

# PAUL F. GOLDSMITH

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## *Curriculum Vitae*

Citizenship: USA

### EDUCATION

American School of Paris, France	High School Diploma 1965
University of California, Berkeley	A.B. (Physics) 1969
University of California, Berkeley	Ph.D. (Physics) 1975

### POSITIONS HELD

2009 -	Adjunct Professor of Astronomy, University of Arizona, Tucson
2008 -	Chief Technologist, Astronomy and Physics Directorate, Jet Propulsion Laboratory
2006 -	Senior Research Scientist, Jet Propulsion Laboratory
	NASA Project Scientist, Herschel Space Observatory
	Visiting Associate, Department of Astronomy, Calif. Inst. Technology, Pasadena
2006 - 2008	Supervisor, Group 3266, Evolution of Galaxies
2005 - 2006	Principal Scientist, Jet Propulsion Laboratory, Calif. Inst. Technology, Pasadena
2005 -	Professor Emeritus of Astronomy, Cornell University
2000,2001,2004	Professeur Invité, Ecole Normale Supérieure, Paris, France
1999 - 2005	James Weeks Professor in the Physical Sciences, Department of Astronomy, Cornell University
1993 - 2002	Director, National Astronomy and Ionosphere Center
1993 - 2005	Professor, Department of Astronomy, Cornell University
1986 - 1992	Professor, Dept. of Physics & Astronomy, University of Massachusetts, Amherst
1982 - 1992	Vice President of Research and Development, Millitech Corporation
1981 - 1986	Associate Professor, Dept. of Physics & Astronomy, Univ. of Massachusetts, Amherst
1980 - 1992	Associate Director, Five College Radio Astronomy Observatory
1977 - 1980	Consultant, Lincoln Laboratory, Lexington, Massachusetts
1977 - 1979	Resident Visitor, Bell Laboratories, Holmdel, New Jersey
1977 - 1981	Assistant Professor, Dept. of Physics & Astronomy, Univ. of Massachusetts, Amherst
1975 - 1977	Member Technical Staff, Bell Laboratories, Crawford Hill Laboratory, New Jersey
1971 - 1975	Research Assistant, Dept. of Physics, University of California, Berkeley
1969 - 1970	Research Physicist, Lawrence Radiation Laboratory, Berkeley, California

### HONORS AND AWARDS

Fellow, Institute of Electrical and Electronics Engineers, 1991  
IEEE Microwave Theory & Techniques Society - Distinguished Lecturer, 1992  
James Weeks Professor in the Physical Sciences, Cornell University, 1999  
NASA Group Achievement Award, 2010  
NASA Exceptional Achievement Medal, 2010

### NATIONAL & INTERNATIONAL COMMITTEE SERVICE

Joseph Weber Award for Astronomical Instrumentation Committee, American Astronomical Society, 2003-2005

Chair, Scientific and Technical Advisory Committee for Large Millimeter Telescope (LMT) University of Massachusetts, Amherst, and INAOE (Mexico), 1994 -

## PUBLICATIONS

### Articles

“Collisional Excitation of Carbon Monoxide in Interstellar Clouds,” Goldsmith, P.F., *Ap.J.*, 176, 597, 1972.

“Measurement of Atmospheric Attenuation at 1.3 and 0.87 mm with an Harmonic Mixing Radiometer,” Goldsmith, P.F., Plambeck, R., and Chiao, R., *IEEE Trans. Microwave Theory Tech.*, MTT-22, 1115, 1974.

“Observations of the  $J = 2-1$  Transition of Carbon Monoxide in Interstellar Clouds,” Goldsmith, P.F., Plambeck, R., and Chiao, R., *Ap.J.*, 196, L39, 1975.

“Observations of the  $^{12}\text{C}/^{13}\text{C}$  Ratio in Four Galactic Sources of Formaldehyde,” Matsakis, D., Chui, M., Goldsmith, P.F., and Townes, C.H., *Ap.J. (Lett.)*, 206, L63, 1976.

“A 230 GHz Radiometer System Employing a Second Harmonic Mixer,” Goldsmith, P.F., and Plambeck, R., *IEEE Trans. Microwave Theory Tech.*, MTT-24, 859, 1976.

“Rotational Excitation of Molecules by Electrons in Interstellar Clouds,” Dickinson, A.S., Phillips, T.G., Goldsmith, P.F., Percival, I.C., and Richards, D., *Astron. Astrophys.*, 54, 645, 1977.

“Comparison of  $J = 2-1$  and  $J = 1-0$  Spectra of CO in Molecular Clouds,” Plambeck, R., Williams, D.R.W., and Goldsmith, P.F., *Ap.J. (Lett.)*, 213, L41, 1977.

“Isotopic Abundance Variations in Interstellar HCN,” Linke, R.A., Goldsmith, P.F., Wannier, P.G., Wilson, R.W., and Penzias, A.A., *Ap.J.*, 214, 50, 1977.

“A Quasioptical Feed System for Radioastronomical Observations at Millimeter Wavelengths, B.S.T.J., 56, 1483, 1977.

“Molecular Cooling and Thermal Balance of Dense Interstellar Clouds,” Goldsmith, P.F. and Langer, W.D., *Ap.J.*, 222, 881, 1978.

“Carbon Monoxide Mixing Ratio in the Mesosphere Derived From Ground-Based Microwave Measurements,” Goldsmith, P.F., Litvak, M.M., Plambeck, R.L., and Williams, D.R.W., *J. Geophys. Res.*, 84, 416, 1979.

“Microwave Radiometer Blackbody Calibration Standard for Use at Millimeter Wavelengths,” Goldsmith, P.F., Kot, R.A., and Iwasaki, R.S., *Rev. Sci. Instrum.*, 50(9), 1120, 1979.

“Tunable Submillimeter Sources Applied to Excited State Rotational Spectroscopy and Kinetics of  $\text{CH}_3\text{F}$ ,” Blumberg, W., Fetterman, H., Goldsmith, P.F., and Peck, D., *Appl. Phys. Lett.*, 35(8),

1979.

“Evidence for Isotopic Fractionation of Carbon Monoxide in Dark Clouds,” Langer, W.D., Goldsmith, P.F., Carlson, E.R., and Wilson, R.W., *Ap.J. (Lett.)*, 235, L39, 1980.

“Observations of Interstellar Carbon Monosulfide – Evidence for Turbulent Cores in Giant Molecular Clouds,” Linke, R.A. and Goldsmith, P.F., *Ap.J.*, 235, 437, 1980.

“Baseline Ripple Reduction by Quasi-Optical Phase Modulation,” Goldsmith, P.F. and Scoville, N.Z., *Astron. Astrophys.*, 82, 337, 1980.

“High Angular Resolution Observations of CS in the Orion Nebula,” Goldsmith, P.F., Langer, W.D., Schloerb, F.P., and Scoville, N.Z., *Ap.J.*, 240, 524, 1980.

“A Quasi-Optical Single Sideband Filter Employing a Semiconfocal Resonator,” Goldsmith, P.F. and Schlossberg, H., *IEEE Trans. Microwave. Theory. Tech.*, MTT-28, 1136, 1980.

“CO Abundance and Isotopic Fractionation in Dark Clouds,” Goldsmith, P.F., Langer, W.D., Carlson, E.R., and Wilson, R.W., *Proc. IAU Symposium 87: Interstellar Molecules*, B.H. Andrew, ed., Dordrecht: Reidel, 417, 1980.

“Molecular Cloud Densities from Observations of Carbon Mono- sulfide,” Linke, R.A. and Goldsmith, P.F., *Proc. IAU Symposium 87: Interstellar Molecules*, B.H. Andrew, ed., Dordrecht: Reidel, 117, 1980.

“A Cooled Schottky-Diode Mixer for 75–120 GHz,” Raisanen, A.V., Predmore, C.R., Parrish, P.T., Marrero, J.L., Goldsmith, P.F., Kot, R.A., and Schneider, M.V., *Proc. 10th European Microwave Conference*, Warsaw, Poland, Sept., 1980.

“Groundbased Heterodyne Observation of CO at 691 GHz,” Koepf, G.A., Fetterman, H.R., Goldsmith, P.F., Clifton, B.J., Buhl, D., Erickson, N.R., McAvoy, N., and Tannenwald, P.E., *Proc. Fifth Int'l. Conf. IR and MM Waves*, Wurzburg, 189, 1980.

“A Study of Interstellar Carbonyl Sulfide,” Goldsmith, P.F. and Linke, R.A., *Ap.J.*, 240, 524, 1980.

“Detection of the  $J = 6-5$  Transition of Carbon Monoxide,” Goldsmith, P.F., Erickson, N.R., Fetterman, H.R., Clifton, B.J., Peck, D.D., Tannenwald, P.E., Koepf, G.A., Buhl, D., and McAvoy, N., *Ap.J.(Lett.)*, 243, L79, 1981.

“A Determination of the Carbon and Oxygen Isotopic Ratios in the Local Interstellar Medium,” Wilson, R.W., Langer, W.D., and Goldsmith, P.F., *Ap.J.(Lett.)*, 243, L47, 1981.

“Submillimeter Heterodyne Detection of Interstellar Carbon Monoxide at 434 Micrometers,” Fetterman, H.R., Koepf, G.A., Clifton, B.J., Buhl, D., Erickson, N.R., Peck, D.D., Goldsmith, P.F., McAvoy, N., and Tannenwald, P.E., *Science*, 211, 580, 1981.

“Infrared Pumping and Rotational Excitation of Molecules in Interstellar Clouds,” Carroll, T.J. and Goldsmith, P.F., *Ap.J.*, 245, 891, 1981.

“Determination of HNC to HCN Abundance Ratio in Giant Molecular Clouds,” Goldsmith, P.F., Langer, W.D., Elder, J., Irvine, W., and Kollberg, E., *Ap.J.*, 249, 524, 1981.

- “Cryogenic Operation of Submillimeter Quasioptical Mixers,” Goldsmith, P.F., Fetterman, H.R., Clifton, B.J., Parker, C.D., and Erickson, N.R., *Int. J. Infrared and MM Waves*, 2(5), 915, 1981.
- “Coupling of the Magnetic Field and Rotation in the Dark Cloud B5,” Young, J.S., Langer, W.D., Goldsmith, P.F., and Wilson, R.W., *Ap.J.(Lett.)*, 251, L81, 1981.
- “An Ultra Low-Noise Schottky Mixer Receiver at 80-120 GHz,” Raisanen, A., Erickson, N., Marrero, J., Goldsmith, P.F., and Predmore, C.R., *Proc. Sixth Int. Conf. IR and MM Waves*, W-3-8, 1981.
- “Molecular Line Mapping of OMC-1,” Schloerb, F.P., Goldsmith, P.F., and Scoville, N.Z., *Regions of Recent Star Formation*, Roger and Dewdney, eds., Dordrecht: Reidel, 439, 1982.
- “Kinematics of Molecular Gas in Orion from Observations of the  $^{13}\text{CO}$  Line,” Goldsmith, P.F., Arquilla, R., Schloerb, F.P., and Scoville, N.Z., *Regions of Recent Star Formation*, Roger and Dewdney, eds., Dordrecht: Reidel, 295, 1982.
- “Quasioptical Techniques at Millimeter and Submillimeter Wavelengths,” Ch. 6 of *Millimeter and Infrared Waves*, K.J. Button, ed. New York: Academic Press, 277, 1982.
- “Diffraction Loss in Dielectric-Filled Fabry-Perot Interferometers,” *IEEE Trans. Microwave Theory Tech.*, MTT-30, 820, 1982.
- “Vibrationally Excited Cyanoacetylene in the Orion Molecular Cloud,” Goldsmith, P.F., Snell, R.L., Deguchi, S., and Krotkov, R., *Ap.J.*, 260, 147, 1982.
- “The Performance of the Multiple Mirror Telescope: X. The First Sub-Millimeter Phased Array,” Ulich, B.L., Lada, C.J., Erickson, N.R., Goldsmith, P.F., and Huguenin, G.R., *Proc. Int. Conf. on Advanced Technology Optical Telescopes*, Tucson, AZ, 82, 1982.
- “Cryogenic Receivers for Millimeter and Near Millimeter Wavelengths,” Huguenin, G.R., Goldsmith, P.F., Erickson, N.R., and Predmore, C.R., *Proc. SPIE*, 337, 36, 1982.
- “Physical Conditions and Carbon Monoxide Abundance in the Dark Cloud B5,” Young, J.S., Goldsmith, P.F., Langer, W.D., Wilson, R.W., and Carlson, E.R., *Ap.J.*, 261, 513, 1982.
- “High Velocity Emission in the Orion Molecular Cloud,” *Proc. ESTEC Workshop on “The Scientific Importance of Submillimeter Observations,” Noordwijkerhout, Holland*, 37, 1982.
- “Quasioptics in Millimeterwave Systems,” *Proc. 12th European Microwave Conf., Helsinki, Finland, Sept.*, 13, 1982.
- “3mm Continuous Comparison Radiometer,” Predmore, C.R., Erickson, N.R., Huguenin, G.R., and Goldsmith, P.F., *Proc. 12th European Microwave Conf., Helsinki, Finland, Sept.*, 85, 1982.
- “Detection of Bipolar CO Outflow in Orion,” Erickson, N.R., Goldsmith, P.F., Snell, R.L., Berson, R.L., Huguenin, G.R., Ulich, B.L., and Lada, C.J., *Ap.J.(Lett.)*, 261, L103, 1982.
- “Submillimeter Observations of Molecules and The Structure of Giant Molecular Clouds,” Goldsmith, P.F., *Proc. XVI ESLAB Symposium on Galactic and Extragalactic Infrared Astronomy*,

Toledo, Spain, 233, 1982.

“Curves for the Analysis of the Two Lowest Rotational Transitions of Carbon Monoxide,” Goldsmith, P.F., Langer, W.D., and Young, J.S., *Ap.J. Suppl.*, 51, 203, 1983.

“Molecular Gas in the W33 Region,” Goldsmith, P.F. and Mao, X., *Ap.J.*, 265, 791, 1983.

“Very Long Baseline Interferometry at a Wavelength of 3.4mm,” Readhead, A.C.S., Masson, C.R., Moffet, A.T., Pearson, T.J., Seielstad, G.A., Woody, D.P., Backer, D.C., Plambeck, R.L., Welch, W.J., M.C.H., Rogers, A.E.E., Webber, J.C., Shapiro, I.I., Moran, J.M., Goldsmith, P.F., Predmore, C.R., Baath, L., and Ronnang, B., *Nature*, 303, 504, 1983.

“Detection of Interstellar  $\text{HOC}^+$ , and the  $[\text{HCO}^+]/[\text{HOC}^+]$  Abundance Ratio in Molecular Clouds,” Woods, R.C., Gudeman, C.S., Dickman, R.L., Goldsmith, P.F., Huguenin, G.R., Irvine, W.M., Hjalmarson, A., Nyman, L.A., and Olofsson, H., *Ap.J.*, 270, 583, 1983.

“Vibrationally Excited  $\text{CH}_3\text{CN}$  and  $\text{HC}_3\text{N}$  in Orion,” Goldsmith, P.F., Krotkov, R., Snell, R.L., Brown, R.D., and Godfrey, P., *Ap.J.*, 274, 184, 1983.

“Quasioptical Techniques Offer Advantages at Millimeter Frequencies,” *Microwave Systems News*, 13, 65, 1983.

“Models of Molecular Clouds: I. Multitransition Study of CS,” Snell, R.L., Mundy, L.G., Goldsmith, P.F., Evans, N.J. II, and Erickson, N.R., *Ap.J.*, 276, 625, 1984.

“A Broadband, Ultra Low-Noise Schottky Mixer Receiver from 80 to 115 GHz,” Predmore, C.R., Raisanen, A.V., Marrero, J.F., Erickson, N.R., and Goldsmith, P.F., *IEEE Trans. Microwave Theory Tech.*, MTT-32, 498, 1984.

“Gaussian Optics Lens Antennas,” Goldsmith, P.F. and Moore, E.L., *Microwave Journal*, 27, No. 7, 153, 1984.

“The Molecular Cloud Associated with the Infrared Source GL437,” Arquilla, R. and Goldsmith, P.F., *Ap.J.*, 279, 664, 1984.

“Structure of the L1535 Dark Cloud and the Velocity Field in the Taurus Molecular Complex,” Goldsmith, P.F. and Sernyak, M.J. Jr., *Ap.J.*, 283, 140, 1984.

“New SiO Maser Sources: Red Supergiants in the Vicinity of Molecular Clouds,” Ukita, N. and Goldsmith, P.F., *Astron. Astrophys.*, 138, 194, 1984.

“A Continuous Comparison Radiometer at 97 GHz,” Predmore, C.R., Erickson, N.R., Huguenin, G.R., Goldsmith, P.F., *IEEE Trans. Microwave Theory Tech.*, MTT-33, 44, 1984.

“Rotation in Dark Clouds,” Goldsmith, P.F. and Arquilla, R.A., *Protostars and Planets II*, D.C. Black and M.S. Matthews eds., Tucson: University of Arizona Press, 137, 1985.

“Bipolar Outflows in Dark Clouds,” Goldsmith, P.F., Snell, R.L., Hemeon-Heyer, M., and Langer, W.D., *Ap.J.*, 286, 599, 1984.

“Recent Progress in Quasioptical Techniques at Millimeter and Sub-millimeter Wavelengths,” Proc. 9th Infrared and Millimeter Wave Conference, Takarazuka, Japan, October, 491, 1984.

“Technique Allows Measurement of Small Millimeter Antenna Patterns,” Goldsmith, P.F., and Moore, E.L., MSN, 14 (No. 13), 59, 1984.

“Search for Molecular Oxygen in Dense Interstellar Clouds,” Goldsmith, P.F., Snell, R.L., Erickson, N.R., Dickman, R.L., Schloerb, F.P., and Irvine, W.M., Ap.J., 289, 613, 1985.

“Gaussian Beam Imaging with Cylindrical Optics,” 1985 International Microwave Symposium, MTT-S Digest, 173, 1985.

“HCN Emission from OH Infrared Sources,” Deguchi, S. and Goldsmith, P.F., Nature, 317, 336, 1985.

“Density Distributions in Dark Clouds,” Arquilla, R. and Goldsmith, P.F., Ap.J., 297, 436, 1985.

“Further Study of Vibrationally Excited Cyanoacetylene in Orion IRC2 and Other Sources,” Goldsmith, P.F., Krotkov, R., and Snell, R.L., Ap.J., 299, 40, 1985.

“Waveguide Submillimeter Mixers,” Proc. Conf. on Instrumentation for Submillimeter Spectroscopy,” SPIE 598, Cannes, 52, 1985.

“Molecular Outflows Associated with IRAS Sources in B5,” Langer, W.D., Goldsmith, P.F., and Wilson, R.W., Proc. Haystack Meeting, Masers, Molecules, and Mass Outflows in Star Forming Regions, A.D. Haschick, ed., 169, 1986.

“Holographic Measurements,” Goldsmith, P.F. and Erickson, N.R., in Radio Astronomy (2nd edition) by J. Kraus. Powell: Cygnus-Quasar Books, 6-62, 1986.

“Gaussian Beam Transformation with Cylindrical Lenses,” Goldsmith, P.F., IEEE Trans. Antennas Propag., AP-34, 603, 1986.

“A Detailed Examination of the Kinematics of Rotating Clouds,” Arquilla R. and Goldsmith, P.F., Ap.J., 303, 356, 1986.

“HCN Emission from Bipolar Reflection Nebulae,” Deguchi, S., Claussen, M.J., and Goldsmith, P.F., Ap.J., 303, 810, 1986.

“Molecular Outflows, Gas Density Distribution, and the Effects of Star Formation in the Dark Cloud B5,” Goldsmith, P.F., Langer, W.D., and Wilson, R.W., Ap.J.(Lett.), 303, L11, 1986.

“Submillimeter Observations of CS in M17,” Snell, R.L., Erickson, N.R., Goldsmith, P.F., Ulich, B.L., Lada, C.J., Martin, R.N., and Schulz, A., Ap.J., 304, 780, 1986.

“Solid State Submillimeter Radiometer for Space Applications,” P. Goldsmith, N. Erickson, A. Vickery, and N. Deo, Proc. ESA Workshop on a Space-Borne Sub-Millimetre Astronomy Mission, Segovia, Spain, June 1986, 221.

“Models of Molecular Cores II: Multi-transition Study of C<sup>34</sup>S,” Mundy, L.G., Snell, R.L., Evans, N.J. II, Goldsmith, P.F., and Bally, J., Ap.J., 306, 670, 1986

“A Study of the Morphology and Kinematics of the Dense Gas Associated with Star Forming Regions,” Heyer, M.H., Snell, R.L., Goldsmith, P.F., Snell, R.L., Strom, S.E., and Strom, K.M., *Ap.J.*, 308, 134, 1986.

“Dielectric Wedge Conical Scanned Gaussian Optics Lens Antenna,” Goldsmith, P.F. and Gill, G.J., *Microwave Journal*, 29, 207, 1986.

“Variations in the HCN/HNC Abundance Ratio in the Orion Molecular Cloud,” Goldsmith, P.F., Irvine, W.M., Hjalmarson, A., and Ellder, J., *Ap.J.*, 310, 383, 1986.

“1300 Micron Continuum Observations of the Sagittarius B2 Molecular Cloud Core,” Goldsmith, P.F., Snell, R.L., and Lis, D.C., *Ap.J.*, 313, L5, 1987.

“Small-Scale Structure and Chemical Differentiation in the Central Region of the Sagittarius B2 Molecular Clouds,” Goldsmith, P.F., Snell, R.L., Hasegawa, T., and Ukita, N., *Ap.J.*, 314, 525, 1987.

“Molecular Clouds: An Overview,” Goldsmith, P.F., *Interstellar Processes*, D.J. Hollenbach and H.A. Thronson eds., Dordrecht: Reidel, 51, 1987.

“Chemical Abundances in Molecular Clouds,” Irvine, W.M., Goldsmith, P.F., and Hjalmarson, A., *Interstellar Processes*, D.J. Hollenbach and H.A. Thronson eds., Dordrecht: Reidel, 561, 1987.

“Radiation Patterns of Circular Apertures with Gaussian Illumination,” Goldsmith, P.F., *Int’l Journal of Infrared and Millimeter Waves*, 8, 771, 1987.

“Models of Molecular Cloud Cores, III. A Multitransition Study of H<sub>2</sub>CO,” Mundy, L.G., Evans, N.J. II, Snell, R.L., and Goldsmith, P.F., *Ap.J.*, 318, 392, 1987.

“Designing Quasioptical Systems,” Goldsmith, P.F., *Microwave Systems Designers Handbook*, MSN 17, 182, 1987.

“A Survey of IRAS Point Sources in Taurus for High-Velocity Molecular Gas,” Heyer, M.H., Snell, R.L., Goldsmith, P.F., and Myers, P.C., *Ap.J.*, 321, 370, 1987.

“The Magnetic Evolution of the Taurus Molecular Clouds. I. Large - Scale Properties,” Heyer, M.H., Vrba, F.J., Snell, R.L., Schloerb, F.P., Strom, S.E., Goldsmith, P.F., and Strom, K.M., *Ap.J.*, 321, 855, 1987.

“The Vicinity of Omicron Per,” Bachiller, R., Cernicharo, J., Goldsmith, P., and Omont, A., *Astron. Astrophys.*, 185, 297, 1987.

“Optiguide: A Modular Approach to Gaussian Beam Waveguide,” Moore, E.L. and Goldsmith, P.F., *Microwave Journal*, November, 131, 1987.

“A Modular Approach to Beam Waveguide – The Optiguide System,” Goldsmith, P.F. and Moore, E.M., *Proc. 12th IR and MM Waves Conference*, Orlando, Florida, 172, 1987.

“A 3mm Heterodyne Imaging Array,” Erickson, N.R., Goldsmith, P.F., Predmore, C.R., and Viscuso, P., *Proc. 12th IR and MM Waves Conference*, Orlando, Florida, 218, 1987.

“Dense Cores in Dark Clouds: V. CO Outflow,” Myers, P.C., Heyer, M., Snell, R.L., and Goldsmith, P.F., *Ap.J.*, 324, 907, 1988.

“1.4MM H<sub>2</sub>CO Observations of NGC2071,” Tauber, J., Goldsmith, P.F., and Snell, R.L., *Ap.J.*, 325, 846, 1988.

“Linear Polarization of Millimeter–Wave Emission Lines in Clouds Without Large Velocity Gradients,” Lis, D.C., Goldsmith, P.F., Dickman, R.L., Predmore, C.R., Omont, A., and Cernicharo, J., *Ap.J.*, 328, 304, 1988.

“Linear Polarization of HCN Maser Emission in CIT 6,” Goldsmith, P.F., Lis, D.C., Guilloteau, S., and Omont, A., *Proc. Second Haystack Observatory Meeting on Interstellar Molecules*, J.M. Moran and P.T.P. Ho, eds., Montreux: Gordon and Breach, 225, 1988.

“A Submillimeter Receiver at 492 GHz,” Tauber, J.A., Erickson, N.R., Goldsmith, P.F., and Snell, R.L., *Proc. Second Haystack Observatory Meeting Interstellar Molecules*, J.M. Moran and P.T.P. Ho, eds., Montreux: Gordon and Breach, 253, 1988.

“Infrared Limb Brightening in the Barnard 5 Cloud,” Beichman, C.A., Wilson, R.W., Langer, W.D., and Goldsmith, P.F., *Ap.J.(Lett.)*, 332, L81, 1988.

“Linear Polarization of HCN Maser Emission in CIT6,” Goldsmith, P.F., Lis, D.C., Omont, A., Guilloteau, S., and Lucas, R., *Ap.J.*, 333, 873, 1988.

“Identification of RN043 and B335 as Two Highly Collimated Bipolar Outflows Oriented Nearly in the Plane of the Sky,” Cabrit, S., Goldsmith P.F., and Snell, R.L., *Ap.J.*, 334, 196, 1988.

“Temperatures and Densities in Interstellar Molecular Clouds,” Goldsmith, P.F., *Proc. FCRAO Conference on Molecular Clouds in the Milky Way and Other Galaxies*, R. Dickman, R. Snell, and J.S. Young, eds., Berlin: Springer, 1, 1988.

“RNO43 and B335: Two Examples of Highly Collimated Bipolar Flows Oriented Nearly in the Plane of the Sky,” Cabrit, S., Goldsmith, P.F., and Snell, R.L., *Proc. FCRAO Conference on Molecular Clouds in the Milky Way and Other Galaxies*, R. Dickman, R. Snell, and J.S. Young, eds., Berlin: Springer, 275, 1988.

“CO J = 3–2 Observations of IRC+10216,” Tauber, J.A., Kwan, J., Goldsmith, P.F., Snell, R.L., and Erickson, N.R., *Astron.J.*, 97, 236, 1989.

“Dust and Gas Emission in Barnard 5,” Langer, W.D., Wilson, R.W., Goldsmith, P.F., and Beichman, C.A., *Ap.J.*, 337, 355, 1989.

“CO Isotope Studies and Mass of the Sagittarius B2 Molecular Cloud,” Lis, D.C., and Goldsmith, P.F., *Ap.J.*, 337, 704, 1989.

“Gaussian Beam Techniques for Illuminating Reflector Antennas,” McEwan, N.J. and Goldsmith, P.F., *IEEE Trans. Antennas Propagation*, 37, 297, 1989.

“Search for Molecular Oxygen in VII Zw 31,” Goldsmith, P.F. and Young, J.S., *Ap.J.*, 341, 717, 1989.

“Search for Circular Polarization of HCN Maser Emission in CIT6,” Lis, D.C., Goldsmith, P.F., and



Predmore, C.R., Ap.J., 341, 823, 1989.

“Focal Plane Imaging Array for Astronomical Spectroscopy at 3mm Wavelength,” Goldsmith, P.F., Erickson, N.R., Predmore, C.R., Viscuso, P.J., and Novak, G., Proc. Conf.: The Physics and Chemistry of Interstellar Molecular Clouds, G. Winnewisser and J.T. Armstrong, eds., Berlin: Springer, 389, 1989.

“Design of Elliptical and Offset Reflector Antennas Using Gaussian Beam Theory,” McEwan, N.J. and Goldsmith, P.F., Proc. 6th Int'l. Conference on Antennas and Propagation, Warwick, U.K., 1989.

“Millimeter–Wavelength Optical Systems Come of Age,” Goldsmith, P.F., Photonics Spectra, 23, 147, 1989.

“High Angular Resolution Submillimeter Observations of Sgr B2,” Goldsmith, P.F., Lis, D.C., Hills, R., and Lasenby, J., Ap.J., 350, 186, 1990.

“Flexible Circular Waveguides at Millimeter Wavelengths from Metallized Teflon Tubing,” Obrzut, J. and Goldsmith, P.F., IEEE Trans. Microwave Theory Tech., MTT-38, 324, 1990.

“A 15 Element Imaging Array for 100 GHz,” Erickson, N.R., Goldsmith, P.F., Predmore, C.R., Novak, G.A., and Viscuso, P.J., Proc. IEEE-MTT Conf. Dallas, 973, May, 1990.

“Polarization of the 1.3 Millimeter Continuum Radiation from the Kleinmann–Low Nebula,” Novak, G., Predmore, C.R., and Goldsmith, P.F., Ap.J., 355, 166, 1990.

“Submillimeter Wave Astronomy Satellite,” Goldsmith, P.F., Proc. First International Symposium on Space Terahertz Technology, University of Michigan, Ann Arbor, 458, 1990.

“Modeling of the Continuum and Molecular Line Emission from the Sagittarius B2 Molecular Cloud,” Lis, D.C. and Goldsmith, P.F., Ap.J., 356, 195, 1990.

“A Model for Clumpy Giant Molecular Clouds with External Ultraviolet Heating,” Tauber, J.A. and Goldsmith, P.F., Ap.J. (Lett.), 356, L63, 1990.

“ $J = 3-2$  Observations of IRC+10216,” Tauber, J.A. and Goldsmith, P.F., in Submillimetre Astronomy, G. Watt and A. Webster, eds., Dordrecht: Kluwer, 31, 1990.

“Far Infrared and Submillimeter Continuum Observations of the Sagittarius B2 Molecular Cloud Core,” Lis, D.C., Goldsmith, P.F., Hills, R., and Lasenby, J., in Submillimetre Astronomy, G. Watt and A. Webster, eds., Dordrecht: Kluwer, 183, 1990.

“A Bipolar Outflow in the Globule Lynds 810,” Xie, T. and Goldsmith, P.F., Ap.J., 359, 378, 1990.

“A Size Upper Limit and Position for the HCN Maser in CIT 6,” Carlstrom, J.E., Welch, W.J., Goldsmith, P.F., and Lis, D.C., Astron. J., 100, 213, 1990. “Quasi-Optics in Radar Systems,” Goldsmith, P.F., Microwave J., 34, No. 1, 79, 1991.

“High–Density Gas in the Core of the Sagittarius B2 Molecular Cloud,” Lis, D.C. and Goldsmith, P.F., Ap.J., 369, 157, 1991.

“A Full-Band Waveguide SIS Mixer with Integrated Tuning for 75-110 GHz,” Winkler, D., Ugras, N.G., Worsham, A.H., Prober, D.E., Erickson, N.R., and Goldsmith, P.F., *IEEE Trans Magnetics*, 27, 2634, 1991.

“A New Method for Analyzing IRAS Data to Determine the Dust Temperature Distribution,” Xie, T., Goldsmith, P.F., and Zhou, W., *Ap.J.(Lett.)*, 371, L81, 1991.

“Abundance Variations of Tracers and Their Effects on Our Determination of Molecular Cloud Structure,” Goldsmith, P.F., in *Fragmentation of Molecular Clouds and Star Formation*, E. Falgarone et al. eds., Dordrecht: Kluwer, 177, 1991.

“The Submillimeter Wave Astronomy Satellite,” Goldsmith, P.F. et al., in *1991 MTT-S Conference Digest*, 395, 1991.

“Perforated Plate Lens for Millimeter Quasi-Optical Systems,” Goldsmith, P.F., *IEEE Trans. Antennas Propag.*, 39, 834, 1991.

“Anatomy of the Barnard 5 Core,” Fuller, G.A., Myers, P.C., Welch, W.J., Goldsmith, P.F., Langer, W.D., Campbell, B.G., Guillobeau, S., and Wilson, R.W., *Ap.J.*, 376, 135, 1991.

“The Smoothness of CO Line Profiles in Orion: Implications for Clumpiness,” Tauber, J.A., Goldsmith, P.F., and Dickman, R.L., *Ap.J.*, 375, 635, 1991.

“Quantum Tunneling Currents in a Superconducting Junction,” Worsham, A.H., Ugras, N.G., Winkler, D., Prober, D.E., Erickson, N.R., and Goldsmith, P.F., *Phys. Rev. Lett.*, 67, 3034, 1991.

“A 15 Element Focal Plane Array for 100 GHz,” Erickson, N.R., Goldsmith, P.F., Novak, G., Grosslein, R.N., Viscuso, P.J., Erickson, R.B., and Predmore, C.R., *IEEE Trans. Microwave Theory Tech.*, MTT-40, 1, 1992.

“Structure, Chemistry, and Clumping in the NGC2071 (North) Molecular Cloud,” Goldsmith, P.F., Margulis, M., Snell, R.L., and Fukui, Y., *Astrophys. J.*, 385, 522, 1991.

“High Angular Resolution Far-Infrared Observations of Sagittarius B2,” Goldsmith, P.F., Lis, D.C., Lester, D.F., and Harvey, P.M., *Astrophys. J.*, 389, 338, 1992.

“Coherent Systems in the Terahertz Frequency Range: Elements, Operation, & Examples,” Goldsmith, P.F., *Proc. Third Int’l Symp. on Space Terahertz Technology*, March 22-24, 1, 1992.

“Zone Plate Lens Antennas for Millimeter and Submillimeter Wavelengths,” Goldsmith, P.F., *Proc. Third Int’l Symp. on Space Terahertz Technology*, March 22-24, 345, 1992.

“W-Band Quasioptical Integrated PIN Diode Switch,” Stephan, K.D. and Goldsmith, P.F., *1992 MTT-S Digest*, 591, 1992.

“Focal Plane Arrays for Millimeter-Wavelength Astronomy,” Goldsmith P.F., *1992 MTT-S Digest*, 1225, 1992.

“Chemical Gradients in the Orion Molecular Cloud,” Ungerechts, H., Bergin, E.A., Carpenter, J., Goldsmith, P.F., Irvine, W.M., Lovell, A., McGonagle, D., Schloerb, F.P., and Snell, R.L., in *‘Astrochemistry of Cosmic Phenomena’*, IAU Symp. 150, P.D. Singh, ed., 271, 1992.

“Evidence for Large-Scale Expanding Motions Within the Orion A Molecular Cloud,” Heyer, M.H., Morgan, J., Schloerb, F.P., Snell, R.L., and Goldsmith, P.F., *Astrophys. J. (Lett.)*, 395, L99, 1992.

“Quasi-Optical Techniques,” Goldsmith, P.F., *Proc. IEEE*, 80, 1729, 1992.

“Dust Temperature Distributions in Star-Forming Condensations,” Xie, T., Goldsmith, P.F., Snell, R.L., and Snell, R.L., *Astrophys. J.*, 402, 216, 1993.

“Millimeter-Wavelength Aperture Synthesis Observations of Massive Star-Forming Regions in Sagittarius B2,” Lis, D.C., Goldsmith, P.F., Carlstrom, J.E., and Scoville, N.Z., *Astrophys. J.*, 402, 238, 1993.

“The Morphology of a Bright Rim in NGC 2264: Early Stages of High Mass Star Formation,” Tauber, J.A. and Goldsmith, P.F., *Astrophys. J.*, 403, 202, 1993.

“Cometary Globules in the Southeast Quadrant of the Rosette Nebula,” Patel, N.A., Xie, T., and Goldsmith, P.F., *Astrophys. J.*, 413, 593, 1993.

“Focal Plane Imaging Systems for Millimeter Wavelengths,” Goldsmith, P.F., Hsieh, C.-T., Huguenin, G.R., Kapitzky, J., and Moore, E.L., *IEEE Trans. Microwave Theory Tech.*, MTT-41, 1664, 1993.

“Quasi-Optical Millimeter-Wave Hybrid and Monolithic PIN Diodes Switches,” Stephan, K.D., Spooner, F.H., and Goldsmith, P.F., *IEEE Trans. Microwave Theory Tech.*, MTT-41, 1791, 1993.

“A Well-Shaped Bipolar Outflow Shell in Monoceros R2,” Xie, T., Goldsmith, P.F., and Patel, N., *Astrophys. J. (Lett.)*, 419, L33, 1993.

“Anatomy of a Photodissociation Region: High Angular Resolution Images of Molecular Emission in the Orion Bar,” Tauber, J.A., Tielens, A.G.G.M., Meixner, M., and Goldsmith, P.F., *Astrophys. J.*, 422, 136, 1994.

“Analysis of Active Surface Reflector Antenna for a Large Millimeter Wave Radio Telescope,” Cortes-Medellin, G. and Goldsmith, P.F., *IEEE Trans. Ant. Propag.*, AP-42, 176, 1994.

“The Giant Molecular Cloud Monoceros R2. I. Shell Structure,” Xie, T. and Goldsmith, P.F., *Astrophys. J.*, 430, 242, 1994.

“The Magnetic Field Structure in Monoceros R2,” Jerrett, T.H, Novak, G. and Goldsmith, P.F., *Astrophys. J.*, 430, 753, 1994.

“CH<sub>3</sub>C<sub>2</sub>H as a Temperature Probe in Dense Molecular Cloud Cores,” Bergin, E.A., Goldsmith, P.F., Snell, R.L. and Ungerechts, H., *Ap.J.*, 431, 674, 1994.

“Comparison of the Holographic, Radiometric, and Near-Field Surface Error Measurements of a 14-m Radio Telescope,” Tuovenin, J., Brewer, M., Erickson, N.R., Goldsmith, P.F., Grosslein, R., Lauria, E. and Snell, R., 16th Annual Meeting and Symposium AMTA, Long Beach, CA, Oct. 3-7, 15, 1994.

“CO Mapping of the Cepheus Bubble,” Patel, N., Heyer, M.H., Goldsmith, P.F., Snell, R.L., Hezel, T. and Pratap, P., *ASP Conf. Series Vol. 65, Proc. Conf. Clouds, Cores, and Low Mass Stars*, eds.

D.P. Clemens and R. Barvainis, 81, 1994.

“Gas-Phase Chemistry in Dense Interstellar Clouds Including Grain Surface Molecular Depletion and Desorption,” Bergin, E.A., Langer, W.D. and Goldsmith, P.F., *Astrophys. J.*, 441, 221, 1995.

“Multi-Feed Systems for the Arecibo Gregorian,” Goldsmith, P.F., Baker, L.A., Davis, M.M. and Giovanelli, R., *ASP Conf. Series Vol. 75, Proc. Conf. Multi-Feed Systems for Radio Telescope*, eds. D.T. Emerson and J.M. Payne, 90, 1995.

“Multi-Feed Systems for Radio Telescopes: Workshop Summary and Miscellaneous Thoughts on What We May Have Forgotten,” Goldsmith, P.F., *ASP Conf. Series Vol. 75, Proc. Conf. Multi-Feed Systems for Radio Telescopes*, eds. D.T. Emerson and J.M. Payne, 337, 1995.

“The Large-Scale Structure, Kinematics, and Evolution of IC 1396,” Patel, N.A., Goldsmith, P.F., Snell, R.L., Hezel, T. and Xie, T., *Ap.J.*, 447, 721, 1995.

“Sequential Star Formation in the Cepheus Molecular Cloud: The S155 / Cepheus B Interface,” Testi, L., Olmi, L., Hunt, L., Tofani, G., Felli, M., and Goldsmith, P., *Astron. Astrophys.*, 303, 881, 1995.

“The Clumpy Structure of Molecular Clouds,” Goldsmith, P. F., in *Amazing Light, a Volume Dedicated to C.H. Townes on his 80th Birthday*, R.Y. Chiao, ed., Berlin: Springer, 285, 1996.

“Density Structure in Giant Molecular Cloud Cores,” Bergin, E.A., Snell, R.L., and Goldsmith, P.F., *Astrophys. J.*, 460, 343, 1996.

“The Second Arecibo Upgrade,” Goldsmith, P.F., *IEEE Potentials*, Aug./Sept., 38, 1996.

“Physical Conditions in Quiescent Dark Cloud Cores Determined from Multi-transition Observations of CCS,” Wolkovitch, D., Langer, W.D., Goldsmith, P.F., and Heyer, M., *Ap. J.*, 477, 241, 1997.

“Atmospheric Opacity at 215 GHz Over San Pedro Martir Sierra in Baja California,” Hiriart, D., Goldsmith, P.F., Skrutskie, M.F., and Salas, L., *Revista Mexicana de Astronomia y Astrofisica*, 33, 59, 1997.

“Probing Giant Molecular Cloud Cores with Millimeter and Submillimeter Observations of C18O and Dust,” Goldsmith, P.F., Bergin, E.A., and Lis, D.C., *CO: 25 Years of Millimeter-wave Spectroscopy, Proceedings IAU Symposium 170*, W.B. Latter et al., eds., Dordrecht: Kluwer, 113, 1997.

“Chemical and Physical Gradients Along the OMC-1 Ridge,” Ungerechts, H., Bergin, E.A., Goldsmith, P.F., Irvine, W.M., Schloerb, F.P., and Snell, R.L., *Ap.J.*, 482, 245, 1997.

“A Survey of the Chemical Properties of the M17 and Cepheus A Cloud Cores,” Bergin, E.A., Ungerechts, H.A., Goldsmith, P.F., Snell, R.L., Irvine, W.M., and Schloerb, F.P., *Ap.J.*, 482, 267, 1997.

“The Chemical Composition and Evolution of Giant Molecular Cloud Cores,” Bergin, E.A., Goldsmith, P.F. Snell, R.L., and Langer, W.D., *Ap.J.*, 482, 285, 1997.

“Polarized Far-Infrared Emission From the Core and Envelope of the Sagittarius B2 Molecular Cloud,” Novak, G., Dotson, J.L., Dowell, C.D., Goldsmith, P.F., Hildebrand, R.H., Platt, S.R., and

Schleuning, D.A., *Ap.J.*, 487, 320, 1997.

“Carbon Monoxide and Dust Column Densities: The Dust-to-Gas Ratio and Structure of Three Giant Molecular Cloud Cores,” Goldsmith, P.F., Bergin, E.A., and Lis, D.C., *Ap.J.*, 491, 615, 1997.

“Spectroscopic Observations of Comet C/1996 B2 (Hyakutake) with the Caltech Submillimeter Observatory,” Lis, D.C., Young, K., Phillips, T.G., Bocklee-Morvan, D., Crovisier, J., Schilke, P., Goldsmith, P.F., and Bergin, E.A., *Icarus*, 130, 355, 1997.

“Molecular Absorption as a Probe of the Structure of Dense Clouds,” Kleban, R. and Goldsmith, P.F., *Astro. Lett. & Commun.*, 37, 73, 1998.

“Deuterated Water in Comet C/1996 B2 (Hyakutake) and its Implications for the Structure of the Primitive Solar Nebula,” Bocklee-Morvan, D., Gautier, D., Lis, D.C., Young, K., Keene, J., Phillips, T., Owen, T., Crovisier, J., Goldsmith, P.F., Bergin, E.A., Despois, D., and Wootten, A., *Icarus*, 133, 147, 1998.

“Origin and Evolution of the Cepheus Bubble,” Patel, N.A., Goldsmith, P.F., Heyer, M.H., and Snell, R.L., *Ap.J.*, 507, 241, 1998.

“Population Diagram Analysis of Molecular Line Emission,” Goldsmith, P.F. and Langer, W.D. *Ap.J.*, 517,209, 1999.

“Detection of Methanol in a Class 0 Protostellar Disk,” Goldsmith, P.F., Langer, W.D., and Velusamy, T., *Ap.J.*, 519, L173, 1999.

“A New Method for Determining the Dust Temperature Distribution in Star-Forming Regions,” Li, D., Goldsmith, P.F., and Xie, T., *Ap.J.*, 522, 897, 1999.

“Proper Motion of Water Masers Associated with IRAS 21391+5802,” Patel, N.A., Greenhill, L.J., Herrnstein, J.R., Zhang, Q., Moran, J.M., Ho, P.T.P., and Goldsmith, P.F., in ‘Star Formation 1999’, T. Nakamoto, ed., Nobeyama Radio Observatory, 300, 1999.

“Proper Motion of Water Masers Associated with IRAS 2131+5802: Bipolar Outflow and an AU-Scale Dusty Circumstellar Shell,” Patel, N.A., Greenhill, L.J., Herrnstein, J., Zhang, Q., Moran, J.M., Ho, P.T.P., and Goldsmith, P.F., *Ap.J.*, 538, 268, 2000.

“The Submillimeter Wave Astronomy Satellite: Science Objectives and Mission Overview,” Melnick, G.J., Stauffer, J.R., Ashby, M.L.N., Bergin, E.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J.E., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Snell, R.L., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L77, 2000.

“Observations of Water Vapor toward Orion BN/KL,” Melnick, G. J., Ashby, M.L.N., Plume, R., Bergin, E.A., Neufeld, D.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J. E., Kleiner, S. C., Koch, D.G., Patten, B., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L87, 2000.

“Submillimeter Wave Astronomy Satellite Observations of Extended Water Emission in Orion,” Snell, R.L., Howe, J.E., Ashby, M.L.N., Bergin, E. A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L93,

2000.

“The Distribution of Water Emission in M17SW,” Snell, R.L., Howe, J.E., Ashby, M.L.N., Bergin, E. A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L97, 2000.

“Water Abundance in Molecular Cloud Cores,” Snell, R.L., Howe, J.E., Ashby, M.L.N., Bergin, E.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L101, 2000.

“Observations of Interstellar Water Vapor in Outflow Regions,” Neufeld, D.A., Snell, R.L., Ashby, M.L.N., Bergin, E.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Patten, B.M., Plume, R., Schieder, R., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L107, 2000.

“Absorption by Water Vapor toward Sgr B2,” Neufeld, D.A., Snell, R.L., Ashby, M.L.N., Bergin, E.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Patten, B.M., Plume, R., Schieder, R., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L111, 2000.

“An Analysis of Water Line Profiles in Star Formation Regions Observed by the Submillimeter Wave Astronomy Satellite,” Ashby, M.L.N., Bergin, E.A., Plume, R., Carpenter, J.M., Neufeld, D.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Patten, B.M., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L115, 2000.

“Water Abundance and Velocity Structure in S140, Rho Oph A, and B335,” Ashby, M.L.N., Bergin, E.A., Plume, R., Carpenter, J.M., Melnick, G.J., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J.E., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L119, 2000.

“O<sub>2</sub> in Interstellar Molecular Clouds,” Goldsmith, P.F., Melnick, G.J., Bergin, E.A., Howe, J.E., Snell, R.L., Neufeld, D.A., Harwit, M., Ashby, M.L.N., Patten, B.M., Kleiner, S.C., Plume, R., Stauffer, J.R., Tolls, V., Wang, Z., Zhang, Y.F., Erickson, N.R., Koch, D.G., Schieder, R., Winnewisser, G., and Chin, G., *Ap.J.*, 539, L123, 2000.

“Implications of Submillimeter Wave Astronomy Satellite Observations for Interstellar Chemistry and Star Formation,” Bergin, E.A., Melnick, G., Stauffer, J.R., Ashby, M.L.N., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J.E., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Snell, R.L., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L129, 2000.

“Large-scale <sup>13</sup>CO J = 5–4 and [CI] Mapping of Orion A,” Plume, R., Bensch, F., Howe, J.E., Ashby, M.L.N., Bergin, E.A., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., Reynolds, K., Joyce, R., Tavoletti, C., Jack, G., Rodkey, C.J., and Melnick, G.J., *Ap.J.*, 539, L133, 2000.

“Extended [CI] and <sup>13</sup>CO (5–4) Emission in M17SW,” Howe, J.E., Ashby, M.L.N., Bergin, Chin,

G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Hollenbach, D.J., Kaufman, M.J., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L137, 2000.

“Submillimeter Wave Astronomy Satellite Observations of the Martian Atmosphere: Temperature and Vertical Distribution of Water Vapor,” Gurwell, M.A., Bergin, E.A., Melnick, G.J., Ashby, M.L.N., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J.E., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Snell, R.L., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L143, 2000.

“Submillimeter Wave Astronomy Satellite Observations of Jupiter and Saturn: Detection of 557GHz Water Emission from the Upper Atmosphere,” Bergin, E.A., Lellouch, E., Harwit, M., Gurwell, M.A., Melnick, G.J., Ashby, M.L.N., Chin, G., Erickson, N.R., Goldsmith, P.F., Howe, J.E., Kleiner, S.C., Koch, D.G., Neufeld, D.A., Patten, B.M., Plume, R., Schieder, R., Snell, R.L., Stauffer, J.R., Tolls, V., Wang, Z., Winnewisser, G., and Zhang, Y.F., *Ap.J.*, 539, L147, 2000.

“Submillimeter Wave Astronomy Satellite Observations of Water Vapor toward Comet C/1999H1 (Lee),” Neufeld, D.A., Stauffer, J.R., Bergin, E.A., Kleiner, S.C., Patten, B.M., Wang, Z., Ashby, M.L.N., Chin, G., Erickson, N.R., Goldsmith, P.F., Harwit, M., Howe, J.E., Koch, D.G., Plume, R., Schieder, R., Snell, R.L., Tolls, V., Winnewisser, G., Zhang, Y.F., and Melnick, G.J., *Ap.J.*, 539, L151, 2000.

“Molecular Depletion and Thermal Balance in Dark Cloud Cores,” Goldsmith, P.F. 2001, *ApJ*, 557, 736.

“Tracing the Infall and the Accretion Shock in the Protostellar Disk: L1157,” Velusamy, T., Langer, W.D., & Goldsmith, P.F., *ApJ*, 565, L43, 2002.

“Tentative Detection of Molecular Oxygen in the  $\rho$  Ophiuchi Cloud,” Goldsmith, P.F., Li, D., Bergin, E.A., Melnick, G.J., Tolls, F.V., Howe, J.E., Snell, R.L., & Neufeld, D.A. 2002, *ApJ*, 576, 814.

“Comparing SWAS and ISO Observations of Water in Outflows,” Bendettini, M., Viti, S., Nisini, B., Goldsmith, P.F., & Saraceno, P. 2002, *Astron. Astrophys.*, 395, 657.

“Submillimeter Wave Astronomy Satellite and Arecibo Observations of H<sub>2</sub>O and OH in a Diffuse Cloud Along the Line of Sight to W51,” Neufeld, D.A., Kaufman, M.J., Goldsmith, P.F., Hollenbach, D.J., & Plume, R. 2002, *ApJ*, 580, 278.

“HI Narrow Self-Absorption Features in Dark Clouds,” Li, D. & Goldsmith, P.F. 2003, *ApJ*, 585, 823.

“A Search for 6.7 GHz Methanol Masers in OH Megamaser Galaxies at  $0.11 \leq z \leq 0.27$ ,” Darling, J., Goldsmith, P., Li, D., & Giovanelli, R. 2003, *AJ*, 125, 1177.

“Massive Quiescent Cores in Orion. I. Temperature Structure,” Li, D. & Goldsmith, P.F. 2003, *ApJ*, 587, 262.

“Detection of OH Toward the Extreme Carbon Star IRC +10216,” Ford, K.E., Neufeld, D.A., Goldsmith, P.F., & Melnick, G.J. 2003, *ApJ*, 589, 430.

“Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2,” Neufeld, D.A., Bergin, E.A., Melnick, G.J., & Goldsmith, P.F. 2003, *ApJ*, 590, 882.

- “A C-Band Spectral Scan of IRC +10°216,” Araya, E., Hofner, P., Goldsmith, P., Slysh, S., & Takano, S. 2003, *ApJ*, 596, 556.
- “Water Absorption from Line-of-Sight Clouds toward W49A,” Plume, R., Kaufman, M.J., Neufeld, D.A., Snell, R.L., Hollenbach, D.J., Goldsmith, P.F., Howe, J., Bergin, E.A., Melnick, G.J., & Bensch, F. 2004, *ApJ*, 605, 247.
- “Submillimeter Wave Astronomy Satellite Performance on the Ground and in Orbit,” Tolls, V., Melnick, G.J., Ashby, M.L.N., Bergin, E.A., Gurwell, M.A., Kleiner, S.C., Patten, B.M., Plume, R., Stauffer, J.R., Wang, Z., Zhang, Y.F., Chin, G., Erickson, N.R., Snell, R.L., Goldsmith, P.F., Neufeld, D.A., Schieder, R., & Winnewisser, G. 2004, *ApJS*, 152, 137.
- “A 4–6 GHz Spectral Scan and 8–10 GHz Observations of the Dark Cloud TMC-1,” Kalenskii, S.V., Slysh, V.I., Goldsmith, P.F., & Johansson, L.E.B. 2004, *ApJ* 610, 329.
- “Probing Pre-Protostellar Cores with Formaldehyde,” Young, K.E., Lee, J.-E., Evans, N.J.II, Goldsmith, P.F., & Doty, S.D. 2004, *ApJ*, 614, 252.
- “Interstellar Deuterated Ammonia: from NH<sub>3</sub> to ND<sub>3</sub>,” Roueff, E., Lis, D.C., van der Tak, F.F.S., Gerin, M., & Goldsmith, P.F., 2005, *Astr. Ap.*, 438, 585.
- “HI Narrow Self-Absorption in Dark Clouds: Correlations with Molecular Gas and Implications for Cloud Evolution and Star Formation,” Goldsmith, P.F., & Li, D. 2005, *ApJ*, 622, 983.
- “HINSA as a Tool for Studying Dark Clouds and Star Formation,” Krco, M. & Goldsmith, P.F. 2005, *Mem. Soc. Astr. Ital.*, 7, 78.
- “Analysis of the Optical Design for the SAFIR Telescope,” Goldsmith, P., Khayatian, B., Bradford, M., Dragovan, M., Hoppe, D., Imbriale, W., Lee, R., Paine, C., Yorke, H., & Zmuidzinas, J. 2006, *Space Telescopes and Instrumentation I: Optical, Infrared, and Millimeter*, J.C. Mather, M.A. MacEwen, & M.W.M. De Graauw, eds., *Proc. SPIE*, 6265, Pt.2, 62645A-1.
- “First Results from the Arecibo Galactic HI Survey: The Disk/Halo Interface Region in the Outer Galaxy,” Stanimirovic, S., Putman, M., Heliles, C. Goldston, J.E., Goldsmith, P.F., Koo, B.-C., Krco, M., Lazarian, A., Lee, J.-J., Mock, J., Muller, E., Pandian, J.D., Parsons, A., Tang, Y., & Werthimer, D. 2006, *ApJ*. 635, 1210.
- “Low-Noise 6-8 GHz Receiver,” Pandian, J., Baker, L., Cortes, G., Goldsmith, P.F., Deshpande, A.A., Ganesan, R., Hagen, J., Locke, L., Wadefalk, N., & Weinreb, S. 2006, *IEEE Microwave Magazine*, 7 (6), 74.
- “Large-Scale Surveys with the Arecibo Multibeam System,” Goldsmith, P.F. 2007, in *Proc. Exploring the Cosmic Frontier: Astrophysical Instruments for the 21st Century*, A.P. Lobanov et al. ed., Berlin: Springer, 209.
- “The Transition from Atomic to Molecular Hydrogen in Interstellar Clouds: 21cm Signature of the Evolution of Cold Atomic Hydrogen in Dense Clouds,” Goldsmith, P.F., Li, D., & Krčo, M. 2007, *ApJ*, 654, 273.
- “Massive Quiescent Cores in Orion. II. Core Mass Function,” Li, D., Velusamy, T., Goldsmith, P.F.,



& Langer, W.D. 2007, ApJ, 655, 351.

“Instrumentation for the Next-Generation Cryogenic Space-borne Far-IR Observatories,” Bradford, C.M., Goldsmith, P.F., Dragovan, M., Kenyon, M., Holmes, W., & Yorke, H. 2007, Proc. SPIE Vol. 6687, 66870O-1.

“CALISTO: A Cryogenic Far-Infrared/Submillimeter Observatory,” Goldsmith, P.F., Bradford, C.M., Dragovan, M., Khayatian, B., Huffenberger, K., O’Dwyer, I.J., Gorski, K., Yorke, H.W., Zmuidzinas, J., Paine, C., Satter, C., & Lee, R. 2007, Proc. SPIE Vol. 6687, 66870P-1.

“The Arecibo Methanol Maser Galactic Plane Survey. I. Data,” Pandian, J.D., Goldsmith, P.F., & Deshpande, A. A. 2007, ApJ, 656, 255.

“Spectroscopy with the Herschel Space Observatory,” Goldsmith, P.F. 2008, Proc. 18<sup>th</sup> International Symposium on Space Terahertz Technology, March 21–23 2007, Calif. Inst. Technology, Pasadena, CA, 25.

“The Arecibo Methanol Maser Galactic Plane Survey. II. Statistical and Multiwavelength Counterpart Analysis,” 2007, ApJ., 5669, 435.

“Conversion of HI to H<sub>2</sub> and the Age of Molecular Clouds,” Goldsmith, P.F. 2008, Proc. Molecules in Space & Laboratory Conference, Paris, France, 14–18 May 2007, 335.

“A Search for 6.7 GHz Methanol Masers in M33,” Goldsmith, P.F., Pandian, J.D., & Deshpande, A.A., 2008, ApJ., 680, 1132.

“Resolving Distance Ambiguities Towards 6.7 GHz Methanol Masers,” Pandian, J.D., Momjian, E., & Goldsmith, P.F. 2008, Astronomy & Astrophys., 486, 191.

“Large-Scale Structure of the Molecular Gas in Taurus Revealed by High Linear Dynamic Range Spectral Line Mapping,” Goldsmith, P.F., Heyer, M., Narayanan, G., Snell, R., Li, D., & Brunt, C., 2008, ApJ, 680, 428.

“The Five College Radio Astronomy Observatory CO Mapping Survey of the Taurus Molecular Cloud,” Narayanan, G., Heyer, M.H., Goldsmith, P.F., Snell, R., & Li, D. 2008, ApJS, 177, 341.

“CALISTO: The Cryogenic Aperture Large Infrared Space Telescope Observatory,” Goldsmith, P.F., Bradford, M., Dragovan, M., Paine, C. Satter, C., Langer, B., Yorke, H., Benford, D., & Lester, D. 2008, Proc. SPIE, 7010, 701020-1.

“Cornell Caltech Atacama Telescope Primary Mirror Surface Sensing and Controllability,” MacDonald, D., Woody, D., Bradford, C.M., Chamberlin, R., Dragovan, M., Goldsmith, P., Radford, S., Sebring, T., & Zmuidzinas, J. 2008, Proc. SPIE, 7012, 701211-1.

“Panel Options for Large Precision Radio Telescopes,” Woody, D., MacDonald, D., Bradford, M., Chamberlin, R. Dragovan, M., Goldsmith, P., Lamb, J., Radford, S., & Zmuidzinas, J. 2008, Proc. SPIE, 7018, 7018T-1.

“Detection of 6.7 GHz Methanol Absorption Towards Hot Corinos,” Pandian, J.D., Leurini, S., Menten, K.M., Belloche, A., & Goldsmith, P.F. 2008, Astronomy & Astrophys., 489, 1175.

- “Dichotomy in the Dynamical Status of Massive Cores in Orion,” Velusamy, T., Peng, R., Li, D., Goldsmith, P.F. & Langer, W.D. 2008, *Ap.J.*, 688, L87.
- “An Improved Technique for Measurement of Cold HI in Molecular Cloud Cores,” Krco, M., Goldsmith, P.F., Brown, R.L., & Li, D. 2008, *Ap.J.*, 689, 276.
- “The Astrophysics of Spectroscopic Studies with the Herschel Space Observatory,” Goldsmith, P.F., in *Astronomy in the Submillimeter and Far Infrared Domains with the Herschel Space Observatory*, L. Pagani & M. Gerin, eds., Les Ulis: EDP Sciences, 34, 89, 2009.
- “The Molecular Hydrogen Explorer H2EX,” Boulanger, F., Maillard, J.P., Appleton, P. et al. 2009, *Experimental Astronomy*, 23, 277.
- “A Flexible Quasioptical Input System for a Submillimeter Multiobject Spectrometer,” Goldsmith, P.F. & Seiffert, M. 2009, *Publ. Astr. Soc. Pacific*, 121, 375.
- “The Arecibo Methanol Maser Galactic Plane Survey. III. Distances and Luminosities,” Pandian, J.D., Menten, K.M., & Goldsmith, P.F. 2009, *Ap.J.*, 706, 1609.
- “Hydrides in Space: Past, Present, and Future,” Lis, D.C., Goldsmith, P.F., Bergin, E.A., Falgarone, E., & Gerin, M., in *Submillimeter Astrophysics and Technology: A Symposium Honoring Thomas G. Phillips*, D.C. Lis et al., eds., San Francisco: Astronomical Society of the Pacific, 23, 2010.
- “H<sub>2</sub> in Molecular Clouds,” Goldsmith, P.F., Velusamy, T., Li, D. & Langer, W.D., in *Submillimeter Astrophysics and Technology: A Symposium Honoring Thomas G. Phillips*, D.C. Lis et al., eds., San Francisco: Astronomical Society of the Pacific, 177, 2010.
- “Hi-GAL: The Herschel Infrared Galactic Plane Survey,” Molinari, S. et al. (118 coauthors including PFG) 2010, *Publ. Astr. Soc. Pacific*, 122, 314.
- “Molecular Hydrogen Emission from the Boundaries of the Taurus Molecular Cloud,” Goldsmith, P.F., Velusamy, T., Li, D., & Langer, W.D. 2010, *ApJ*, 715, 1370.
- “The Large-Scale Disk Fraction of Brown Dwarfs in the Taurus Cloud as Measured with Spitzer,” Monin, J.-L., Guieu, S., Pinte, C., Rebull, L., Goldsmith, P., et al. 2010, *Astronomy & Astrophysics*, 515, A91.
- “The Uptake of Interstellar Gaseous CO Into Icy Grain Mantles in a Quiescent Dark Cloud,” Whittet, D.C.B., Goldsmith, P.F., & Pineda, J.L. 2010, *ApJ*, 720, 259.
- “The Relation Between Gas and Dust in the Taurus Molecular Cloud,” Pineda, J.L., Goldsmith, P.F., Chapman, N., Snell, R.L., Li, D., Cambrésy, L., & Brunt, C. 2010, *ApJ*, 721, 686.
- “Clouds, Filaments and Protostars: the *Herschel* Hi-GAL Milky Way,” Molinari, S. et al. (114 coauthors including PFG) 2010, *Astronomy & Astrophysics*, 518, L108.
- “Strong Absorption by Interstellar Hydrogen Fluoride: Herschel/HIFI Observations of the Sight-Line to G10.6-0.4 (W31C),” Neufeld, D. A., Sonnentrucker, P., Phillips, T. G., Lis, D. C., de Luca, M., Goicoechea, J. R., Black, J.H., Gerin, M., Bell, T., Boulanger, F., Cernicharo, J., Coutens, A., Dartois, E., Kazmierczak, M., Encrenaz, P., Falgarone, E., Geballe, T. R., Giesen, T., Godard, B., Goldsmith, P.F., Gry, C., Gupta, H., Hennebelle, P., Herbst, E., Hily-Blant, P., Joblin, C., Kolos,

R., Krelowski, J., Martn-Pintado, J., Menten, K. M., Monje, R., Mookerjea, B., Pearson, J., Perault, M., Persson, C., Plume, R., Salez, M., Schlemmer, S., Schmidt, M., Stutzki, J., Teyssier, D., Vastel, C., Yu, S., Cais, P., Caux, E., Liseau, R., Morris, P., & Planesas, P. 2010, *Astronomy & Astrophysics*, 518, L100.

“Herschel Observations of EXtra-Ordinary Sources (HEXOS): Detection of Hydrogen Fluoride in Absorption Towards Orion KL,” Phillips, T.G., Bergin, E.A., Lis, D.C., Neufeld, D.A., Bell, T.A., Wang, S., Crockett, N.R., Emprechtinger, M., Blake, G. A., Caux, E., Ceccarelli, C., Cernicharo, J., Comito, C., Daniel, F., Dubernet, M.-L., Encrenaz, P., Gerin, M., Giesen, T. F., Goicoechea, J.R., Goldsmith, P.F., Herbst, E., Joblin, C., Johnstone, D., Langer, W. D., Latter, W. D., Lord, S. D., Maret, S., Martin, P. G., Melnick, G. J., Menten, K. M., Morris, P., Mller, H.S.P., Murphy, J.A., Ossenkopf, V., Pearson, J.C., Prault, M., Plume, R., Qin, S.-L., Schilke, P., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Yorke, H.W., Yu, S., Zmuidzinas, J., Boogert, A., Gsten, R., Hartogh, P., Honingh, N., Karpov, A., Kooi, J., Krieg, J.-M., & Schieder, R. 2010, *Astronomy & Astrophysics*, 518, L109.

“Interstellar OH<sup>+</sup>, H<sub>2</sub>O<sup>+</sup> and H<sub>3</sub>O<sup>+</sup> Along the Sight-Line to G10.6-0.4,” Gerin, M., de Luca, M., Black, J., Goicoechea, J. R., Herbst, E., Neufeld, D. A., Falgarone, E., Godard, B., Pearson, J.C., Lis, D.C., Phillips, T. G., Bell, T. A., Sonnentrucker, P., Boulanger, F., Cernicharo, J., Coutens, A., Dartois, E., Encrenaz, P., Giesen, T., Goldsmith, P.F., Gupta, H., Gry, C., Hennebelle, P., Hily-Blant, P., Joblin, C., Kazmierczak, M., Kolos, R., Krelowski, J., Martin-Pintado, J., Monje, R., Mookerjea, B., Perault, M., Persson, C., Plume, R., Rimmer, P. B., Salez, M., Schmidt, M., Stutzki, J., Teyssier, D., Vastel, C., Yu, S., Contursi, A., Menten, K., Geballe, T., Schlemmer, S., Shipman, R., Tielens, A.G.G.M., Philipp-May, S., Cros, A., Zmuidzinas, J., Samoska, L. A., Klein, K., & Lorenzani, A. 2010, *Astronomy & Astrophysics*, 518, L110.

“Detection of Interstellar Oxidaniumyl: Abundant H<sub>2</sub>O<sup>+</sup> Towards the Star-Forming Regions DR21, Sgr B2, and NGC6334,” Ossenkopf, V., Mller, H. S. P., Lis, D.C., Schilke, P., Bell, T.A., Bruderer, S., Bergin, E., Ceccarelli, C., Comito, C., Stutzki, J., Bacman, A., Baudry, A., Benz, A. O., Benedettini, M., Berne, O., Blake, G., Boogert, A., Bottinelli, S., Boulanger, F., Cabrit, S., Caselli, P., Caux, E., Cernicharo, J., Codella, C., Coutens, A., Crimier, N., Crockett, N.R., Daniel, F., Demyk, K., Dieleman, P., Dominik, C., Dubernet, M. L., Emprechtinger, M., Encrenaz, P., Falgarone, E., France, K., Fuente, A., Gerin, M., Giesen, T.F., di Giorgio, A. M., Goicoechea, J. R., Goldsmith, P.F., Gsten, R., Harris, A., Helmich, F., Herbst, E., Hily-Blant, P., Jacobs, K., Jacq, T., Joblin, Ch., Johnstone, D., Kahane, C., Kama, M., Klein, T., Klotz, A., Kramer, C., Langer, W., Lefloch, B., Leinz, C., Lorenzani, A., Lord, S.D., Maret, S., Martin, P.G., Martin-Pintado, J., McCoy, C., Melchior, M., Melnick, G. J., Menten, K.M., Mookerjea, B., Morris, P., Murphy, J. A., Neufeld, D.A., Nisini, B., Pacheco, S., Pagani, L., Parise, B., Pearson, J. C., Prault, M., Phillips, T. G., Plume, R., Quin, S.-L., Rizzo, R., Rllig, M., Salez, M., Saraceno, P., Schlemmer, S., Simon, R., Schuster, K., van der Tak, F.F.S., Tielens, A.G.G.M., Teyssier, D., Trappe, N., Vastel, C., Viti, S., Wakelam, V., Walters, A., Wang, S., Whyborn, N., van der Wiel, M., Yorke, H.W., Yu, S., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 518, L111.

“The CHESSE Spectral Survey of Star Forming Regions: Peering into the Protostellar shock L1157-B1. I. Shock Chemical Complexity,” Codella, C., Lefloch, B., Ceccarelli, C., Cernicharo, J., Caux, E., Lorenzani, A., Viti, S., Hily-Blant, P., Parise, B., Maret, S., Nisini, B., Caselli, P., Cabrit, S., Pagani, L., Benedettini, M., Boogert, A., Gueth, F., Melnick, G., Neufeld, D., Pacheco, S., Salez, M., Schuster, K., Bacmann, A., Baudry, A., Bell, T., Bergin, E. A., Blake, G., Bottinelli, S., Castets, A., Comito, C., Coutens, A., Crimier, N., Dominik, C., Demyk, K., Encrenaz, P., Falgarone, E., Fuente, A., Gerin, M., Goldsmith, P., Helmich, F., Hennebelle, P., Henning, Th., Herbst, E., Jacq, T., Kahane, C., Kama, M., Klotz, A., Langer, W., Lis, D., Lord, S., Pearson, J., Phillips, T.,

Saraceno, P., Schilke, P., Tielens, X., van der Tak, F., van der Wiel, M., Vastel, C., Wakelam, V., Walters, A., Wyrowski, F., Yorke, H., Borys, C., Delorme, Y., Kramer, C., Larsson, B., Mehdi, I., Ossenkopf, V., & Stutzki, J. 2010, *Astronomy & Astrophysics*, 518, L112.

“The CHESSE Spectral Survey of Star Forming Regions: Peering into the Protostellar Shock L1157-B1. II. Shock Dynamics,” Lefloch, B., Cabrit, S., Codella, C., Melnick, G., Cernicharo, J., Caux, E., Benedettini, M., Boogert, A., Caselli, P., Ceccarelli, C., Gueth, F., Hily-Blant, P., Lorenzani, A., Neufeld, D., Nisini, B., Pacheco, S., Pagani, L., Pardo, J. R., Parise, B., Salez, M., Schuster, K., Viti, S., Bacmann, A., Baudry, A., Bell, T., Bergin, E. A., Blake, G., Bottinelli, S., Castets, A., Comito, C., Coutens, A., Crimier, N., Dominik, C., Demyk, K., Encrenaz, P., Falgarone, E., Fuente, A., Gerin, M., Goldsmith, P., Helmich, F., Hennebelle, P., Henning, T., Herbst, E., Jacq, T., Kahane, C., Kama, M., Klotz, A., Langer, W., Lis, D., Lord, S., Maret, S., Pearson, J., Phillips, T., Saraceno, P., Schilke, P., Tielens, X., van der Tak, F., van der Wiel, M., Vastel, C., Wakelam, V., Walters, A., Wyrowski, F., Yorke, H., Bachiller, R., Borys, C., de Lange, G., Delorme, Y., Kramer, C., Larsson, B., Lai, R., Maiwald, F. W., Martin-Pintado, J., Mehdi, I., Ossenkopf, V., Siegel, P., Stutzki, J., & Wunsch, J. H. 2010, *Astronomy & Astrophysics*, 518, L113.

“The Stratospheric THz Observatory (STO),” Walker, C., Kulesa, C., Bernasconi, P., Eaton, H., Rolander, N., Groppi, C., Kloosterman, J., Cottam, T., Lesser, D., Martin, C., Stark, A., Neufeld, D., Lisse, C., Hollenbach, D., Kawamura, J., Goldsmith, P., Langer, W., Yorke, H., Sterne, J., Skalare, A., Mehdi, I., Weinreb, S., Kooi, J., Stutzki, J., Graf, U., Brasse, M., Honingh, C., Simon, R., Akyilmaz, M., Puetz, P., & Wolfire, M. 2010, *Proc. SPIE*, 7733, 77330N.

“Large Format Heterodyne Arrays for Observing Far-Infrared lines with SOFIA,” Walker, C., Kulesa, C., Kloosterman, J., Lesser, D., Cottam, T., Groppi, C., Zmuidzinas, J., Edgar, M., Radford, S., Goldsmith, P., Langer, W., Yorke, H., Kawamura, J., Mehdi, I., Hollenbach, D., Stutzki, J., Huebers, H., Gao, J. R., & Martin, C. 2010, *Proc. SPIE*, 7741, 77410Z.

“Herschel/HIFI Discovery of Interstellar Chloronium ( $\text{H}_2\text{Cl}^+$ ),” Lis, D.C. (102 coauthors including PFG) 2010, *Astronomy & Astrophysics*, 521, L9.

“Herschel/HIFI Observations of Interstellar  $\text{OH}^+$  and  $\text{H}_2\text{O}^+$  Towards W49N: a Probe of Diffuse Clouds with a Small Molecular Fraction,” Neufeld, D. A., Goicoechea, J. R., Sonnentrucker, P., Black, J. H., Pearson, J., Yu, S., Phillips, T. G., Lis, D. C., de Luca, M., Herbst, E., Rimmer, P., Gerin, M., Bell, T. A., Boulanger, F., Cernicharo, J., Coutens, A., Dartois, E., Kazmierczak, M., Encrenaz, P., Falgarone, E., Geballe, T. R., Giesen, T., Godard, B., Goldsmith, P.F., Gupta, H., Hennebelle, P., Hily-Blant, P., Joblin, C., Kolos, R., Krelowski, J., Martin-Pintado, J., Menten, K. M., Monje, R., Mookerjee, B., Perault, M., Persson, C., Plume, R., Salez, M., Schlemmer, S., Schmidt, M., Stutzki, J., Teyssier, D., Vastel, C., Cros, A., Klein, K., Lorenzani, A., Philipp, S., Samoska, L. A., Shipman, R., Tielens, A.G.G.M., Szczerba, R., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L10.

“Herschel Observations of Ortho- and Para-Oxidaniumyl ( $\text{H}_2\text{O}^+$ ) in Spiral Arm Clouds Toward Sagittarius B2(M),” Schilke, P., Comito, C., Mller, H. S. P., Bergin, E. A., Herbst, E., Lis, D. C., Neufeld, D. A., Phillips, T. G., Bell, T. A., Blake, G. A., Cabrit, S., Caux, E., Ceccarelli, C., Cernicharo, J., Crockett, N.R., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Falgarone, E., Gerin, M., Giesen, T. F., Goicoechea, J.R., Goldsmith, P.F., Gupta, H., Joblin, C., Johnstone, D., Langer, W.D., Latter, W. B., Lord, S. D., Maret, S., Martin, P. G., Melnick, G. J., Menten, K. M., Morris, P., Murphy, J. A., Ossenkopf, V., Pagani, L., Pearson, J. C., Prault, M., Plume, R., Qin, S.-L., Salez, M., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F. F. S., Vastel, C., Wang, S., Yorke, H. W., Yu, S., Erickson, N., Maiwald, F. W., Kooi, J., Karpov,

A., Zmuidzinas, J., Boogert, A., Schieder, R., & Zaal, P. 2010, *Astronomy & Astrophysics*, 521, L11.

“Detection of Hydrogen Fluoride Absorption in Diffuse Molecular Clouds with Herschel/HIFI: an Ubiquitous Tracer of Molecular Gas,” Sonnentrucker, P., Neufeld, D. A., Phillips, T. G., Gerin, M., Lis, D.C., de Luca, M., Goicoechea, J.R., Black, J. H., Bell, T. A., Boulanger, F., Cernicharo, J., Coutens, A., Dartois, E., Kazmierczak, M., Encrenaz, P., Falgarone, E., Geballe, T. R., Giesen, T., Godard, B., Goldsmith, P.F., Gry, C., Gupta, H., Hennebelle, P., Herbst, E., Hily-Blant, P., Joblin, C., Kołos, R., Krelowski, J., Martín-Pintado, J., Menten, K. M., Monje, R., Mookerjea, B., Pearson, J., Perault, M., Persson, C. M., Plume, R., Salez, M., Schlemmer, S., Schmidt, M., Stutzki, J., Teyssier, D., Vastel, C., Yu, S., Caux, E., Gsten, R., Hatch, W. A., Klein, T., Mehdi, I., Morris, P., & Ward, J. S. 2010, *Astronomy & Astrophysics*, 521, L12.

“Excitation and Abundance of C<sub>3</sub> in Star Forming Cores. Herschel/HIFI Observations of the Sight-Lines to W31C and W49N,” Mookerjea, B., Giesen, T., Stutzki, J., Cernicharo, J., Goicoechea, J.R., de Luca, M., Bell, T. A., Gupta, H., Gerin, M., Persson, C. M., Sonnentrucker, P., Makai, Z., Black, J., Boulanger, F., Coutens, A., Dartois, E., Encrenaz, P., Falgarone, E., Geballe, T., Godard, B., Goldsmith, P.F., Gry, C., Hennebelle, P., Herbst, E., Hily-Blant, P., Joblin, C., Kazmierczak, M., Kolos, R., Krelowski, J., Lis, D. C., Martín-Pintado, J., Menten, K. M., Monje, R., Pearson, J. C., Perault, M., Phillips, T. G., Plume, R., Salez, M., Schlemmer, S., Schmidt, M., Teyssier, D., Vastel, C., Yu, S., Dieleman, P., Güsten, R., Honingh, C.E., Morris, P., Roelfsema, P., Schieder, R., Tielens, A.G.G.M., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L13.

“Herschel Observations of EXtra-Ordinary Sources (HEXOS): Detecting Spiral Arm Clouds by CH Absorption Lines,” Qin, S.-L., Schilke, P., Comito, C., Miller, T., Rolfs, R., Miller, H.S.P., Belloche, A., Menten, K.M., Lis, D.C., Phillips, T.G., Bergin, E.A., Bell, T.A., Crockett, N.R., Blake, G.A., Cabrit, S., Caux, E., Ceccarelli, C., Cernicharo, J., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Falgarone, E., Gerin, M., Giesen, T. F., Goicoechea, J. R., Goldsmith, P.F., Gupta, H., Herbst, E., Joblin, C., Johnstone, D., Langer, W.D., Lord, S.D., Maret, S., Martin, P.G., Melnick, G.J., Morris, P., Murphy, J.A., Neufeld, D.A., Ossenkopf, V., Pagani, L., Pearson, J.C., Pérault, M., Plume, R., Salez, M., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Wang, S., Yorke, H.W., Yu, S., Zmuidzinas, J., Boogert, A., Gsten, R., Hartogh, P., Honingh, N., Karpov, A., Kooi, J., Krieg, J.-M., Schieder, R., Diez-Gonzalez, M.C., Bachiller, R., Martín-Pintado, J., Baechtold, W., Olberg, M., Nordh, L.H., Gill, J.L., & Chattopadhyay, G. 2010, *Astronomy & Astrophysics* 521, L14.

“CH<sup>+</sup>(1-0) and <sup>13</sup>CH<sup>+</sup>(1-0) Absorption Lines in the Direction of Massive Star-Forming Regions,” Falgarone, E., Godard, B., Cernicharo, J., de Luca, M., Gerin, M., Phillips, T. G., Black, J. H., Lis, D. C., Bell, T. A., Boulanger, F., Coutens, A., Dartois, E., Encrenaz, P., Giesen, T., Goicoechea, J.R., Goldsmith, P. F., Gupta, H., Gry, C., Hennebelle, P., Herbst, E., Hily-Blant, P., Joblin, C., Kazmierczak, M., Kolos, R., Krelowski, J., Martín-Pintado, J., Monje, R., Mookerjea, B., Neufeld, D. A., Perault, M., Pearson, J. C., Persson, C., Plume, R., Salez, M., Schmidt, M., Sonnentrucker, P., Stutzki, J., Teyssier, D., Vastel, C., Yu, S., Menten, K., Geballe, T.R., Schlemmer, S., Shipman, R., Tielens, A.G.G.M., Philipp, S., Cros, A., Zmuidzinas, J., Samoska, L.A., Klein, K., Lorenzani, A., Szczerba, R., Péron, I., Cais, P., Gaufre, P., Cros, A., Ravera, L., Morris, P., Lord, S., & Planesas, P. 2010, *Astronomy & Astrophysics*, 521, L15.

“Interstellar CH Absorption in the Diffuse Interstellar Medium Along the Sight-Lines to G10.6-0.4 (W31C), W49N, and W51,” Gerin, M., de Luca, M., Goicoechea, J.R., Herbst, E., Falgarone, E., Godard, B., Bell, T. A., Coutens, A., Kazmierczak, M., Sonnentrucker, P., Black, J.H., Neufeld, D.A., Phillips, T.G., Pearson, J., Rimmer, P.B., Hassel, G., Lis, D. C., Vastel, C., Boulanger, F., Cernicharo, J., Dartois, E., Encrenaz, P., Giesen, T., Goldsmith, P. F., Gupta, H., Gry, C.,

Hennebelle, P., Hily-Blant, P., Joblin, C., Kolos, R., Krelowski, J., Martn-Pintado, J., Monje, R., Mookerjea, B., Perault, M., Persson, C., Plume, R., Salez, M., Schmidt, M., Stutzki, J., Teyssier, D., Yu, S., Contursi, A., Menten, K., Geballe, T.R., Schlemmer, S., Morris, P., Hatch, W.A., Mehdi, I., Ward, J. S., Caux, E., Güsten, R., Klein, T., Roelfsema, P., Dieleman, P., Schieder, R., Honingh, N., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L16.

“C<sup>+</sup> Detection of Warm Dark Gas in Diffuse Clouds,” Langer, W.D., Velusamy, T., Pineda, J.L., Goldsmith, P.F., Li, D., & Yorke, H.W. 2010, *Astronomy & Astrophysics*, 521, L17.

“[CII] observations of H<sub>2</sub> Molecular Layers in Transition Clouds,” Velusamy, T., Langer, W.D., Pineda, J. L., Goldsmith, P.F., Li, D., & Yorke, H.W. 2010, *Astronomy & Astrophysics*, 521, L18.

“A Sample of [C II] Clouds Tracing Dense Clouds in Weak FUV Fields Observed by Herschel,” Pineda, J.L., Velusamy, T., Langer, W.D., Goldsmith, P.F., Li, D., & Yorke, H.W. 2010, *Astronomy & Astrophysics*, 521, L19.

“Herschel Observations of EXtra-Ordinary Sources (HEXOS): The Present and Future of Spectral Surveys with Herschel/HIFI,” Bergin, E. A., Phillips, T. G., Comito, C., Crockett, N. R., Lis, D.C., Schilke, P., Wang, S., Bell, T. A., Blake, G.A., Bumble, B., Caux, E., Cabrit, S., Ceccarelli, C., Cernicharo, J., Daniel, F., de Graauw, Th., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Falgarone, E., Gerin, M., Giesen, T.F., Goicoechea, J. R., Goldsmith, P.F., Gupta, H., Hartogh, P., Helmich, F. P., Herbst, E., Joblin, C., Johnstone, D., Kawamura, J. H., Langer, W.D., Latter, W.B., Lord, S. D., Maret, S., Martin, P. G., Melnick, G.J., Menten, K.M., Morris, P., Mller, H. S. P., Murphy, J. A., Neufeld, D. A., Ossenkopf, V., Pagani, L., Pearson, J. C., Pérault, M., Plume, R., Roelfsema, P., Qin, S.-L., Salez, M., Schlemmer, S., Stutzki, J., Tielens, A.G.G.M., Trappe, N., van der Tak, F.F.S., Vastel, C., Yorke, H.W., Yu, S., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L20.

“Herschel Observations of EXtra-Ordinary Sources (HEXOS): The Terahertz Spectrum of Orion KL Seen at High spectral Resolution,” Crockett, N.R., Bergin, E.A., Wang, S., Lis, D.C., Bell, T.A., Blake, G.A., Boogert, A., Bumble, B., Cabrit, S., Caux, E., Ceccarelli, C., Cernicharo, J., Comito, C., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Falgarone, E., Gerin, M., Giesen, T.F., Goicoechea, J. R., Goldsmith, P.F., Gupta, H., Güsten, R., Hartogh, P., Helmich, F., Herbst, E., Honingh, N., Joblin, C., Johnstone, D., Karpov, A., Kawamura, J.H., Kooi, J., Krieg, J.-M., Langer, W.D., Latter, W.D., Lord, S.D., Maret, S., Martin, P. G., Melnick, G.J., Menten, K.M., Morris, P., Mller, H.S.P., Murphy, J. A., Neufeld, D. A., Ossenkopf, V., Pearson, J. C., Pérault, M., Phillips, T. G., Plume, R., Qin, S.-L., Roelfsema, P., Schieder, R., Schilke, P., Schlemmer, S., Stutzki, J., van der Tak, F.F.S., Tielens, A., Trappe, N., Vastel, C., Yorke, H.W., Yu, S., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L21.

“Herschel Spectral Surveys of Star-Forming Regions. Overview of the 555–636 GHz Range,” Ceccarelli, C., Bacmann, A., Boogert, A., Caux, E., Dominik, C., Lefloch, B., Lis, D., Schilke, P., van der Tak, F., Caselli, P., Cernicharo, J., Codella, C., Comito, C., Fuente, A., Baudry, A., Bell, T., Benedettini, M., Bergin, E. A., Blake, G. A., Bottinelli, S., Cabrit, S., Castets, A., Coutens, A., Crimier, N., Demyk, K., Encrenaz, P., Falgarone, E., Gerin, M., Goldsmith, P.F., Helmich, F., Hennebelle, P., Henning, T., Herbst, E., Hily-Blant, P., Jacq, T., Kahane, C., Kama, M., Klotz, A., Langer, W., Lord, S., Lorenzani, A., Maret, S., Melnick, G., Neufeld, D., Nisini, B., Pacheco, S., Pagani, L., Parise, B., Pearson, J., Phillips, T., Salez, M., Saraceno, P., Schuster, K., Tielens, X., van der Wiel, M.H.D., Vastel, C., Viti, S., Wakelam, V., Walters, A., Wyrowski, F., Yorke, H., Liseau, R., Olberg, M., Szczerba, R., Benz, A. O., & Melchior, M. 2010, *Astronomy & Astrophysics*, 521, L22.

“Herschel/HIFI Measurements of the Ortho/Para Ratio in Water Towards Sagittarius B2(M) and W31C,” Lis, D.C., Phillips, T.G., Goldsmith, P.F., Neufeld, D.A., Herbst, E., Comito, C., Schilke, P., Müller, H.S.P., Bergin, E., Gerin, M., Bell, T. A., Emprechtinger, M., Black, J.H., Blake, G.A., Boulanger, F., Caux, E., Ceccarelli, C., Cernicharo, J., Coutens, A., Crockett, N. R., Daniel, F., Dartois, E., de Luca, M., Dubernet, M.-L., Encrenaz, P., Falgarone, E., Geballe, T.R., Godard, B., Giesen, T. F., Goicoechea, J.R., Gry, C., Gupta, H., Hennebelle, P., Hily-Blant, P., Kolos, R., Krelowski, J., Joblin, C., Johnstone, D., Kazmierczak, M., Lord, S.D., Maret, S., Martin, P.G., Martn-Pintado, J., Melnick, G.J., Menten, K.M., Monje, R., Mookerjea, B., Morris, P., Murphy, J. A., Ossenkopf, V., Pearson, J. C., Pérault, M., Persson, C., Plume, R., Qin, S.-L., Salez, M., Schlemmer, S., Schmidt, M., Sonnentrucker, P., Stutzki, J., Teyssier, D., Trappe, N., van der Tak, F.F.S., Vastel, C., Wang, S., Yorke, H.W., Yu, S., Zmuidzinas, J., Boogert, A., Erickson, N., Karpov, A., Kooi, J., Maiwald, F.W., Schieder, R., & Zaal, P. 2010, *Astronomy & Astrophysics*, 521, L26.

“Herschel Observations of EXtra-Ordinary Sources (HEXOS): Observations of H<sub>2</sub>O and its Isotopologues Towards Orion KL,” Melnick, G.J., Tolls, V., Neufeld, D.A., Bergin, E.A., Phillips, T.G., Wang, S., Crockett, N.R., Bell, T.A., Blake, G.A., Cabrit, S., Caux, E., Ceccarelli, C., Cernicharo, J., Comito, C., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Falgarone, E., Gerin, M., Giesen, T.F., Goicoechea, J.R., Goldsmith, P.F., Herbst, E., Joblin, C., Johnstone, D., Langer, W.D., Latter, W. D., Lis, D.C., Lord, S. D., Maret, S., Martin, P.G., Menten, K. M., Morris, P., Müller, H.S.P., Murphy, J.A., Ossenkopf, V., Pagani, L., Pearson, J. C., Pérault, M., Plume, R., Qin, S.-L., Salez, M., Schilke, P., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Yorke, H.W., Yu, S., & Zmuidzinas, J. 2010, *Astronomy & Astrophysics*, 521, L27.

“The Distribution of Water in the High-Mass Star-Forming Region NGC 6334 I,” Emprechtinger, M., Lis, D.C., Bell, T., Phillips, T.G., Schilke, P., Comito, C., Rolfs, R., van der Tak, F., Ceccarelli, C., Aarts, H., Bacmann, A., Baudry, A., Benedettini, M., Bergin, E. A., Blake, G., Boogert, A., Bottinelli, S., Cabrit, S., Caselli, P., Castets, A., Caux, E., Cernicharo, J., Codella, C., Coutens, A., Crimier, N., Demyk, K., Dominik, C., Encrenaz, P., Falgarone, E., Fuente, A., Gerin, M., Goldsmith, P., Helmich, F., Hennebelle, P., Henning, T., Herbst, E., Hily-Blant, P., Jacq, T., Kahane, C., Kama, M., Klotz, A., Kooi, J., Langer, W., Lefloch, B., Loose, A., Lord, S., Lorenzani, A., Maret, S., Melnick, G., Neufeld, D., Nisini, B., Ossenkopf, V., Pacheco, S., Pagani, L., Parise, B., Pearson, J., Risacher, C., Salez, M., Saraceno, P., Schuster, K., Stutzki, J., Tielens, X., van der Wiel, M., Vastel, C., Viti, S., Wakelam, V., Walters, A., Wyrowski, F., & Yorke, H. 2010, *Astronomy & Astrophysics*, 521, L28.

“Ortho-to-Para Ratio of Interstellar Heavy Water,” Vastel, C., Ceccarelli, C., Caux, E., Coutens, A., Cernicharo, J., Bottinelli, S., Demyk, K., Faure, A., Wiesenfeld, L., Scribano, Y., Bacmann, A., Hily-Blant, P., Maret, S., Walters, A., Bergin, E. A., Blake, G.A., Castets, A., Crimier, N., Dominik, C., Encrenaz, P., Gerin, M., Hennebelle, P., Kahane, C., Klotz, A., Melnick, G., Pagani, L., Parise, B., Schilke, P., Wakelam, V., Baudry, A., Bell, T., Benedettini, M., Boogert, A., Cabrit, S., Caselli, P., Codella, C., Comito, C., Falgarone, E., Fuente, A., Goldsmith, P.F., Helmich, F., Henning, T., Herbst, E., Jacq, T., Kama, M., Langer, W., Lefloch, B., Lis, D., Lord, S., Lorenzani, A., Neufeld, D., Nisini, B., Pacheco, S., Pearson, J., Phillips, T., Salez, M., Saraceno, P., Schuster, K., Tielens, X., van der Tak, F., van der Wiel, M. H. D., Viti, S., Wyrowski, F., Yorke, H., Cais, P., Krieg, J. M., Olberg, M., & Ravera, L. 2010, *Astronomy & Astrophysics*, 521, L31.

“Herschel Observations of Deuterated Water Towards Sgr B2(M),” Comito, C., Schilke, P., Rolfs, R., Lis, D.C., Belloche, A., Bergin, E. A., Phillips, T.G., Bell, T.A., Crockett, N.R., Wang, S., Blake, G.A., Caux, E., Ceccarelli, C., Cernicharo, J., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Gerin, M., Giesen, T. F., Goicoechea, J.R., Goldsmith, P.F., Gupta, H., Herbst,

E., Joblin, C., Johnstone, D., Langer, W.D., Latter, W.D., Lord, S.D., Maret, S., Martin, P. G., Melnick, G.J., Menten, K.M., Morris, P., Müller, H.S.P., Murphy, J. A., Neufeld, D. A., Ossenkopf, V., Pearson, J. C., Prault, M., Plume, R., Qin, S.-L., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Yorke, H.W., Yu, S., Olberg, M., Szczerba, R., Larsson, B., Liseau, R., Lin, R.H., Samoska, L. A., & Schlecht, E. 2010, *Astronomy & Astrophysics*, 521, L38.

“The Methanol Lines and Hot Core of OMC2-FIR4, an Intermediate-Mass Protostar, with Herschel/HIFI,” Kama, M., Dominik, C., Maret, S., van der Tak, F., Caux, E., Ceccarelli, C., Fuente, A., Crimier, N., Lord, S., Bacmann, A., Baudry, A., Bell, T., Benedettini, M., Bergin, E. A., Blake, G. A., Boogert, A., Bottinelli, S., Cabrit, S., Caselli, P., Castets, A., Cernicharo, J., Codella, C., Comito, C., Coutens, A., Demyk, K., Encrenaz, P., Falgarone, E., Gerin, M., Goldsmith, P.F., Helmich, F., Hennebelle, P., Henning, T., Herbst, E., Hily-Blant, P., Jacq, T., Kahane, C., Klotz, A., Langer, W., Lefloch, B., Lis, D., Lorenzani, A., Melnick, G., Nisini, B., Pacheco, S., Pagani, L., Parise, B., Pearson, J., Phillips, T., Salez, M., Saraceno, P., Schilke, P., Schuster, K., Tielens, X., van der Wiel, M. H. D., Vastel, C., Viti, S., Wakelam, V., Walters, A., Wyrowski, F., Yorke, H., Cais, P., Güsten, R., Philipp, S., Klein, T., & Helmich, F. 2010, *Astronomy & Astrophysics*, 521, L39.

“First Detection of ND in the Solar-Mass Protostar IRAS16293-2422,” Bacmann, A., Caux, E., Hily-Blant, P., Parise, B., Pagani, L., Bottinelli, S., Maret, S., Vastel, C., Ceccarelli, C., Cernicharo, J., Henning, T., Castets, A., Coutens, A., Bergin, E. A., Blake, G.A., Crimier, N., Demyk, K., Dominik, C., Gerin, M., Hennebelle, P., Kahane, C., Klotz, A., Melnick, G., Schilke, P., Wakelam, V., Walters, A., Baudry, A., Bell, T., Benedettini, M., Boogert, A., Cabrit, S., Caselli, P., Codella, C., Comito, C., Encrenaz, P., Falgarone, E., Fuente, A., Goldsmith, P.F., Helmich, F., Herbst, E., Jacq, T., Kama, M., Langer, W., Lefloch, B., Lis, D., Lord, S., Lorenzani, A., Neufeld, D., Nisini, B., Pacheco, S., Pearson, J., Phillips, T., Salez, M., Saraceno, P., Schuster, K., Tielens, X., van der Tak, F. F. S., van der Wiel, M. H. D., Viti, S., Wyrowski, F., Yorke, H., Faure, A., Benz, A., Coeur-Joly, O., Cros, A., Güsten, R., & Ravera, L. 2010, *Astronomy & Astrophysics*, 521, L42.

“Herschel/HIFI Observations of Spectrally Resolved Methylidyne Signatures Toward the High-Mass Star-Forming core NGC 6334I,” van der Wiel, M.H.D., van der Tak, F.F.S., Lis, D.C., Bell, T., Bergin, E.A., Comito, C., Emprechtinger, M., Schilke, P., Caux, E., Ceccarelli, C., Baudry, A., Goldsmith, P.F., Herbst, E., Langer, W., Lord, S., Neufeld, D., Pearson, J., Phillips, T., Rolffs, R., Yorke, H., Bacmann, A., Benedettini, M., Blake, G. A., Boogert, A., Bottinelli, S., Cabrit, S., Caselli, P., Castets, A., Cernicharo, J., Codella, C., Coutens, A., Crimier, N., Demyk, K., Dominik, C., Encrenaz, P., Falgarone, E., Fuente, A., Gerin, M., Helmich, F., Hennebelle, P., Henning, T., Hily-Blant, P., Jacq, T., Kahane, C., Kama, M., Klotz, A., Lefloch, B., Lorenzani, A., Maret, S., Melnick, G., Nisini, B., Pacheco, S., Pagani, L., Parise, B., Salez, M., Saraceno, P., Schuster, K., Tielens, A.G.G.M., Vastel, C., Viti, S., Wakelam, V., Walters, A., Wyrowski, F., Edwards, K., Zmuidzinas, J., Morris, P., Samoska, L. A., & Teyssier, D. 2010, *Astronomy & Astrophysics*, 521, L43.

“Nitrogen Hydrides in Interstellar Gas. Herschel/HIFI Observations Towards G10.6-0.4 (W31C),” Persson, C.M., Black, J.H., Cernicharo, J., Goicoechea, J.R., Hassel, G.E., Herbst, E., Gerin, M., de Luca, M., Bell, T.A., Coutens, A., Falgarone, E., Goldsmith, P.F., Gupta, H., Kazmierczak, M., Lis, D. C., Mookerjee, B., Neufeld, D. A., Pearson, J., Phillips, T. G., Sonnentrucker, P., Stutzki, J., Vastel, C., Yu, S., Boulanger, F., Dartois, E., Encrenaz, P., Geballe, T.R., Giesen, T., Godard, B., Gry, C., Hennebelle, P., Hily-Blant, P., Joblin, C., Kołosa, R., Kreowski, J., Martín-Pintado, J., Menten, K., Monje, R., Perault, M., Plume, R., Salez, M., Schlemmer, S., Schmidt, M., Teyssier, D., Pron, I., Cais, P., Gaufre, P., Cros, A., Ravera, L., Morris, P., Lord, S., & Planesas, P. 2010, *Astronomy & Astrophysics*, 521, L45.



“Reversal of Infall in SgrB2(M) Revealed by Herschel/HIFI Observations of HCN Lines at THz Frequencies,” Rolfs, R., Schilke, P., Comito, C., Bergin, E. A., van der Tak, F.F.S., Lis, D.C., Qin, S.-L., Menten, K.M., Güsten, R., Bell, T.A., Blake, G.A., Caux, E., Ceccarelli, C., Cernicharo, J., Crockett, N.R., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Gerin, M., Giesen, T.F., Goicoechea, J.R., Goldsmith, P.F., Gupta, H., Herbst, E., Joblin, C., Johnstone, D., Langer, W.D., Latter, W.D., Lord, S.D., Maret, S., Martin, P. G., Melnick, G. J., Morris, P., Müller, H.S.P., Murphy, J.A., Ossenkopf, V., Pearson, J.C., Pérault, M., Phillips, T. G., Plume, R., Schlemmer, S., Stutzki, J., Trappe, N., Vastel, C., Wang, S., Yorke, H.W., Yu, S., Zmuidzinas, J., Diez-Gonzalez, M. C., Bachiller, R., Martin-Pintado, J., Baechtold, W., Olberg, M., Nordh, L. H., Gill, J.J., & Chattopadhyay, G. 2010, *Astronomy & Astrophysics*, 521, L46.

“Detection of OH<sup>+</sup> and H<sub>2</sub>O<sup>+</sup> Towards Orion KL,” Gupta, H., Rimmer, P., Pearson, J. C., Yu, S., Herbst, E., Harada, N., Bergin, E.A., Neufeld, D.A., Melnick, G.J., Bachiller, R., Baechtold, W., Bell, T.A., Blake, G. A., Caux, E., Ceccarelli, C., Cernicharo, J., Chattopadhyay, G., Comito, C., Cabrit, S., Crockett, N.R., Daniel, F., Falgarone, E., Diez-Gonzalez, M.C., Dubernet, M.-L., Erickson, N., Emprechtinger, M., Encrenaz, P., Gerin, M., Gill, J. ., Giesen, T.F., Goicoechea, J.R., Goldsmith, P F., Joblin, C., Johnstone, D., Langer, W.D., Larsson, B., Latter, W. B., Lin, R. H., Lis, D C., Liseau, R., Lord, S. D., Maiwald, F. W., Maret, S., Martin, P. G., Martin-Pintado, J., Menten, K.M., Morris, P., Mller, H. S. P., Murphy, J.A., Nordh, L.H., Olberg, M., Ossenkopf, V., Pagani, L., Pérault, M., Phillips, T.G., Plume, R., Qin, S.-L., Salez, M., Samoska, L.A., Schilke, P., Schlecht, E., Schlemmer, S., Szczerba, R., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Wang, S., Yorke, H.W., Zmuidzinas, J., Boogert, A., Gsten, R., Hartogh, P., Honingh, N., Karpov, A., Kooi, J., Krieg, J.-M., Schieder, R., & Zaal, P. 2010, *Astronomy & Astrophysics*, 521, L47.

“Nitrogen Hydrides in the Cold Envelope of IRAS 16293-2422,” Hily-Blant, P., Maret, S., Bacmann, A., Bottinelli, S., Parise, B., Caux, E., Faure, A., Bergin, E.A., Blake, G.A., Castets, A., Ceccarelli, C., Cernicharo, J., Coutens, A., Crimier, N., Demyk, K., Dominik, C., Gerin, M., Hennebelle, P., Henning, T., Kahane, C., Klotz, A., Melnick, G., Pagani, L., Schilke, P., Vastel, C., Wakelam, V., Walters, A., Baudry, A., Bell, T., Benedettini, M., Boogert, A., Cabrit, S., Caselli, P., Codella, C., Comito, C., Encrenaz, P., Falgarone, E., Fuente, A., Goldsmith, P.F., Helmich, F., Herbst, E., Jacq, T., Kama, M., Langer, W., Lefloch, B., Lis, D., Lord, S., Lorenzani, A., Neufeld, D., Nisini, B., Pacheco, S., Phillips, T., Salez, M., Saraceno, P., Schuster, K., Tielens, X., van der Tak, F., van der Wiel, M.H.D., Viti, S., Wyrowski, F., & Yorke, H. 2010, *Astronomy & Astrophysics*, 521, L52.

“Spectral Energy Distributions of 6.7 GHz Methanol Masers,” Pandian, J.D., Momjian, E., Xu, Y., Menten, K.M., & Goldsmith, P.F. 2010, *Astronomy & Astrophysics*, 522, A8.

“A Survey of HI Narrow Self-Absorption in Molecular Cores,” Krčo, M. & Goldsmith, P.F. 2010, *ApJ*, 724, 1402.

“Herschel Observations of Extra-Ordinary Sources: Methanol as a Probe of Physical Conditions in Orion KL, Wang, S., Bergin, E.A., Crockett, N.R., Goldsmith, P.F., Lis, D.C., Pearson, J.C., Schilke, P., Bell, T.A., Comito, C., Blake, G.A., Caux, E., Ceccarelli, C., Cernicharo, J., Daniel, F., Dubernet, M.-L., Emprechtinger, M., Encrenaz, P., Gerin, M., Giesen, T.F., Goicoechea, J.R., Gupta, H., Herbst, E., Joblin, C., Johnstone, D., Langer, W.D., Latter, W.B., Lord, S.C., Maret, S., Martin, P.G., Melnick, G.J., Menten, K.M., Morris, P., Mueller, H.S.P., Murphy, J.A., Neufeld, D.A., Ossenkopf, V., Perault, M., Phillips, T.G., Plume, R., Qin, S.-L., Schlemmer, S., Stutzki, J., Trappe, N., van der Tak, F.F.S., Vastel, C., Yorke, H.W., Yu, S., & Zmuidzinas, J. 2011, *Astronomy & Astrophysics*, 527, A95.

“Magnetic Field Structure around Low-Mass Class 0 Protostars: B335, L1527 and IC348-SMM2, Davidson, J., Novak, G., Matthews, T.F., Matthews, B., Goldsmith, P.F., Chapman, N., Volgenau, N. H., Vaillancourt, J.E., & Attard, M. 2011, ApJ, 732, 97.

### Chapters in Books

“Quasioptical Techniques,” Chapter 5 in *Infrared and Millimeter Waves Vol. 6*, K.J. Button, ed., New York: Academic, 1982.

“Quasioptical Techniques,” Goldsmith, P.F., Itoh, T., and Stefan, K., Ch. 7 in *Handbook of Microwave and Optical Components Vol. 1*, K. Chang, ed., New York: Wiley, 1989.

“Some Radio Telescope Considerations in Millimeter and Submillimeter Radio Astronomy,” in *Millimeter-Wave Astronomy: Molecular Chemistry & Physics in Space, Proc. of the 1996 INAOE Summer School of Millimeter-Wave Astronomy*, W. Wall, A. Caraminana, L. Carrasco, and P.F. Goldsmith, eds., Dordrecht: Kluwer, 405, 1999.

“Probing Molecular Clouds – Their Density and Structure,” in *Millimeter-Wave Astronomy: Molecular Chemistry & Physics in Space, Proc. of the 1996 INAOE Summer School of Millimeter-Wave Astronomy*, W. Wall, A. Caraminana, L. Carrasco, and P.F. Goldsmith, eds., Dordrecht: Kluwer, 57, 1999.

“Radio Telescopes and Measurements at Radio Wavelengths,” Goldsmith, P.F., *ASP Conf. Series Vol. 278, Proc. Conf. Single-Dish Radio Astronomy Techniques and Applications*, S. Stanimirovic, D.R. Altschuler, P.F. Goldsmith, and C.J. Salter eds., San Francisco: ASP, 45, 2002.

“Quasi-Optical Techniques,” Goldsmith, P.F., Itoh, T., Stephan, K.D., and Mortazawi, A., Ch. 7 in *Handbook of RF/Microwave Components and Engineering*, K. Chang ed., Hoboken: Wiley, 2003.

“Historical Background and Development of Soviet Quasioptics at Near-MM and Sub-MM Wavelengths,” Kostenko, A.A., Nosich, A.I., & Goldsmith, P.F., Ch. 13 in *The Historical Development of Wireless*, T. Sarkar et al., ed. Hoboken: Wiley, 2006.

### Edited Books

*Instruments and Techniques for Radio Astronomy*, P.F. Goldsmith, ed., New York: IEEE Press, 1988.

*Millimeter-Wave Astronomy: Molecular Chemistry & Physics in Space, Proc. of the 1996 INAOE Summer School of Millimeter-Wave Astronomy*, W. Wall, A. Caraminana, L. Carrasco, and P.F. Goldsmith, eds., Dordrecht: Kluwer, 1999.

*Single-Dish Radio Astronomy: Techniques and Applications, ASP Conference Series, Vol. 278*, S. Stanimirovic, D.R. Altschuler, P.F. Goldsmith, & C.J. Salter, eds., San Francisco: Astronomical Society of the Pacific, 2002.

*Submillimeter Astrophysics and Technology: A Symposium Honoring Thomas G. Phillips, ASP Conference Series Vol. 417*, D.C. Lis, J. E. Vaillancourt, P.F. Goldsmith, T.A. Bell, N.Z. Scoville, & J.Zmuidzinas, eds., San Francisco: Astronomical Society of the Pacific, 2010.

## Monographs

*Quasioptical Systems – Gaussian Beam Quasioptical Propagation and Applications*, P.F. Goldsmith,  
New York: IEEE Press/Chapman & Hall, 1998.

## GRADUATE STUDENTS SUPERVISED

### Degrees Completed

Richard Arquilla, PhD  
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