

5th Harsh-Environment Mass Spectrometry Workshop 2005

**Sarasota, Florida, USA
20-23 September 2005**

ISBN: 978-1-61839-273-2

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Red Hook, NY 12571



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The 5th Harsh-Environment Mass Spectrometry Workshop

Presented by the
Center for Ocean Technology
College of Marine Science /University of South Florida
September 20-23 2005, Lido Beach Sarasota, Florida

Tue, September 20

Travel Day

7:00 p.m.

Welcome Reception at Holiday Inn Lido Beach KoKoNuts Pool Deck Wed,
September 21

7:30 a.m.

Continental Breakfast (SandDollar Rooftop Restaurant)

8:30 a.m.

Technical Session: (SandDollar Rooftop Restaurant)

8:30 a.m. Welcoming Remarks: Larry Langebrake, Tim Short 9:00 a.m.

["Applications of membrane inlet mass spectrometry for long term monitoring in the field"](#) Frants Lauritsen, *Copenhagen University; Copenhagen, Denmark* Anders Feilberg, *Danish Technological Institute, Aarhus, Denmark* [Abstract](#) 9:30 a.m. 1

["Field-Portable GC/MS Characterization and Testing"](#) Garth E. Patterson, J. Mitchell Wells, John W. Grossenbacher, Anthony, J. Cochran, Caryn R. O'Hearn, *Griffin Analytical Technologies, Inc., West Lafayette, IN* [Abstract](#) 10:00 a.m. 9

Coffee Break

(SandDollar Rooftop Restaurant) 10:30 a.m.

["A Field-Portable Thermal Desorption Time-of-Flight Mass Spectrometer"](#) M. Brookes, A. Marr, *Defence Science and Technology Laboratory (Dstl), Fort Halstead, Seveoaks, Kent, UK*, S. Mullock, F. Nuber, F. Reich, C. Corlett, *Kore Technology Ltd, Ely, UK* [Abstract](#) 11:00 a.m. 28

["Waterborne CB Agent Detection System"](#) Steve Smith, *JPL/Caltech, Pasadena, CA*, Rao Mangina, *Ionfinity, LLC* [Abstract](#) 11:30 a.m. Lunch on your own 1:30 p.m.

Technical Session: (SandDollar Rooftop Restaurant) 1:30 p.m. 42

"An Ion Trap Mass Spectrometer System for Continuous Monitoring of Biological and Chemical Backgrounds" Ben D. Gardner, William Donaldson, Richard Chun, Wai Tak Lee, Michael Tissandier, *Hamilton Sundstrand, Pomona, CA* [Abstract](#) 2:00 p.m. N/A

["Detection of Explosives at a Formerly Used Defense Site with a Portable SPME/GC-Cylindrical Ion Trap Mass Spectrometer"](#) Denise K. MacMillan, *Engineer Research and Development Center, Omaha, NE*, Randy D. Laubscher, *Analytical Services Incorporated, Vicksburg, MS* [Abstract](#) 2:30 p.m. 57

["CT-1128 Portable Gas Chromatograph – Mass Spectrometer"](#) Jay D. Sheffer,
Constellation Technology Corp, Largo, FL [Abstract](#) 3:00 p.m. **69**

Afternoon Break (SandDollar Rooftop Restaurant)
3:30 p.m. Poster Session (SandDollar Rooftop Restaurant)

["Underwater mass spectrometry—Calibration issues for membrane introduction interfaces"](#) R.J. Bell, F.H.W. van Amerom, S.K. Toler, P. G. Wenner and R.T. Short,
Center for Ocean Technology, College of Marine Science, University of South Florida, St. Petersburg, FL **90**

["LIGA fabricated high aspect ratio nickel gas chromatograph \(GC\) columns as a step towards a portable and fast GC instrument"](#) Abhinav Bhushan, Dawit Yemane, Jost Goettert, *CAMD, Louisiana State University*, Edward B. Overton, *Department of Environmental Studies, LSU, Baton Rouge, LA* [Abstract](#) **91**

["Implications of Miniaturising Linear Ion Trap Arrays for Portable Detectors"](#) S.N. Cairns(1), D.P.A. Kilgour(1), J. Murrell(1), M.D. Brookes(1), and J.F.J. Todd(2);
(1)Defence Science and Technology Laboratory (Dstl), Fort Halstead, Sevenoaks, Kent, United Kingdom, (2)University of Kent, Canterbury, Kent, United Kingdom N/A

["Performance Characteristics of Detectors Operated in Harsh Environments"](#) Raymond F. Cochran, Bruce N. Laprade, Richard Prunier, Lenny Erickson, William Dunn, *BURLE Electro-Optics Inc., Sturbridge, MA* [Abstract](#) **92**

["Gas Concentration Mapping of Arenal Volcano using AVEMS"](#) J. Andres Diaz (1,4), C. Richard Arkin (2), Timothy P. Griffin (3), Elian Conejo (4), Kristel Heinrich (1,4), Carlomagno Soto (1), Laura Bogantes (1), Guy R. Naylor (2), Charles Curley (2), David Floyd (2), Oliver Gomez (1), *(1) National Program for Airborne and Remote Sensing Research (PRIAS), CENAT. Costa Rica, (2) ASRC Aerospace Corp., Kennedy Space Center, FL (3) National Aeronautics and Space Administration, YA-F2, Kennedy Space Center, FL, (4) CICANUM, Universidad de Costa Rica, Costa Rica* **106**

["In-situ programmable, reconfigurable fluidic processor for waterborne biomolecular sample prep: towards the development of an automated bio-mass spec."](#) Brian Gregson, Andrew Farmer, Matt Smith and David Fries, *Center for Ocean Technology, College of Marine Science, University of South Florida, St. Petersburg, FL* **107**

["Characterization of a Mini Membrane Inlet Mass Spectrometer Operating at High Pressure \(~ 1•10⁻³ torr\) Using Different Types of Microporous Membranes"](#) Frants R. Lauritsen, Christian Janfelt, Christian Schack Pedersen, *Chemistry, Copenhagen University, Copenhagen, Denmark* N/A

[“Mobile water mass-spectrometer”](#) Dimitrii Lebedev, Viktor Kogan, Anatolii Pavlov, Yurii Chichagov, Yurii Tubol'tsev, Olga Viktorova, Mihail Savchenko A. F. Ioffe *Physico-Technical Institute, St. Petersburg, Russia*, Boris Dubenskii, Sergei Nikonov *CFTI Analytic, St.Petersburg, Russia* **108**

["A High-Performance Vapor-Jet Micropump for Miniaturized Mass-Spectrometers"](#) Eric Wapelhorst, M. Doms J. Müller, *Hamburg-Harburg University of Technology, Hamburg, Germany* [Abstract](#) **109**

["Analysis of Atmospheric Samples using a Comprehensive Two-Dimensional Gas Chromatograph Coupled to a Time-of-Flight Mass Spectrometer"](#) J. Yu(1), J. H. Waite1, B. P. Block(1), M. E. McGuigan(1), S. Scherer(1), R. D. Sacks(2), M. J. Libardoni(2), A. L. Payeur(2), P. T. Stevens(2), E. F. Hasselbrink(3), (1)*Department of Atmospheric, Oceanic and Space Sciences, Space Physics Research Laboratory, University of Michigan* (2)*Department of Chemistry, University of Michigan*, (3)*Department of Mechanical Engineering, College of Engineering University of Michigan* 5:30p.m. **110**

Evening Free Thu, September 22

7:30 a.m.

Continental Breakfast (SandDollar Rooftop Restaurant)

8:30 a.m.

Technical Session: (SandDollar Rooftop Restaurant) 8:30 a.m.

["3D Gas Concentration Mapping of Active Volcanoes using Mass Spectrometry"](#) J. Andres Diaz (1,4), C. Richard Arkin (2), Timothy P. Griffin (3), Elian Conejo (4), Kristel Heinrich (1,4), Carlomagno Soto (1), Laura Bogantes (1), Guy R. Naylor (2), Charles Curley (2), David Floyd (2), Oliver Gomez (1), (1) *National Program for Airborne and Remote Sensing Research (PRIAS), CENAT. Costa Rica*, (2) *ASRC Aerospace Corp., Kennedy Space Center, FL* (3) *National Aeronautics and Space Administration, YA-F2, Kennedy Space Center, FL* (4) *CICANUM, Universidad de Costa Rica, Costa Rica* 9:00 a.m. **N/A**

["The Cassini/Huygens Gas Chromatograph Mass Spectrometer"](#) Dan Harpold, *NASA/GSFC, Greenbelt, MD* [Abstract](#) 9:30 a.m. **111**

["Laser TOF-MS instrumentation for planetary missions"](#) W. B. Brinckerhoff, C. M. Corrigan, T. J. Cornish, S. A. Ecelberger, A. L. Ganesan (*JHU/APL*); T. J. McCoy, E. P. Vicenzi (*NMNH Dept. Mineral Sci.*); P. R. Mahaffy (*NASA/GSFC*) [Abstract](#) 10:00 a.m. **123**

Coffee Break (SandDollar Rooftop Restaurant) 10:30 a.m.

["Offgas from Radiolysis – Difficult analysis needing High Resolution Mass Spectrometry"](#) William A. Spencer, Charles L. Crawford, Thomas L. White, Stephen L. Crump, Robert J. Lascola, and Laura L. Tovo, *Savannah River National Laboratory, Westinghouse Savannah River Company, Aiken, SC* [Abstract](#) 11:00 a.m. **136**

["Comprehensive Two-Dimensional Gas Chromatography Coupled with Time-of-Flight Mass Spectrometry for Broad Spectrum Organic Analysis"](#) S. Scherer(1), J. H. Waite(1), B. P. Block(1), M. E. McGuigan(1), J. Yu(1), R. D. Sacks(2), M. J. Libardoni(2), A. L. Payeur(2), P. T. Stevens(2), E. F. Hasselbrink(3), (1)*Department of Atmospheric, Oceanic and Space Sciences, Space Physics Research Laboratory, University of Michigan*, (2)*Department of Chemistry, University of Michigan*, (3)*Department of Mechanical Engineering, College of Engineering University of Michigan* **146**

11:30 a.m. Lunch on your own 1:30 p.m. Technical Session: (SandDollar Rooftop Restaurant) 1:30 p.m.

"Ion trapping in microfabricated ion trap arrays" D. Cruz (1,2), M. Fico (3), A. J. Guymon (3), R. G. Cooks (3), J. P. Chang (2), and M. G. Blain (1), (1)*Sandia National Laboratories, Albuquerque, NM*, (2)*University of California, Los Angeles, Los Angeles, CA*, (3)*Purdue University, West Lafayette, IN* **N/A**

["Miniature ion traps and arrays for high pressure mass spectrometry"](#) W. B. Whitten, J. Moxom, G. F. Verbeck, and P. T. A. Reilly, *Oak Ridge National Laboratory, Oak Ridge, TN* [Abstract](#) 2:30 p.m. **162**

["MEMS fabrication techniques for miniaturization of cylindrical ion trap arrays"](#) Friso van Amerom, Ashish Chaudhary, Mary Voorhees, Michelle Cardenas and Tim Short *Center for Ocean Technology, University of South Florida, St. Petersburg, FL* [Abstract](#) 3:00 p.m. **175**

Afternoon Break (SandDollar Rooftop Restaurant) 3:30 p.m.

["A Fully Integrated Micro Mass Spectrometer"](#) Eric Wapelhorst, Jan-Peter Hauschild, Joerg Mueller, *Hamburg University of Technology, Germany* [Abstract](#) 4:00 p.m. **189**

["Portable mass-spectrograph with linear segmented detector array"](#) Dmitrii Lebedev, Viktor Kogan, Olga Viktorova, Sergey Manninen, *A.F.Ioffe Physico-Technical Institute, RAS, St. Petersburg, Russia* [Abstract](#) 4:30 p.m. **N/A**

["A CCD detector array for direct ion measurement"](#) Gottfried Kibelka, *OI Analytical / CMS Field Products, Pelham, AL* [Abstract](#) 5:00 p.m. **202**

Free Time

6:00 p.m.

Workshop Dinner (Mote Marine Laboratory)

Fri, September 23

7:30 a.m.

Continental Breakfast (SandDollar Rooftop Restaurant)

8:30 a.m.

Technical Session: (SandDollar Rooftop Restaurant) 9:00 a.m.

["Development of the DOMS Deep-Ocean Mass Spectrometer System"](#) Gary McMurtry, *SOEST, University of Hawaii*, Lloyd C. French, *Hawaii Institute of Geophysics & Planetology, Univ. of Hawaii*, Gindi D. French, *Dept. of Oceanography, Univ. of Hawaii, Honolulu, HI* [Abstract](#) 9:30 a.m. **211**

["Determination of dissolved gas concentrations in natural waters using an in-situ, membrane inlet mass spectrometer"](#) Pete Wenner, R.J. Bell, F.H.W. van Amerom, S.K. Toler, M.L. Hall, R.T. Short, *Center for Ocean Technology, College of Marine Science, University of South Florida, St. Petersburg, FL* [Abstract](#) 10:00 a.m. **229**

Coffee Break

(SandDollar Rooftop Restaurant) 10:30 a.m.

"Paradigm shifts in mass spectrometry" Mark Rippen, *Concurrent Technologies Corp, Largo, FL* [Abstract](#) 11:00 a.m. **N/A**

["DoD's SBIR & STTR Programs: An Overview "](#) Larry Pollack, *Joint Science and Technology Office for Chemical and Biological Defense, Defense Threat Reduction Agency, Ft. Belvoir, Virginia* [Abstract](#) 11:30 a.m. **246**

Workshop ends