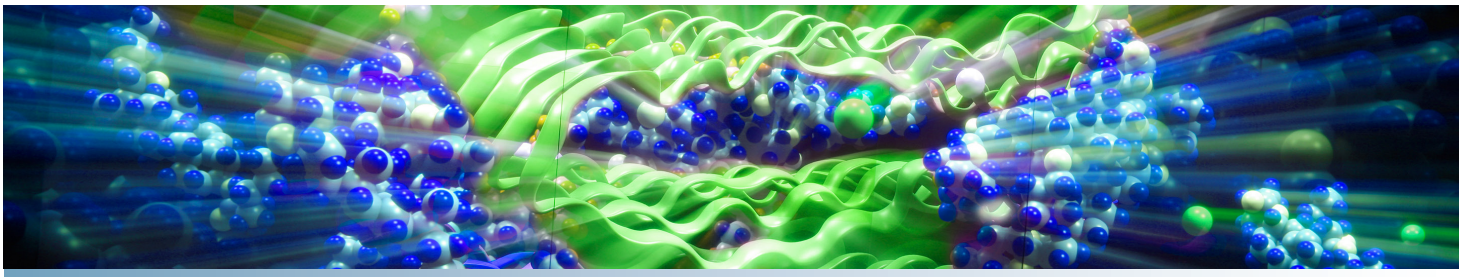
Pulsed Ionization Source for Miniature Ion Mobility Spectrometers



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Technology Summary

The subject invention is a pulsed discharge ionization source for analytical instruments, including miniature ion mobility spectrometers (IMSs). The device consists of a nickel corona electrode ion source; a miniature IMS drift channel composed of a stack of electrodes, insulating spacers, and miniature resistors; a pulse generator coupled with a high voltage pulse amplifier; and a detector. A high voltage pulse is applied to the corona electrode, generating ions in the vicinity of the electrode tip through field-induced ionization. A DC bias is used in combination with the pulse to decrease noise and power consumption. The pulse also serves as the start signal for ion mobility measurements, eliminating the need for an ion gate and thus reducing space requirements. High sensitivity is maintained because the ions generated by this technology are highly concentrated in space and time.

Patents

Jun Xu, J. Michael Ramsey, and William B. Whitten. *Pulsed Discharge Ionization Source for Miniature Ion Mobility Spectrometers,* U.S. Patent US 6,822,225 B2, issued November 23, 2004.

Inventor Point of Contact

Jun Xu
Chemical Sciences Division
Oak Ridge National Laboratory

Licensing Contact

Jennifer Tonzello Caldwell
Group Leader, Technology Commercialization
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.574.4180
E-mail: caldwelljt@ornl.gov