> , Vol. 14, No. 3, pp. 821–837 (1985)	\$6.00
262.Evaluated Theoretical Cross-Section Data for Charge Exchange of Multiply Charged Ions with Atoms. III. Nonhydrogenic Target Atoms, <i>R. K. Janev and J. W. Gallagher</i> , Vol. 13, No. 4, pp. 1199–1249 (1984)	\$8.00	281.Carbon Monoxide Thermophysical Properties from 68 to 1000 K at Pressures to 100 MPa, <i>Robert D. Goodwin</i> , Vol. 14, No. 4, pp. 849-932 (1985)	\$10.00
263.Heat Capacity of Reference Materials: Cu and W, G. K. White and S. J. Collocott, Vol. 13, No. 4, pp. 1251–1257 (1984)	\$5.00	282.Refractive Index of Water and Its Dependence on Wavelength, Temperature, and Density, <i>I. Thormählen, J. Straub, and U. Grigull,</i> Vol. 14, No. 4, pp. 933–945 (1985)	\$5.00
264.Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry: Supplement II. CODATA Task Group on Gas Phase Chemical Kinetics, D. L. Baulch,		283. Viscosity and Thermal Conductivity of Dry Air in the Gaseous Phase, <i>K. Kadoya, N. Matsunaga, and A. Nagashima,</i> Vol. 14, No. 4, pp. 947–970 (1985)	\$6.00
R. A. Cox, R. F. Hampson, Jr., J. A. Kerr (Chairman), J. Troe, and R. T. Watson, Vol. 13, No. 4, pp. 1259–1380 (1984)	\$12.00	284.Charge Transfer of Hydrogen lons and Atoms in Metal Vapors, <i>T. J. Morgan, R. E. Olson, A. S. Schlachter, and J. W. Gallagher,</i> Vol. 14, No. 4, pp. 971–1040	<b>#0.00</b>
Reprints from Volume 14		(1985) 285.Reactivity of $HO_2/O_2^-$ Radicals in Aqueous Solution,	\$9.00
265.Thermodynamic Properties of Key Organic Oxygen Compounds in the Carbon Range C ₁ to C ₄ . Part 1. Properties of Condensed Phases, <i>Randolph C. Wilhoit, Jing Chao, and Kenneth R. Hall,</i> Vol. 14, No. 1, pp.		Benon H. J. Bielski, Diane E. Cabelli, Ravindra L. Arudi, and Alberta B. Ross, Vol. 14, No. 4, pp. 1041– 1100 (1985)	\$8.00
1–175 (1985)  266.Standard Chemical Thermodynamic Properties of Alkyl-	\$15.00	286.The Mark-Houwink-Sakurada Equation for the Viscosity of Atactic Polystyrene, <i>Herman L. Wagner</i> , Vol. 14, No. 4, pp. 1101–1106 (1985)	\$5.00
benzene Isomer Groups, Robert A. Alberty, Vol. 14, No. 1, pp. 177–192 (1985)  267.Assessment of Critical Parameter Values for H ₂ O and	\$5.00	287.Standard Chemical Thermodynamic Properties of Alkyl- cyclopentane Isomer Groups, Alkylcyclohexane Isomer	
D ₂ O, <i>J. M. H. Levelt Sengers, J. Straub, K. Watanabe, and P. G. Hill,</i> Vol. 14, No. 1, pp. 193–207 (1985)	\$5.00	Groups, and Combined Isomer Groups, Robert A. Alberty and Young S. Ha, Vol. 14, No. 4, pp. 1107–1132 (1985)	\$6.00
268.The Viscosity of Nitrogen, Oxygen, and Their Binary Mixtures in the Limit of Zero Density, Wendy A. Cole and William A. Wakeham, Vol. 14, No. 1, pp. 209–226 (1985)	\$6.00	Reprints from Volume 15	
269.The Thermal Conductivity of Fluid Air, K. Stephan and	23.00	288.Triplet-Triplet Absorption Spectra of Organic Molecules	
A. Laesecke, Vol. 14, No. 1, pp. 227–234 (1985) 270.The Electronic Spectrum and Energy Levels of the	\$5.00	in Condensed Phases, <i>lan Carmichael and Gordon L. Hug,</i> Vol. 15, No. 1, pp. 1–250 (1986)	\$20.00
Deuterium Molecule, <i>Robert S. Freund, James A. Schiavone, and H. M. Crosswhite,</i> Vol. 14, No. 1, pp. 235–383 (1985)	\$14.00	289.Recommended Rest Frequencies for Observed Interstellar Molecular Microwave Transitions—1985 Revision, <i>F. J. Lovas</i> , Vol. 15, No. 1, pp. 251–303 (1986)	\$8.00

•		•		
290	New International Formulations for the Thermodynamic Properties of Light and Heavy Water, <i>J. Kestin and J. V. Sengers</i> , Vol. 15, No. 1, pp. 305–320 (1986)	\$5.00	308.Rate Constants for Reactions of Radiation-Produced Transients in Aqueous Solutions of Actinides, <i>S. Gordon, J. C. Sullivan, and Alberta B. Ross,</i> Vol. 15, No. 4 a.c. 1957 1967 (1992)	<b>AT C</b>
291	Forbidden Lines in $ns^2np^k$ Ground Configurations and $nsnp$ Excited Configurations of Beryllium through Molybdenum Atoms and Ions, <i>Victor Kaufman and Jack Sugar</i> , Vol. 15, No. 1, pp. 321–426 (1986)	\$11.00	No. 4, pp. 1357–1367 (1986)  309.Thermodynamic Properties of Key Organic Oxygen Compounds in the Carbon Range C ₁ to C ₄ . Part 2. Ideal Gas Properties, <i>Jing Chao, Kenneth R. Hall,</i>	\$5.00
292	Thermodynamic Properties of Twenty-One Monocyclic Hydrocarbons, <i>O. V. Dorofeeva, L. V. Gurvich, and V. S. Jorish,</i> Vol. 15, No. 2, pp. 437–464 (1986)	\$6.00	Kenneth N. Marsh, and Randolph C. Wilhoit, Vol. 15, No. 4, pp. 1369–1436 (1986)	\$9.00
293	Evaluated Kinetic Data for High-Temperature Reactions. Volume 5. Part 1. Homogeneous Gas Phase Reactions of the Hydroxyl Radical with Alkanes, <i>D. L. Baulch, M. Bowers, D. G. Malcolm, and R. T. Tuckerman,</i> Vol. 15, No. 2, pp. 465–592 (1986)	\$12.00		
294	Thermodynamic Properties of Ethylene from the Freez-		Reprints from Volume 16	
	ing Line to 450 K at Pressures to 260 MPa, <i>Majid Jahangiri</i> , <i>Richard T Jacobsen</i> , <i>Richard B. Stewart</i> , and <i>Robert D. McCarty</i> , Vol. 15, No. 2, pp. 593–734 (1986)	\$13.00	310.Thermochemical Data on Gas Phase Compounds of Sulfur, Fluorine, Oxygen, and Hydrogen Related to Pyrolysis and Oxidation of Sulfur Hexafluoride, <i>John T. Herron,</i> Vol. 16, No. 1, pp. 1–6 (1987)	\$5.00
295	Thermodynamic Properties of Nitrogen from the Freezing Line to 2000 K at Pressures to 1000 MPa, <i>Richard T Jacobsen, Richard B. Stewart, and Majid Jahangiri</i> , Vol. 15, No. 2, pp. 735–909 (1986)	\$15.00	311.The Thermochemical Measurements on Rubidium Compounds: A Comparison of Measured Values with Those Predicted from the NBS Tables of Chemical	<b>V</b> 0.00
296	A Critical Review of Aqueous Solubilities, Vapor Pressures, Henry's Law Constants, and Octanol-Water Partition Coefficients of the Polychlorinated Biphenyls,		and Thermodynamic Properties, <i>V. B. Parker, W. H. Evans, and R. L. Nuttall,</i> Vol. 16, No. 1, pp. 7–59 (1987)	\$8.00
207	Wan Ying Shiu and Donald Mackay, Vol. 15, No. 2, pp. 911–929 (1986)  Computer Methods Applied to the Assessment of	\$6.00	312.Standard Thermodynamic Functions of Gaseous Polyatomic lons at 100–1000 K, <i>Aharon Loewenschuss and Yitzhak Marcus</i> , Vol. 16, No. 1, pp. 61–89	ec 00
231	Thermochemical Data. Part I. The Establishment of a Computerized Thermochemical Data Base Illustrated by Data for TiCl ₄ (g), TiCl ₄ (l), TiCl ₃ (cr), and TiCl ₂ (cr), S. P. Kirby, E. M. Marshall, and J. B. Pedley, Vol. 15,		(1987) 313.Thermodynamic Properties of Manganese and Molybdenum, <i>P. D. Desai</i> , Vol. 16, No. 1, pp. 91–108 (1987)	\$6.00 \$6.00
298	No. 3, pp. 943–965 (1986)  Thermodynamic Properties of Iron and Silicon, <i>P. D. Desai</i> , Vol. 15, No. 3, pp. 967–983 (1986)	\$6.00 \$6.00	314.Thermodynamic Properties of Selected Binary Aluminum Alloy Systems, <i>P. D. Desai</i> , Vol. 16, No. 1, pp. 109–124 (1987)	\$5.00
299	Cross Sections for Collisions of Electrons and Photons with Nitrogen Molecules, Y. Itikawa, M. Hayashi, A.	ψ0.00	315. ¹³ C Chemical Shielding in Solids, <i>T. M. Duncan</i> , Vol. 16, No. 1, pp. 125–151 (1987)	\$6.00
	Ichimura, K. Onda, K. Sakimoto, K. Takayanagi, M. Nakamura, H. Nishimura, and T. Takayanagi, Vol. 15, No. 3, pp. 985–1010 (1986)	\$6.00	316.The Mark–Houwink–Sakurada Relation for Poly(Methyl Methacrylate), Herman L. Wagner, Vol. 16, No. 2, pp. 165–173 (1987)	\$5.00
300	Thermochemical Data on Gas-Phase Ion-Molecule Association and Clustering Reactions, <i>R. G. Keesee and A. W. Castleman, Jr.</i> , Vol. 15, No. 3, pp. 1011–1071 (1986)	\$8.00	317.The Viscosity of Carbon Dioxide, Methane, and Sulfur Hexafluoride in the Limit of Zero Density, <i>R. D. Trengove and W. A. Wakeham,</i> Vol. 16, No. 2, pp. 175–187 (1987)	\$5.00
301	Standard Reference Data for the Thermal Conductivity of Liquids, C. A. Nieto de Castro, S. F. Y. Li, A. Nagashima, R. D. Trengove, and W. A. Wakeham,		318.The Viscosity of Normal Deuterium in the Limit of Zero Density, M. J. Assael, S. Mixafendi, and W. A. Wakeham, Vol. 16, No. 2, pp. 189–192 (1987)	\$5.00
302	Vol. 15, No. 3, pp. 1073–1086 (1986)  Chemical Kinetic Data Base for Combustion Chemistry. Part I. Methane and Related Compounds, W. Tsang and R. F. Hampson, Vol. 15, No. 3, pp. 1087–1279	\$5.00	319.Standard Chemical Thermodynamic Properties of Al- kanethiol Isomer Groups, <i>Robert A. Alberty, Ellen</i> <i>Burmenko, Tae H. Kang, and Michael B. Chung,</i>	¢5.00
	(1986)	\$17.00	Vol. 16, No. 2, pp. 193–208 (1987) 320.Evaluation of Binary Excess Volume Data for the	\$5.00
303	Improved International Formulations for the Viscosity and Thermal Conductivity of Water Substance, J. V. Sengers and J. T. R. Watson, Vol. 15, No. 4, pp.		Methanol + Hydrocarbon Systems, R. Srivastava and B. D. Smith, Vol. 16, No. 2, pp. 209–218 (1987)	\$5.00
304	1291-1314 (1986) The Viscosity and Thermal Conductivity of Normal Hy-	\$6.00	321.Evaluation of Binary Excess Enthalpy Data for the Methanol + Hydrocarbon Systems, <i>R. Srivastava and B. D. Smith,</i> Vol. 16, No. 2, pp. 219–237 (1987)	\$6.00
305	drogen in the Limit of Zero Density, <i>M. J. Assael, S. Mixafendi, and W. A. Wakeham,</i> Vol. 15, No. 4, pp. 1315–1322 (1986)  The Viscosity and Thermal Conductivity Coefficients of	\$5.00	322.Extinction Coefficients of Triplet-Triplet Absorption Spectra of Organic Molecules in Condensed Phases: A Least-Squares Analysis, <i>Ian Carmichael, W. P. Helman, and G. L. Hug,</i> Vol. 16, No. 2, pp. 239–260	
306	Gaseous and Liquid Argon, <i>B. A. Younglove and H. J. M. Hanley</i> , Vol. 15, No. 4, pp. 1323–1337 (1986)  Standard Chemical Thermodynamic Properties of Al-	\$5.00	(1987)  323.Evaluated Chemical Kinetic Data for the Reactions of Atomic Oxygen O( ³ P) with Unsaturated Hydrocarbons,	\$6.00
	kyne Isomer Groups, <i>Robert A. Alberty and Ellen Burmenko</i> , Vol. 15, No. 4, pp. 1339–1349 (1986)	\$5.00	R. J. Cvetanović, Vol. 16, No. 2, pp. 261-326 (1987) 324.Spectral Data for Molybdenum lons, Mo vi-Mo XLII,	\$9.00
307	Recent Progress in Deuterium Triple-Point Measurements, <i>L. A. Schwalbe</i> , Vol. 15, No. 4, pp. 1351–1356 (1986)	\$5.00	Toshizo Shirai, Yohta Nakai, Kunio Ozawa, Keishi Ishii, Jack Sugar, and Kazuo Mori, Vol. 16, No. 2, pp. 327–377 (1987)	\$8.00

325.Standard Chemical Thermodynamic Properties of Alkanol Isomer Groups, <i>Robert A. Alberty, Michael B. Chung, and Theresa M. Flood,</i> Vol. 16, No. 3, pp. 391–417 (1987)	\$6.00	334.Rate Data for Inelastic Collision Processes in the Diatomic Halogen Molecules. 1986 Supplement, <i>J. I. Steinfeld</i> , Vol. 16, No. 4, pp. 903–910 (1987) 335.Critical Survey of Data on the Spectroscopy and	\$5.00
326.High-Temperature Vaporization Behavior of Oxides II. Oxides of Be, Mg, Ca, Sr, Ba, B, Al, Ga, In, Tl, Si, Ge, Sn, Pb, Zn, Cd, and Hg, <i>R. H. Lamoreaux, D. L. Hildenbrand, and L. Brewer,</i> Vol. 16, No. 3, pp. 419–443 (1987)	\$6.00	Kinetics of Ozone in the Mesosphere and Thermosphere, <i>Jeffrey I. Steinfeld, Steven M. Adler-Golden, and Jean W. Gallagher</i> , Vol. 16, No. 4, pp. 911–951 (1987)	\$7.00
327.Equilibrium and Transport Properties of Eleven Polyatomic Gases at Low Density, <i>A. Boushehri, J. Bzowski, J. Kestin, and E. A. Mason,</i> Vol. 16, No. 3, pp. 445–466 (1987)	\$6.00	336.Critical Compilation of Surface Structures Determined by Low-Energy Electron Diffraction Crystallography, <i>Philip R. Watson</i> , Vol. 16, No. 4, pp. 953–992 (1987)	\$7.00
328. The Thermochemistry of Inorganic Solids IV. Enthalpies of Formation of Compounds of the Formula MX _a Y _b , <i>Mohamed W. M. Hisham and Sidney W. Benson</i> , Vol. 16, No. 3, pp. 467–470 (1987)	\$5.00	337.Viscosity and Thermal Conductivity of Nitrogen for a Wide Range of Fluid States, <i>K. Stephan, R. Krauss, and A. Laesecke,</i> Vol. 16, No. 4, pp. 993–1023 (1987)	\$6.00
329.Chemical Kinetic Data Base for Combustion Chemistry. Part 2. Methanol, <i>Wing Tsang</i> , Vol. 16, No. 3, pp. 471–508 (1987)	\$7.00	Reprints from Volume 17 338.Pressure and Density Series Equations of State for	
330.Phase Diagrams and Thermodynamic Properties of the 70 Binary Alkali Halide Systems Having Com- mon lons, <i>James Sangster and Arthur D. Pelton</i> ,	*****	Steam as Derived from the Haar–Gallagher–Kell Formulation, <i>R. A. Dobbins, K. Mohammed, and D. A. Sullivan</i> , Vol. 17, No. 1, pp. 1–8 (1988)	\$5.00
Vol. 16, No. 3, pp. 509–561 (1987) 331.Thermophysical Properties of Fluids. II. Methane, Ethane, Propane, Isobutane, and Normal Butane, B. A. Younglove and J. F. Ely, Vol. 16, No. 4, pp.	\$8.00	339.Absolute Cross Sections for Molecular Photoabsorption, Partial Photoionization, and Ionic Photofragmentation Processes, <i>J. W. Gallagher, C. E. Brion, J. A. R. Samson, and P. W. Langhoff</i> , Vol. 17, No. 1, pp. 9–153 (1988)	\$14.00
577–798 (1987) 332.Methanol Thermodynamic Properties from 176 to 673 K at Pressures to 700 Bar, <i>Robert D. Good-</i>	\$18.00	340.Energy Levels of Molybdenum, Mol through Moxul, Jack Sugar and Arlene Musgrove, Vol. 17, No. 1, pp. 155–239 (1988)	\$14.00
<ul><li>win, Vol. 16, No. 4, pp. 799–892 (1987)</li><li>333.International Equations for the Saturation Properties of Ordinary Water Substance, A. Saul and W.</li></ul>	\$10.00	341.Standard Chemical Thermodynamic Properties of Polycyclic Aromatic Hydrocarbons and Their Isomer Groups I. Benzene Series, <i>Robert A. Alberty and</i>	
Wagner, Vol. 16, No. 4, pp. 893–901 (1987)	\$5.00	Andrea K. Reif, Vol. 17, No. 1, pp. 241–253 (1988)	\$5.00

#### **Special Reprints Packages**

These special reprints packages offer selected articles in specific subject areas from the JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA, and they are offered at a better rate than when purchased individually. You will have available a complete library of literature for your specific requirements at a fraction of the cost of purchasing back issues of the journal.

Look over the reprints packages available—they are listed by subject area. In the Cumulative Listing of Reprints you will find the titles corresponding to the reprint numbers. You are sure to find building your information bank in this manner to be thorough and economical.

Package C1 (5 Parts) MOLECULAR VIBRATIONAL FREQUENCIES. Consisting of Reprint Nos. 103, 129, 170, 257, NSRD 39.  If purchased individually: Special package price:	\$ 33.00 <b>\$ 26.00</b>	Package C6 (9 Parts) THERMODYNAMIC PROPERTIES OF ELECTROLYTE SOLUTIONS. Consisting of Reprint Nos. 15, 95, 111, 151, 152, 174, 184, 185, 186.  If purchased individually:	\$ 46.00
Package C2 (22 Parts) ATOMIC ENERGY LEVELS.		Special package price:	\$ 37.00
Consisting of Reprint Nos. 26, 54, 64, 68, 94, 100, 109, 125, 126, 131, 132, 149, 150, 154, 156, 160, 179, 180, 192, 200, 222, 278. If purchased individually:	\$121.00	Package C7 (12 Parts) IDEAL GAS THERMODYNAMIC PROPERTIES. Consisting of Reprint Nos. 30, 42, 43, 62, 65, 66, 70, 80, 83, 113, 115, 141.	
Special package price:	\$ 96.00	If purchased individually:	\$ 38.00
		Special package price:	\$ 31.00
Package C3 (6 Parts) ATOMIC SPECTRA. Consisting of Reprint Nos. 33, 56, 77, 78, 110, 132.		Package C8 (7 Parts) RESISTIVITY. Consisting of Reprint	
If purchased individually:	\$ 33.00	Nos. 138, 139, 155, 221, 258, 259, 260.	
Special package price:	\$ 27.00	If purchased individually:	\$ 47.50
Pookago C4 /E Porto) ATOMIC TRANSITION		Special package price:	\$ 39.00
Package C4 (5 Parts) ATOMIC TRANSITION PROBABILITIES. Consisting of Reprint Nos. 20, 63, 82,		Package C9 (7 Parts) MOLTEN SALTS. Consisting of	
118, 182. If purchased individually:	\$ 35.00	Reprint Nos. 10, 41, 71, 96, 135, 167, 168.	
Special package price:	\$ 28.00	If purchased individually:	\$ 62.50
		Special package price:	\$ 44.00
Package C5 (7 Parts) MOLECULAR SPECTRA. Consisting			
of Reprint Nos. 4, 8, 53, 79, 93, 130, 146.		Package C10 (4 Parts) REFRACTIVE INDEX. Consisting of	
If purchased individually:	\$ 51.50	Reprint Nos. 81, 158, 162, 240.	A 00.50
Special package price:	\$ 41.00	lf purchased individually: Special package price:	\$ 32.50 <b>\$ 26.00</b>

#### Supplements to JPCRD

When the topic demands it, and the quality of the data justifies it, the JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA issues a special Supplement. Each Supplement is a monograph—collected tables of highly significant physical or chemical property data in one complete volume. Listed below are the special Supplements to JPCRD that have been published. Each is a valuable resource for the physical chemist and chemical physicist.

ATOMIC AND IONIC SPECTRUM LINES BELOW 2000 ANGSTROMS: HYDROGEN THROUGH KRYPTON, by Raymond L. Kelly. (Supplement No. 1 to Volume 16) 1987, 1689 pages, 3 volumes. Hardcover.  U.S. & Canada: Abroad:	\$75.00 \$90.00	D.D. Wagman, W.H. Evans, V.B. Parker, R.H. Schumm, I. Halow, S.M. Bailey, K.L. Churney, and R.L. Nuttall. (Supplement No. 2 to Volume 11) 1982, 394 pages. Hardcover.  U.S. & Canada: Abroad:	\$40.00 \$48.00
ATOMIC ENERGY LEVELS OF THE IRON-PERIOD ELEMENTS: POTASSIUM THROUGH NICKEL by J. Sugar and C. Corliss. (Supplement No. 2 to Volume 14) 1985, 664 pages. Hardcover.  U.S. & Canada: Abroad:	\$50.00 \$58.00	THERMOPHYSICAL PROPERTIES OF FLUIDS. 1. ARGON, ETHYLENE, PARAHYDROGEN, NITROGEN, NITROGEN TRIFLUORIDE, AND OXYGEN by B.A. Younglove. (Supplement No. 1 to Volume 11) 1982, 368 pages. Hardcover.  U.S. & Canada: Abroad: EVALUATED KINETIC DATA FOR HIGH TEMPERATURE	\$40.00 \$48.00
JANAF THERMOCHEMICAL TABLES, Third Edition by M. W. Chase, Jr., C. A. Davies, J. R. Downey, Jr., D. J. Frurip, R. A. McDonald, and A. N. Syverud. (Supplement No. 1 to Volume 14) 1985, 1896 pages, 2 volumes. Hardcover.  U.S. & Canada: Abroad:	\$130.00 \$156.00	REACTIONS: VOLUME 4, HOMOGENEOUS GAS PHASE REACTIONS OF HALOGEN- AND CYANIDE-CONTAINING SPECIES by D.L. Baulch, J. Duxbury, S.J. Grant, and D.C. Montague. (Supplement No. 1 to Volume 10) 1981, 721 pages. Hardcover. U.S. & Canada: Abroad: THERMAL CONDUCTIVITY OF THE ELEMENTS: A	\$80.00 \$96.00
HEAT CAPACITIES AND ENTROPIES OF ORGANIC COMPOUNDS IN THE CONDENSED PHASE by E.S. Domalski, W.H. Evans, and E.D. Hearing. (Supplement No. 1 to Volume 13) 1984, 288 pages. Hardcover.  U.S. & Canada: Abroad:	\$40.00 \$48.00	COMPREHENSIVE REVIEW by C.Y. Ho, R.W. Powell, and P.E. Liley. (Supplement No. 1 to Volume 3) 1974, 796 pages.*  U.S. & Canada: Abroad: PHYSICAL AND THERMODYNAMIC PROPERTIES OF ALIPHATIC ALCOHOLS by R.C. Wilhoit and B.J. Zwolinski. (Supplement No. 1 to Volume 2) 1973, 420	\$60/\$55 \$72/\$66
THE NBS TABLES OF CHEMICAL THERMODYNAMIC PROPERTIES. SELECTED VALUES FOR INORGANIC AND $\mathrm{C}_1$ AND $\mathrm{C}_2$ ORGANIC SUBSTANCES IN SI UNITS by		pages.* U.S. & Canada: Abroad:  *Prices are for hardcover/softcover.	\$33/\$30 \$40/\$36

^{&#}x27;Prices are for hardcover/softcover.



**Editors:** 

M.W. Chase, Jr.

C.A. Davies

D.J. Frurip

R.A. McDonald

A.N. Svverud

Nat'l Bureau of Standards

Dow Chemical U.S.A. J.R. Downey, Jr.

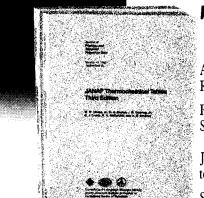
Dow Chemical U.S.A.

Dow Chemical U.S.A.

Dow Chemical U.S.A.

Dow Chemical U.S.A.

# RMOCHEMICAL



# ird Edition

A Major Supplement from JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA

Presenting Reliable Data Utilized by Chemists, Chemical Engineers, and Materials Scientists from Around the World for Over 25 Years

JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA is very pleased to publish the Third Edition of the JANAF THERMOCHEMICAL TABLES.

Since the first version appeared 25 years ago, the JANAF THERMOCHEMICAL TABLES have been among the most widely used data tables in science and engineering.

You'll find:

- Reliable tables of thermodynamic properties of substances of wide interest
- A highly professional approach with critical evaluations of the world's thermochemical and spectroscopic literature
- A concise and easy-to-use format

This Third Edition presents an extensive set of tables including thermodynamic properties of more than 1800 substances, expressed in SI units. The notation has been made consistent with current international recommendations.

There is no other reference source of thermodynamic data that satisfies the needs of such a broad base of users.

Order your 2-volume set of the JANAF THERMOCHEMICAL TABLES today! You'll get over 1890 pages of valuable information that is crucial to your research—in two hardback volumes.

#### SUBSCRIPTION INFORMATION

The JANAF THERMOCHEMICAL TABLES, THIRD EDITION is a twovolume supplement of Journal of Physical and Chemical Reference Data.

1896 pages, 2 volumes, hardcover ISBN 0-88318-473-7 Supplement Number 1 to Volume 14, 1985

U.S. & Canada \$130.00 All Other Countries \$156.00 (Postage included.)

#### All orders for supplements must be prepaid.

Foreign payment must be made in U.S. currency by international money order, UNESCO coupons, U.S. bank draft, or order through your subscription agency. For rates in Japan, contact Maruzen Co., Ltd. Please allow four to six weeks for your copy to be mailed.

For more information, write American Chemical Society, Marketing Communications Department, 1155 Sixteenth Street, NW, Washington, DC 20036.

In a hurry? Call TOLL FREE 800-227-558 and charge your order!



Published by the American Chemical Society and the American Institute of Physics for the National Bureau of Standards

# The Best Source of Quantitative Numerica Data of Physics and Published

## JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA

Editor, David R. Lide National Bureau of Standards

ublished quarterly by the American Chemical Society and the American Institute of Physics, the IOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA provides you with compilations and reviews produced under the National Standard Reference Data System (NSRDS) of the National Bureau of Standards.

chemists, physicists, materials scientists, engineers, and information specialists can all benefit from the reliable information available in this journal. You'll find data on:

- Atomic and Molecular Science
- Chemical Kinetics
- Spectroscopy
- Thermodynamics
- Transport Phenomena
- Crystallography
- Materials Science
- And much more!

he JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA contains recommended values, uncertainty limits, critical commentary on methods of measurement, and full references to the original papers.

oin the thousands of professionals who rely on the IOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA as a working tool for their

Physical AND CHEMICAL REFERENCE DATA is guaranteed to be a reliable, up-to-date reference source—you won't want to miss a single issue!

#### 1988 SUBSCRIPTION INFORMATION

JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE BATA is published quarterly, one volume per year. Volume 17 (1988), ISSN: 0074-2689

	u.		anada & Mexico	Europ Midea N. Afri	st &	Asia & ceanla*
Mambers (ACS, AIP,	and D	560 E	\$ 70	□ \$	<b>80</b> [	3 \$ 80
Sociatios Nonmemb	o sers □ \$	265 C	\$275	□ <b>\$2</b>	85 [	⊒ \$285

Surface rares are \$70 (mombers) and \$275 (nonmembers) to all countries. Mainber rares are far personal use only. "Air service included.

Tworder your JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA subscription, call 1014, FREE 800-227-5558 and charge your order! (U.S. Only) in D.C. or outside the U.S. call (202) 872-4363, or write: American Chemical Society, 1155 Sixteenth Street, NW, Washington, DC 20036, U.S.A.