

Curriculum Vitae

Stephen A. Lammert, Ph.D.
Head, Analytical Spectroscopy Section

Employment:

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Education

Ph.D. (Dec 1992) Analytical Chemistry, Purdue University, West Lafayette, IN. Research Advisor- R. Graham Cooks, Dissertation Title: "The Use of Fast DC Pulses in a Quadrupole Ion Trap Mass Spectrometer"
A.B. (May 1975) Chemistry, Indiana University, Bloomington, IN

Work Experience

10/99 to present Chemical and Analytical Sciences Division, Oak Ridge National Laboratory
Oak Ridge, TN
(Head, Analytical Spectroscopy Section, Deputy Program Manager for the Block II Chemical and Biological Mass Spectrometer Program)

11/92 to 10/99 Chemical and Analytical Sciences Division, Oak Ridge National Laboratory
Oak Ridge, TN
(Research Staff Member)

8/87-11/92. Purdue University Department of Chemistry, West Lafayette, IN
(Graduate Research Assistant, Graduate Teaching Assistant)

7/84-7/87 Finnigan-MAT Corporation, San Jose, CA
(Applications Chemist, Triple Quadrupole Product Specialist)

9/79-7/84 Finnigan-MAT Institute, Cincinnati, OH
(Instructor - Mass Spectrometry, Electronic Maintenance, Chromatography)

1/78-6/79 Perkin-Elmer Corporation, Cincinnati OH
(Gas/Liquid Chromatography Applications Support and Sales Specialist)

2/76-1/78 Frekote, Inc., Indianapolis, IN
(Analytical Chemist)

Research Interests and Expertise

Extensive experience in quadrupole and quadrupole ion trap mass spectrometry including MS and MS/MS techniques. Special emphasis on ion trap fundamentals as well as the design, development and applications of ion trap mass spectrometry instrumentation, field-portable ion traps, and novel analyzer design. Skilled in ion optics, ion trajectory simulations, electronics and vacuum hardware principles/design. Application areas include the detection and identification of chemical and biological weapons (CW/BW). Considerable previous experience in chromatographic methods (both gas and liquid) and their interfaces to mass spectrometry.

Current Responsibilities

Head of Analytical Spectroscopy Section of the Chemical and Analytical Sciences Division. Section staff includes over 50 researchers (26 Ph.D.'s), primarily in the fields of fundamental and applied mass spectrometry, laser spectroscopy and micro-instrumentation.

Point of Contact and Principal Investigator in the US Department of Energy Chemical and Biological Non-Proliferation (CBNP) Program under NN-20. Research focus on applying analytical chemistry solutions to domestic terrorism threat detection.

Technical Lead for project funded by US Army Soldier Biological and Chemical Command (SBCCOM) to design and develop the US Army's next generation CW/BW battlefield detector system, the Block II Chemical and Biological Mass Spectrometer (CBMS).

Previous Projects and Responsibilities

Principal Investigator for project funded by US Army Edgewood Research, Development and Engineering Center to develop portable instrumentation and methods for on-site analysis of compounds related to the Chemical Weapons Convention Treaty.

Principal Investigator for project funded by US DOE (NN-20) to develop a man-portable (carry-on suitcase size), self-powered ion trap mass spectrometer for the detection of chemicals related to nuclear production or proliferation activities.

Contributor to counter-drug projects funded by the US Customs and US Navy involving the detection of illicit drugs as well as the chemicals associated with their production.

Professional Societies

American Society for Mass Spectrometry
American Chemical Society
East Tennessee Mass Spectrometry Discussion Group
International Mass Spectrometry Society
American Association for the Advancement of Science

Professional Activities

Chair-elect, East Tennessee Mass Spectrometry Discussion Group (Term 2001-2003)
Secretary, American Society for Mass Spectrometry (Term 1999-2001)
Member, ASMS Sanibel Organizing Committee (1997 to present, Chairman 1999/2000)
Instructor for Ion Trap Short Course 1997-present
Program Review Committee – 2001 ASMS Conference, ASMS (2001)
Panel Member for US Army Review Board on the Future Directions of Mass Spectrometry Research
(Baltimore, MD, 31 July 1997)
Panel Member for the NASA AEMC Life Sciences Review Panel (17 July 2000).
Session Chair for Ion Trap Session - American Society for Mass Spectrometry Conference (1996).
Review Panel for NSF Chemistry Research Instrumentation and Facilities (CRIF) Program (1999-
2000)
Session Chair for Mass Spectrometry Session - On-Site Conference (1995)
Reviewer of manuscripts for *Int. J. Mass Spectrom.*, *J. Mass Spectrom.*, *J. Am. Soc. Mass Spectrom.*, *J. Onsite Anal.*

Awards and Honors

Dow Research Fellowship 1989
Phi Lambda Upsilon Honorary Chemical Society 1988-1992
R&D 100 Award 2000 (for the Block II Chemical and Biological Mass Spectrometer)
UT-Battelle Technical Achievement Award (for the Block II CBMS) 2000.

Civic Activities

St. Mary's School Board (Member -1995-1997, 2000-present; Chairman -1996/7)
St. Mary's School, Home and School Association President (1995-1996)
Kids Voting Oak Ridge, Member of Board of Directors (1995- present)
American Youth Soccer Organization Coach (1993-present)
Girls Incorporated Basketball Coach (1996-present)
St. Mary's School Varsity Basketball Coach (2000-present)
Tennessee Statewide Catholic Schools Internet Committee (1996)
St. Mary's Catholic Church Building Committee (1997)
St. Mary's Catholic Church Facility Usage Committee Chairman (1999)

PUBLICATIONS

1. Q.V. Thomas, J.R. Stork, S.A. Lammert; "The Chromatographic and GC/MS Analysis of Organic Priority Pollutants in Water", *J. Chromat. Sci.* **18** (1980) 583-593.
2. W.H. McFadden, S.A. Lammert; "Techniques for Increased Use of Thermospray Liquid Chromatography-Mass Spectrometry", *J. Chromatography* **385** (1987) 201-211.
3. R.D. Voyksner, W.H. McFadden, S.A. Lammert "Application of Thermospray HPLC/MS/MS for Determination of Triazine Herbicides" in "Applications of New Mass Spectrometry Techniques in Pesticide Chemistry", J.D. Rosen, editor, John Wiley and Sons, Inc, New York City, 1987, Chapter 17.
4. O.W. Hand, L.D. Detter, S.A. Lammert, R.G. Cooks, R.A. Walton, "Reduction Induced by Ion Beams: Hydrogenation of Nitrogen-Containing Heterocycles and Quinones in Molecular Secondary Ion Mass Spectrometry", *J. Am. Chem. Soc.* **111** (1989) 5577-5583.
5. Raymond E. Kaiser Jr., J.D. Williams, S.A. Lammert, R.G. Cooks, D. Zakett; "Thermospray Liquid Chromatography-Mass Spectrometry with a Quadrupole Ion Trap Mass Spectrometer" *J. Chromatography, Biomedical Appl.* **562** (1991) 3-11.
6. S.A. Lammert and R.G. Cooks; "Surface-induced Dissociation of Molecular Ions in a Quadrupole Ion Trap Mass Spectrometer", *J. Am. Soc. Mass Spectrom.* **2(6)** (1991) 487-491.
7. R.G. Cooks, S.H. Hoke III, K.L. Morand, and S.A. Lammert; "Mass Spectrometers: Instrumentation" *Int. J. Mass Spectrom. Ion Processes*, **118/9** (1992) 1-36.
8. K.L. Morand, S.A. Lammert and R.G. Cooks; "Concerning 'Black Holes' in Ion Trap Mass Spectrometry" *Rapid Comm. Mass Spectrom.* **5(10)** (1991) 491.
9. B.E. Winger, H.J. Laue, S.R. Horning, R.K. Julian, Jr., S.A. Lammert, D.E. Riederer, Jr. and R.G. Cooks; "A Hybrid BEEQ Tandem Mass Spectrometer for the Study of Ion/Surface Collision Processes", *Rev. Sci Instruments* **63(12)** (1992) 5613-25.
10. S.A. Lammert and R.G. Cooks; "Pulsed Axial Activation in the Ion Trap: A New Method for Performing MS/MS" *Rapid Comm. Mass Spectrom.* **6** (1992) 528-30.
11. Stephen A. Lammert, Curtis D. Cleven, R. Graham Cooks; "Determination of Ion Frequencies in a Quadrupole Ion Trap Using a Fast DC Pulse as Pump and a Laser Probe" *J. Am. Soc. Mass Spectrom.* **5(1)** (1994) 29-36.
12. Stephen A. Lammert, Roosevelt Merriweather, Michael B. Wasserman; "Analysis of Chemical Weapons Convention Treaty Compounds using a Field -Portable Ion Trap Mass Spectrometer, AT-*Onsite*, in press
13. Stephen A. Lammert and J. Mitchell Wells, "Experimental Investigation into the Performance of Ion Traps using Air versus Helium as the Buffer Gas", *Rapid Comm. Mass Spectrom* **10(3)** (1996) 361-371.

14. Kevin J. Hart, Marcus B. Wise, Wayne H. Griest, and Stephen A. Lammert "Design, Development and Performance of a Fieldable Chemical and Biological Agent Detector" (*Field Anal. Chem. and Tech.*, **4** (2000) 93-110).
15. Wayne H. Griest*, Marcus B. Wise, Kevin J. Hart, Stephen A. Lammert, Cyril V. Thompson, and Arpad A. Vass; "Biological Agent Detection and Identification by the Block II Chemical Biological Mass Spectrometer" *Field Anal. Chem. and Tech.* (in press).
16. Stephen A. Lammert, Wolfgang R. Plass, Cyril V. Thompson, and Marcus B. Wise; "Design, Optimization and Initial Performance of a Toroidal RF Ion Trap Mass Spectrometer" *Int. J. Mass Spectrom.* (in press).

Directory of Mass Spectrometry Manufacturers and Suppliers

1. S.A. Lammert and R.G. Cooks; "Mass Spectrometer Systems and Products: A Directory of Manufacturers and Suppliers", *Rapid Comm. Mass Spectrom.* **5(9)** (1991) 424-432.
2. S.A. Lammert and R.G. Cooks; "Mass Spectrometer Systems and Products: An Expanded Directory of Manufacturers and Suppliers", *Rapid Comm. Mass Spectrom.* **6(2)** (1992) 75-84.
3. S.A. Lammert; "1993 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **7(2)** (1993) 112-126.
4. Stephen A. Lammert; "1994 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **8(5)** (1994) 43-57.
5. Stephen A. Lammert; "1995 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **9(6)** (1995) 461-487.
6. Stephen A. Lammert; "1996 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **10(6)** (1996) 597-618.
7. Stephen A. Lammert; "1997 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **11(8)** (1997) 821-845.
8. Stephen A. Lammert; "1998 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **12(9)** (1998) 495-507.
9. Stephen A. Lammert "1999 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **13(10)** (1999) 831-844.
10. Stephen A. Lammert "2000 Directory of Mass Spectrometry Manufacturers and Suppliers" *Rapid Commun. Mass Spectrom.* **14(9)** (2000) 725-739.

PRESENTATIONS

- 1) "Measurement of Antioxidant Mixtures by Thermospray LC/MS" J. Welby, W.H. McFadden, S.A. Lammert; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, New Orleans, LA (1985), paper #115.
- 2) "Advantages of Triple Stage Quadrupole MS/MS in the Routine Analytical Laboratory", R.M. Johnston, S.A. Lammert, R. Schubert; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, New Orleans, LA (1985), paper #229.
- 3) "Complex GC Analysis with the Ion Trap Detector", C. Campbell, S.A. Lammert, D. Taylor; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, New Orleans, LA (1985), paper #753.
- 4) "Determination of Highly Polar Drugs in Body Fluids and Tissues by TSQ MS/MS Techniques", R.M. Johnston, S.A. Lammert, P. Christiansen; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, New Orleans, LA (1985), paper #1116.
- 5) "Application of Thermospray LC/MS and Triple Stage Quadrupole MS/MS in Pesticide Analysis", W.H. McFadden, S.A. Lammert, R.D. Voyksner, J.T. Bursey; 33rd Annual Conference on Mass Spectrometry and Allied Topics, San Diego, CA (1985), (proceedings - p. 373).
- 6) "LC/MS Analysis of an Antioxidant Mixture. Comparison of Results Obtained using a Thermospray Interface and a Moving Belt Interface" W.H. McFadden, S.A. Lammert, J. Welby; American Chemical Society Meeting, Miami, FL (1985) paper #36.
- 7) "Analysis of Polyaromatic Amines and Nitrogen Compounds Using Thermospray LC/MS in the Filament Ionization Mode", V. Lopez-Avila, S. Kraska, W.H. McFadden, S.A. Lammert; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (1986) paper #059.
- 8) "Soft Ionization and MS/MS: Complementary Techniques in the Analysis of Thermally Labile and Polar Compounds", S.A. Lammert, R.M. Johnston; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (1986) paper #724.
- 9) "Techniques for Increased Use of Thermospray LC/MS", W.H. McFadden, S.A. Lammert; Tenth International Symposium on Liquid Chromatography, San Francisco, CA, 18-23 May 1986, paper #2605.
- 10) "Recent Advances in Quadrupole MS/MS that Enhance Thermospray LC/MS Capabilities", S.A. Lammert; 1986 American Chemical Society Summer Symposium on Chromatographic/Spectroscopic Combinations, Salt Lake City, UT, 18-20 June 1986.
- 11) "Applications of the TSQ 70: Advanced Instrument Control Language for MS/MS", S.A. Lammert, R.W.K. Chapman, D.A. Garteiz; 1986 Congress on Advances in Spectroscopy and Laboratory Science, Toronto, Ontario, Canada, 6-9 October 1986.

- 12) "Data Dependent Instrument Control on a Triple Stage Quadrupole Mass Spectrometer", S.A. Lammert, R.W.K. Chapman, U. Steiner, A.E. Schoen; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (1987) paper #1105.
- 13) "Determination of Synthetic Pyrethroids by Thermospray LC/MS/MS", D.A. Gartiez, S.A. Lammert; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (1987) paper #038.
- 14) "Use of MS/MS for Analysis of Plant Growth Regulators", R.K.W. Chapman, S.A. Lammert, T.A. Odem, A.E. Schoen; Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (1987) paper #1106.
- 15) "Thermospray LC/MS with a Quadrupole Ion Trap and Recent Applications of Ion Injection", R.E. Kaiser, J.D. Williams, J.C. Schwartz, S.A. Lammert, R.G. Cooks, D. Zakett; 37th ASMS Conference on Mass Spectrometry and Allied Topics, Miami Beach, FL, 21-26 May 1989, (proceedings - p. 369).
- 16) "Evidence for RF Phase Coherence Using Surface-induced Dissociation in the Ion Trap Mass Spectrometer", S.A. Lammert and R.G. Cooks; Presented at the 39th ASMS Conference on Mass Spectrometry and Allied Topics, Nashville, TN, 19-24 May 1991.
- 17) "Mass Spectrometers: Instrumentation", R.G. Cooks, S.H. Hoke II, K.L. Morand, and S.A. Lammert; Presented at the 12th International Mass Spectrometry Conference, Amsterdam, The Netherlands, 26-30 August 1991.
- 18) "Surface-induced Dissociation in the Ion Trap Mass Spectrometer", S.A. Lammert and R.G. Cooks; Presented at the 18th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies (joint meeting with the 13th Pacific Conference on Chemistry and Spectroscopy), Anaheim, CA, 6-11 October 1991, paper #236.
- 19) "Chemical Analysis using the Quadrupole Ion Trap: Advances in Instrumentation", R.G. Cooks, R.K. Julian, Jr., S.A. Lammert, K.L. Morand, and J.D. Williams; Presented at the 1992 Pittcon Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, 9-13 March 1992.
- 20) "Recent Advances in Ion Trap and Multi-quadrupole Mass Spectrometry", R.G. Cooks, R.K. Julian, Jr., S.A. Lammert, K.L. Morand, B.J. Shay; Presented at the International Conference on Biological Mass Spectrometry, Kyoto, Japan, 20-24 September 1992.
- 21) "Determination of Ion Frequencies in a Quadrupole Ion Trap Using a Fast DC Pulse "Pump" and a Laser "Probe", Lammert, S.A., Cleven, C.D., and Cooks, R.G.; Presented at the 41st ASMS Conference on Mass Spectrometry and Allied Topics, San Francisco, CA, 30 May-4 June 1993.
- 22) "Evidence for "Black Holes" during EI in a Quadrupole Ion Trap Mass Spectrometer", Lammert, S.A., Cleven, C.D. and Cooks, R.G.; Presented at the 41st ASMS Conference on Mass Spectrometry and Allied Topics, San Francisco, CA, 30 May-4 June 1993.
- 23) "Pulse/Probe Ion Trap Mass Spectrometry", Cooks, R.G., Lammert, S.A., and Cleven, C.D.; Presented at the 18th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Detroit, MI, 17-22 October 1993.

- 24) "Detection of Chemical Weapons Precursors and By-products Using Ion Trap Technology", Michael B. Wasserman, Stephen A. Lammert, and Derek S. Kelm; Presented at the 2nd International On-site Analysis Conference, Montgomery, TX, 24-26 January 1994.
- 25) "Modification of a Finnigan ITS-40 to Perform Selective Isolation and MS/MS Functions", S.A. Lammert and M.V. Buchanan; Presented at the 42nd ASMS Conference on Mass Spectrometry and Allied Topics, Chicago, IL, 29 May-3 June 1994.
- 26) "Detection of Chemical Agents, Precursors and By-products Using Ion Trap Technology", S. A. Lammert, R. Merriweather, E.W. Sarver, M.B. Wasserman; Presented at the Scientific Conference on Chemical and Biological Defense Research, Edgewood MD, 15-18 November 1994.
- 27) "Analysis of Chemical Weapons Convention Treaty Compounds Using a Field-Portable Ion Trap Mass Spectrometer", S. A. Lammert, R. Merriweather, M.B. Wasserman; Presented at the Third International Conference on On-Site Analysis, Montgomery, TX 22-25 January 1995.
- 28) "Detection of Chemical Agents, Precursors and By-products Using Ion Trap Technology" E. W. Sarver, M.B. Wasserman, R. Merriweather, S.A. Lammert; Presented at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, 7 March 1995.
- 29) "A Field Portable Ion Trap for the Detection of Chemical Weapons Compounds", Palausky, M.A., Lammert, S.A., Merriweather, R., Sarver, M.B., Sarver, E.W., Presented at the 43rd ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, 21-26 May 1995.
- 30) "Buffer Gas and q_{eject} Effects on the Performance of an Ion Trap", Lammert, S.A., Wells, J.M., Presented at the 43rd ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, 21-26 May 1995.
- 31) "Developments Toward Field Portable Ion Traps", Stephen A. Lammert, J. Mitchell Wells, Marcus B. Wise, Presented at the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS XXII), Cincinnati, OH, 15-20 October 1995.
- 32) "Characteristics of Ion Trap MS/MS in the Analysis of Chemical Weapons Treaty Compounds", M.A. Palausky and Stephen A. Lammert, Presented at the Fourth International On-site Analysis Conference, Haines City, FL, 21-24 January 1996.
- 33) "The Use of Ion Trap MS/MS in a Possible Chemical Weapons Convention Treaty Analysis" Stephen A. Lammert and M. Andi Palausky, Presented at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, 3-8 March 1996.
- 34) "MS and MS/MS Performance of a Field-Portable Ion Trap Mass Spectrometer for CWC Treaty Compounds", Lammert, S.A. and Palausky, M.A., Presented at the 44th ASMS Conference on Mass Spectrometry and Allied Topics, Portland, OR, 12-16 May 1996.
- 35) "Analytical Performance of an Ion Trap Mass Spectrometer Using Air as the Buffer Gas", Lammert, S.A., Merriweather, R., and Wise, M.B., Presented at the 44th ASMS Conference on Mass Spectrometry and Allied Topics, Portland, OR, 12-16 May 1996.

- 36) "Trace Chemical Detection Using Direct Sampling Ion Trap Mass Spectrometry" S.A. Lammert, Presented at the Biological and Trace Gas Sensor Workshop, Ft. Belvoir, VA, 5-6 June 1996
- 37) "Landmine Detection Technologies - Direct Sampling Mass Spectrometry for Chemical Signatures" S.A. Lammert, Presented at the JASON's 1996 Summer Study Program, La Jolla, CA, 15 July 1996.
- 38) "Portable Ion Traps: Mass Spectrometry to Go" (invited), S.A. Lammert Presented at the Purdue University Industrial Associates Meeting, W. Lafayette, IN 3 October 1996.
- 39) "A Study of Resonance Ejection at Beta Values >1 for Helium and Air Buffer Gases in Ion Trap Mass Spectrometers", Lammert, S.A. and Wise, M.B., Presented at the 45th ASMS Conference on Mass Spectrometry and Allied Topics, Palm Springs, CA, 1-5 June 1997.
- 40) "Detection and Identification of Chemical Agents Using Tandem Mass Spectrometry", Kevin J. Hart, Michael N. Burnett, M. Andi Palausky and Stephen A. Lammert; Abst. Pap. Amer. Chem Soc. **214** (1997) 135. Las Vegas, NV
- 41) "Development and Applications of Field Portable Ion Trap Mass Spectrometers" (invited), S.A. Lammert, M.B. Wise, K.H. Hart and C.V. Thompson, Presented at the 5th North American Chemical Congress, Cancun, Mexico, 11-15 November 1997.
- 42) "Development of an Ion Trap Mass Spectrometer with an Alternate Trapping Geometry", Stephen A. Lammert, Marcus B. Wise, and Cyril V. Thompson, Presented at the 46th ASMS Conference on Mass Spectrometry and Allied Topics, Orlando, FL, 31 May- 4 June 1998.
- 43) "Development of the Block II CBMS Mass Spectrometer for the Detection and Identification of Chemical and Biological Warfare Agents.", Stephen A. Lammert, and Wayne H. Griest, Presented at the 1998 Gordon Research Conference on Illicit Substances: Chemical and Biological Weapons, Salve Regina University, Newport, RI, 9-14 August 1998.
- 44) "Toroidal Ion Trap Mass Spectrometer" (invited), S.A. Lammert, Presented at the Fourth Canadian and European Workshop on Ion Trap Mass Spectrometry, La Benerie Hotel, Limours, Essonne, France, 4-6 January 1999.
- 45) "Rapid Detection of Aerosolized Bacteria Using a Mobile Mass Spectrometer", David W. Sickenberger and Stephen A. Lammert, Presented at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, 7-12 March 1999.
- 46) "Introduction to Ion Trap Mass Spectrometry" (invited), Stephen A. Lammert, Presented at the California Association of Toxicologists: LC/MS Workshop, Culver City, CA, 7 May 1999.
- 47) "Developments on the Toroid Ion Trap Analyzer", Stephen A. Lammert, Marcus B. Wise, and Cyril V. Thompson, Presented at the 47th ASMS Conference on Mass Spectrometry and Allied Topics, Dallas TX, 13-17 June 1999.

- 48) "Development of the CBMS Block II: A Field-Portable Ion Trap Mass Spectrometer for CW/BW Detection.", Stephen A. Lammert, Presented at the 1999 MASINT Chemical Warfare Science and Technology Symposium, Patrick AFB, St. Petersburg, FL, 30 Aug-2 Sep 1999.
- 49) "Ion Trap Mass Spectrometers for Field Analysis" (invited), Stephen A. Lammert, Presented at the Purdue University Industrial Associates Mass Spectrometry Frontiers Symposium, Purdue University, West Lafayette, IN 7-9 October 1999.
- 50) "Mass Spectrometric Approaches to BW Detection", Stephen A. Lammert, James L. Stephenson, and Wayne H. Griest, Presented at the 2000 MASINT Biological Warfare Science and Technology Symposium, Long Beach, CA, 10-13 January 2000.
- 51) "Fieldable Ion Traps (Military Applications): Chemical and Biological Weapons Detection", Stephen A. Lammert, Presented at the 12th ASMS Sanibel Conference (*Field Portable and Miniature Mass Spectrometry*), Sanibel Is., FL, 22-25 January 2000.
- 52) "A Route to Low Power Ion Trap Mass Spectrometers: The Toroid Mass Analyzer" (invited), Stephen A. Lammert Cyril V. Thompson and Marcus B. Wise, Presented at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, 12-17 March 2000.
- 53) "Improved Performance Obtained On The Toroid Ion Trap Mass Analyzer Using Asymmetric Electrodes", Stephen A. Lammert, Cyril V. Thompson and Marcus B. Wise, Presented at the 48th ASMS Conference on Mass Spectrometry and Allied Topics, Long Beach, CA, 11-15 June 2000.
- 54) "Advanced Ion Trap Mass Spectrometry for the Detection and Identification of Chemical/Biological Threats", James L. Stephenson and Stephen A. Lammert, Presented at the DOE Chemical and Biological National Security Program Annual Summer Meeting, Crystal City, VA, 25-28 July 2000.
- 55) "The Use Of Ion-Ion Chemistry In An Electrospray Ion Trap Mass Spectrometer For The Detection And Identification Of Chemical/Biological Threats", James L. Stephenson and Stephen A. Lammert, Presented at the Joint Conference on Point Detection, Williamsburg, VA, 23-27 October 2000.
- 56) "The Block II Chemical and Biological Mass Spectrometer", Stephen A. Lammert, Presented to the Korea Agency for Defense Development (ADD), Taejon, South Korea, 7 May 2001.
- 57) " Ion-Ion Charge Reduction – An Enabling Technique for the Rapid Electrospray Analysis of Intact Proteins from Whole Cell Digests of Microorganisms", James L. Stephenson and Stephen A. Lammert, Presented to the Korean Advanced Institute for Science and Technology (KAIST), Taejon, South Korea, 8 May 2001.
- 58) "Approaches to Miniature Ion Trap Mass Spectrometers", Stephen A. Lammert, Presented to the Korean Atomic Energy Research Institute (KAERI), Taejon, South Korea, 9 May 2001.