Curriculum Vitae

***GREGORY L. KLUNDER***

**EDUCATION**

Ph.D. Analytical Chemistry, North Carolina State University.

B.S. Chemistry, Virginia Polytechnic Institute and State University.

**POSITIONS**

Staff Scientist, October 1996 to present, Forensic Science Center at Lawrence Livermore National Laboratory, Livermore, CA 94550.

Postdoctoral Research Scientist, December 1993 - October 1996, with Dr. Brian D. Andresen at the Forensic Science Center at Lawrence Livermore National Laboratory, Livermore, CA 94550.

Postdoctoral Scientist, December 1990 - November 1993, with Dr. Richard E. Russo at the Lawrence Berkeley Laboratory, Berkeley, CA 94720.

Graduate Teaching Assistant: Department of Chemistry, North Carolina State University, August 1985 to June 1990.

Supplemental Instruction (SI) leader: Academic Skills Program, North Carolina State University, 1988-1990.

Tutor: Academic Skills Program, North Carolina State University, 1986-1988.

**PROFESSIONAL SOCIETIES**

Society for Applied Spectroscopy (1986-present)

American Chemical Society (1986-present)

American Association of Forensic Scientists, Criminalists Division (1999 - present)

Coblentz Society (2006 - present)

SPIE Fiber Optic Working Group (1993-95)

**AWARDS**

LLNL Strategic Deterrence Directorate Gold Award (2024)- Rigorous Testing and Qualification of HE for the W87-1 Program. The W87-1 High Explosives Product Realization Team was acknowledged for their exceptional efforts. Their collaborative work with the Pantex Plant addressed supply challenges and represented a significant milestone for the W87-1 program.

FACSS Distinguished Service Award 2021.

LLNL Global Security Directorate Silver Award (2014) – In recognition of the extra efforts to rapidly turnaround a multidisciplinary forensic analysis that was an integral centerpiece of a prosecution.

LLNL Physical and Life Sciences Spot Award (2012) – For exceptional preparation and documentation for a DOE LSO audit of high explosive activities

LLNL Global Security Directorate Award (2011) – Throughut Study in support of DHS

LLNL Chemical Sciences Division Spot Award (2009) – Program Chair for FACSS 2008

LLNL Global Security Directorate Gold Award (2008) – OPCW certified laboratory

LLNL Chemistry and Material Science Directorate Associate Director Award for Distinguished Service (2005) – Conference organization FACSS 2004

LLNL Nonproliferation, Arms Control and International Security Directorate Award (2001, 3 distinguished service awards: OCONUS deployment, DAC program technology leader, OPCW proficiency test)

Pi Lambda Upsilon Travel Award (1989)

North Carolina State University (NCSU) College of Physical and Mathemetical Sciences, Award for Outstanding Teaching (1987)

**CONFERENCE SESSIONS/SYMPOSIA ORGANIZED**

2024 SciX Conference

 **SciX General Chair**

2019 SciX Conference

 **FACSS Second Past-Governing Board Chair**

 Security and Forensics Section Chair

 Nuclear Forensics session organizer

2018 SciX Conference

 **FACSS Second Past- Governing Board Chair**

 Security and Forensics Section Chair

 Nuclear Forensics session organizer

2017 SciX Conference

 **FACSS Past-Governing Board Chair**

 Security and Forensics Section Chair

2016 SciX Conference

 **FACSS Past-Governing Board Chair**

 Security and Forensics Section Chair

2015 SciX

 **FACSS Governing Board Chair**

 Forensics and Security *Section Chair*

2014 SciX

 **FACSS Governing Board Chair**

 Forensics and Security *Section Chair*

 Nuclear Forensics session organizer

2013 SciX

 **FACSS Governing Board Chair Elect (Chair in 2014/2015)**

 Forensics and Security *Section Chair*

 Nuclear Forensics session organizer

2012 SciX (formerly FACSS)

 **FACSS Governing Board Chair Elect (Chair in 2014/2015)**

 Forensics and Security *Section Chair*

 Nuclear Forensics session organizer

2011 FACSS Meeting, Reno, NV

 **General Chair**

 Forensics and Security *Section Chair*

 Nuclear Forensics (organizer/presider)

 Ambient Ionization Techniques for Forensics

 Standoff Detection

 Food Safety

 Explosives Detection for Transportation Security

2011 PittCon Conference, Atlanta, GA

 Networking session on ‘Quantitative Analysis by Laser Ablation and LIBS’

2010 FACSS Meeting, Reno, NV

 ‘Headspace Analysis for Chemical Signatures’ session (organizer/presider)

2008 FACSS Meeting, Reno, NV

 **Program Chair**

71 sessions, 450 talks, 180 posters

 Atomic Spectroscopy *Section Chair* (10 sessions)

2007 FACSS Meeting, Memphis, TN

 **Awards Chair**

 ‘Emerging Technologies for Homeland Security’ session (organizer/presider)

2004 FACSS Meeting, Portland, OR

Forensic Science Section Chair (3 sessions)

‘Detection of Weapons of Mass Destruction’ (organizer)

‘New Developments in Mass Spectrometry for Forensics’ (organizer)

‘Advances in Forensic Analytical Techniques’(organizer/presider)

‘Laser Ablation’ session (organizer/presider)

‘Laser Induced Breakdown Spectroscopy’ session (organizer/presider)

**ADDITIONAL DUTIES AND OFFICES HELD**

Society for Applied Spectroscopy (SAS)

President –elect 2016

President, 2017

Past President, 2018

Governing Board – SAS At-Large International Delegate, 2008 – 2009, 2011-2014.

TCG-IX Representative for LLNL, 2007

 Fall Program meeting

 JMP TCG Rodeo

**STUDENTS MENTORED**

Jonathan Plaue, University of Nevada-Las Vegas, 2012. LLNL “Near Infrared Reflectance Spectroscopy as a Process Signature in Uranium Oxides”. PhD graduate student.

Joana Diekman, University of Leibniz, Hannover, 2010-2012. LLNL visiting scientist, “Development of On-Line Coupled Capillary Electrophoresis to Portable Microcoil NMR Detection”. MS and PhD graduate student.

Chadway Cooper, Oregon State University, 2009-2011. LLNL summer student, “Software to identify chemical signatures of explosives”, “Mobile device App for explosives detection”. Undergraduate.

Susanne Conradi, University of Leipzig, 1997. LBNL, “Capillary electrophoresis with photothermal deflection spectroscopy detection”. PhD/postdoc student.

Stefan R. Church, University of California, Berkeley, 1995-1996. LBNL, “Laser and Radioactivity Capillary Electrophoresis”. Undergraduate.

Matthew N. Church, University of California, Berkeley, 1995. LBNL, “Transient Isotachophoresis - Electrophoresis Separation of Lanthanides with Indirect Laser-Induced Fluorescence”. Undergraduate.

Larry H. Mack, Jr., University of Houston, 1993. LLNL Science and Engineering Research Semester, “Diffusion of Analyte Molecules into the Silicone Cladding of Fiber Optic Sensors”. Undergraduate.

**PUBLICATIONS**

30. “Isotopic Substitution in TATB Facilitates Understanding of Structural Features and Thermal Decomposition”, John G. Reynolds, Ana Racoveanu, Alan K. Burnham, Jason S. Moore, Keith R. Coffee, Adele F. Panasci-Nott, Keith D. Morrison, Batikan Koroglu, Gregory L. Klunder, Christopher A. Colla, Jonathan R. I. Lee, Harris E. Mason, Joseph D. Van Horn, and Evan M. Kahl1, SCCM-23 Conference Proceedings, 23rd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter.

29. “TATB thermal decomposition: An improved kinetic model for explosive safety analysis”, Jason S. Moore, Keith D. Morrison, Alan K. Burnham, Ana Racoveanu, John G. Reynolds, Batikan Koroglu, Keith R. Coffee, Greg L. Klunder, Lawrence Livermore National Laboratory report, LLNL-JRNL-available Lawrence Livermore National Laboratory, *Propellants, Explos., Pyrotech*. 49(2), 2024. prep.202300237 (2023).

28. “New thermal decomposition pathway for TATB”, Keith D. Morrison, Ana Racoveanu, Jason S. Moore, Alan K. Burnham, Batikan Koroglu, Keith R. Coffee, Adele F. Panasci‑Nott, Gregory L. Klunder, Bradley A. Steele, M. A. McClelland, John G. Reynolds, *Nature Portfolio* *Scientific Reports*, 13 (2023) 2256. <https://doi.org/10.1038/s41598-023-47952-6>

27. “Analysis of Degradation Products in Thermally Treated TATB”, K. R. Coffee, A, F. Panasci-Nott, J. A. Olivas, J. Selinsky, K. D. Morrison, A. K. Burnham, G. L. Klunder, and J. G. Reynolds, Lawrence Livermore National Laboratory report, LLNL-JRNL-850998 23-S-2556 available Lawrence Livermore National Laboratory, *Propellants, Explos., Pyrotech*. prep.202300176 (2023).

26. “Towards and heat- and mass-balanced kinetic model of TATB decomposition”, Burnham, A. K., Coffee, K. R., Klunder, G. L., Panasci-Nott, A. F. & Reynolds, J. G. Lawrence Livermore National Laboratory report, LLNL-JRNL-848399 available Lawrence Livermore National Laboratory, *Propellants, Explos., Pyrotech.* prep.202300121.R1 (2023).

25. “An experimental characterization of condensed phase soot from overdriven detonation of composition B”, Robert V. Reeves, Garth C. Egan, Greg L. Klunder, M. Riad Manaa, and Sorin Bastea, AIP Conference Proceedings 1979, 100033 (2018); <https://doi.org/10.1063/1.5044905>.

24. ‘Recent advances on thermal safety characterization of energetic materials’, P.C. Hsu, S. A. Strout, G. L. Klunder, E. M. Kahl, N. K. Muetterties, J. G. Reynolds, and M. Gresshoff, AIP Conference Proceedings 1979, 160010 (2018); <https://doi.org/10.1063/1.5045009>.

23. ‘Microwave interrogation of an air plasma plume as a model system for hot spots in explosives’, Ronald J. Kane, Joseph W. Tringe, Gregory L. Klunder, Emer V. Baluyot, John M. Densmore, and Mark C. Converse, AIP Conference Proceedings 1793, 160002 (2017); <https://doi.org/10.1063/1.4971742>.

22. “Application of Visible-Near Infrared Reflectance Spectroscopy to Uranium Ore Concentrates for Nuclear Forensic Analysis and Attribution”, Gregory L. Klunder\*, Jonathan W. Plaue, Paul E. Spackman, Patrick M. Grant, Rachel E. Lindvall, Ian D. Hutcheon, *Applied Spectroscopy*. **67(9)** (2013) 1049 – 1056. **Cover Feature**.

21. “Near Infrared Reflectance Spectroscopy as a Process Signature in Uranium Oxides”, J.W. Plaue, G.L. Klunder, I.D. Hutcheon, K.R. Czerwinski*, J. Radioanal. Nucl. Chem*., **296**(2013) 551-555. DOI - 10.1007/s10967-012-2027-0.

20. “Near Infrared Spectral Imaging of Explosives using a Tunable Laser Source”, Greg Klunder, Lam K. Nguyen, and Eli Margalith, *NIR News* **22(3)** (2011), 19-21.

19. “Portable Microcoil NMR Detection Coupled to Capillary Electrophoresis”, Joana Diekmann, Kristl L. Adams, Gregory L. Klunder, Lee Evans, Paul Steele, Carla Vogt, and Julie L. Herberg\*, *Analytical Chemistry,***83**(2011) 1328 – 1335.

18. “Near Infrared Spectral Imaging of Explosives using a Tunable Laser Source”, Eli Margalith, Lam K. Nguyen, and Greg Klunder, *Proc. SPIE* **7680** (2010), 76800H-1-9. doi:10.1117/12.852659

17. “Low Cost CE-NMR with Microcoils for Chemical Detection”, Adams, K.L.; Klunder, G.L.; Demas, V.; Malba, V.; Bernhardt, A.; Evans, L.; Harvey, C.; Maxwell, R.S.; Herberg, J.L. *Diffusion Fundamentals* **10** (2009) 6.1-6.4.

16. “Direct Laser Ablation and Ionization of Solids for Chemical Analysis by Mass Spectrometry”, *Journal of Physics: Conference Series*, **59** (2007) 657-661. J.K. Holt, E.J. Nelson and G.L. Klunder. UCRL-PROC-215279.

15. “Direct Chemical Analysis of Solids by Laser Ablation in an Ion-Storage Time-of-Flight Mass Spectrometer”, G.L. Klunder, P. Grant, B.D. Andresen, and R.E. Russo, *Analytical Chemistry,* **76** (2004) 1249-1256. UCRL-TR-200116.

14. “Separation of Metal Ions by Capillary Electrophoresis: Diversity, Advantages, and Drawbacks of Detection Methods”, Carla Vogt and Gregory L. Klunder, *Fresenius Journal of Analytical Chemistry*, **370** (2001) 316 – 331. (in collaboration with the Institute for Solid State and Materials Research, Dresden, Germany). UCRL-JC-142782.

13. “Laser Ablation Ion-Storage Time-of-Flight Mass Spectrometry”, R.E. Russo, G.L. Klunder, P. Grant, and B.D. Andresen *Applied Physics A,* **69** (1999) S895-S897.

12. “Nuclear Forensics in Law Enforcement Applications”, P.M. Grant, K.J. Moody, I.D. Hutcheon, R.E. Whipple, J.S. Haas, A. Alcaraz, J.E. Andrews, Jr., G.L. Klunder, R.E. Russo, T.E. Fickies, G.E. Pelkey, and B.D. Andresen, *Journal of Radioanalytical and Nuclear Chemistry*, **235** (1998) 129-132. UCRL-JC-127027.

11. “Nuclear Fission Product Analysis Using Capillary Separation Techniques”, G.L. Klunder, J.E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen, *Journal of Radioanalytical and Nuclear Chemistry*, **236** (1998) 149-153. UCRL-JC-142330.

10. “Forensic Analyses of Suspect Illicit Nuclear Material”, Patrick M. Grant, Kenton J. Moody, Ian D. Hutcheon, Douglas L. Phinney, Jeffrey S. Haas, Alan M. Volpe, James J. Oldani, Richard E. Whipple, Nancy Stoyer, Armando Alcaraz, John E. Andrews, Richard E. Russo, Gregory L. Klunder, Brian D. Andresen, Shawn Cantlin, *Journal of Forensic Science*, **43** (1998) 680-688. UCRL-JC-126584.

9. “Photothermal Deflection Spectroscopy of an Aqueous Sample in a Narrow Bore Quartz Capillary”, Jonathan D. Spear, Gregory L. Klunder, and Richard E. Russo, *Review of Scientific Instruments*, **69** (1998) 2259-2267. UCRL-JC-142331.

8. “Transient Isotachophoresis - Electrophoresis Separation of Lanthanides with Indirect Laser-Induced Fluorescence”, M.N. Church, G.L. Klunder, J.D. Spear, P. Grant, B.D. Andresen, and R.E. Russo, *Analytical Chemistry*, **70** (1998) 2475-2480. UCRL-JC-142329.

7. “Analysis of Fission Products Using Capillary Electrophoresis with On-Line Radioactivity Detection”, G.L. Klunder, J.E. Andrews, Jr., B.D. Andresen, P. Grant, and R.E. Russo, *Analytical Chemistry,* **69** (1997) 2988-2993.

6. “Core-based Intrinsic Fiber Optic Absorption Sensor for the Detection of Volatile Organic Compounds”, Gregory L. Klunder and Richard E. Russo, *Applied Spectroscopy*, **49** (1995) 379-385.

5. “Temperature Effects on a Fiber Optic Evanescent Wave Absorption Sensor”, G.L. Klunder, J. Buerck, H.-J. Ache, R.J. Silva, and R.E. Russo, *Applied Spectroscopy,* **48** (1994), 387-393.

4. “Collinear Photothermal Deflection Spectroscopy of Liquid Samples at Varying Temperatures” Jonathan D. Spear, Robert J. Silva, Gregory L. Klunder, and R.E. Russo, *Applied Spectroscopy*, **47** (1993) 1580-1584. UCRL-JC-114124.

3. “Signal Analysis of Transients for Optimization of Cell Design in Pulsed Photoacoustic Spectroscopy”, D.A. Schurig, G.L. Klunder, M.A. Shannon, and R.E. Russo, *Review of Scientific Instruments*, **64** (1993) 363-373.

2. “Photoacoustic Spectroscopy and the Effect of Amplified Spontaneous Emission”, Gregory L. Klunder, Robert J. Silva and Richard E. Russo, *Analytical Chemistry*, **64** (1992) 2429-2433. UCRL-JC-110174.

1. “The Phosphine Depression in Flame Atomic Spectrometry”, Gary L. Long, William J. Newman Jr., Greg Klunder, and Jim Mahaney, *Applied Spectroscopy*, **41** (1987) 255-260.

**PRESENTATIONS**

62. “Simultaneous DSC–FTIR Reflectance Spectroscopy of the Insensitive High Explosive Triaminotrinitrobenzene (TATB) undergoing Thermal Degradation”, SciX Conference, October 2022, Covington, KY, paper #593, Greg L. Klunder, Malik Oliver, Batikan Koroglu, Joseph D. Van Horn, Evan M. Kahl, Taylor F. Miller, Alan K. Burnham, John G. Reynolds

61. “Spectroscopic Analysis of Aged Kapton”, SciX Conference, October 2021, Providence, RI, paper #, Greg Klunder, Christy Fox, Mihail Bora, Ari Reider, Jeremy Armas, Chris Grant, Amitesh Maiti, Rick Gee.

60. “Near Infrared Spectroscopy of Gases Emanating from Heated Explosives”, SciX Conference, October 2019, Palm Springs, CA, paper #386, Gregory Klunder, Nick Mutterties, Taylor Miller, Evan Kahl, Peter Hsu.

59. “The Scent of a Weapon: Determining Off-Gassing of Components in an Explosive Environment”, SciX Conference, October 2018, Atlanta, GA, paper #819 (poster), Gregory Klunder, Chris Harvey, Daniel Mew, Alex Vu, Ginger Guillen, Josh Ottaway, Kristl Adams, Elizabeth Glascoe.

58. “What Comes Off Before It Explodes: Headspace Gas Composition Measurements from Heated Explosives”, SciX Conference, October 2018, Atlanta, GA, paper #154 (poster), Gregory Klunder, Nick Mutterties, Paul Spackman, Evan Kahl, Peter Hsu.

57. “Gas Composition Measurements During One-Dimensional Time to Explosion (ODTX) Experiments”, SciX Conference, October 2017, Reno, NV , paper #784 (poster), Gregory Klunder, Paul Spackman, Fowzia Zaka, Evan Kahl, Nick Mutterties, Peter Hsu.

56. “Spectroscopic Characterization of the Uranyl-Nitric Acid Extraction by Tributylphosphate (TBP) in Hydrocarbon Solvent”, SciX Conference, October 2016, Minneapolis, MN , paper #291, Gregory Klunder, Paul Spackman, Patrick Grant.

55. “Rapid Characterization of Suspect Materials for Nuclear Forensic Analysis”, SciX Conference, October 2014, Reno,NV , paper #522, Gregory Klunder, Paul Spackman, Patrick Grant, Ian Hutcheon.

54. “Infrared and Near Infrared Spectroscopy of Uarnium Ore Concentrates for Nuclear Forensic Analysis”, SciX Conference, October 2013, Milwaukee, WI, paper #143, Gregory Klunder, Paul Spackman, Patrick Grant, Ian Hutcheon.

53. “Identification of Uranium Ore Concentrate Species by Near Infrared Spectroscopy”, SciX Conference, October 2012, Kansas City, MO, paper #143, Gregory Klunder, Jonathan Plaue, Paul Spackman, Patrick Grant, Lars Borg, Martin Robel, Rachel Lindvall, Ian Hutcheon. INVITED

52. “Pushing the Limits in Analytical Forensics: Can Reality be Better than CSI?”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2011, Reno, NV, paper #746, Gregory Klunder. INVITED PLENARY

51. “NIR Spectroscopy of Uranium Ore Concentrates”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2011, Reno, NV, paper #302, Gregory Klunder, Paul Spackman, Patrick Grant, Lars Borg, Martin Robel, Rachel Lindvall, Ian Hutcheon.

50. “On-Line Coupled to Miniaturized Capillary Electrophoresis-Microcoil NMR Device”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2010, Reno, NC, paper #330, Joana Diekmann, Kristl L. Adams, Gregory L. Klunder, Carla Vogt, Andrew McDowell. SAS STUDENT POSTER AWARD WINNER.

49. “Portable Microcoil NMR Detection Coupled to CE for the Analysis of Perfluoro Organic Acids”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2010, Raleigh, NC, poster # 189, Joana Diekmann, Kristl L. Adams, Gregory L. Klunder, Lee Evans, Carla Vogt, Julie L. Herberg. STUDENT POSTER AWARD WINNER.

48. “What Color is Your Yellow Cake? Vis/NIR Spectroscopic Analysis of Uranium Ore Concentrate Samples”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2010, Raleigh, NC, paper #429, Gregory Klunder, Paul Spackman, Pat Grant, Martin Robel, Lars Borg, Rachel Lindvall, Ian Hutcheon.

47. “Trace-Analysis with NIR Imaging; Case in Point: Explosive Detection”, International Diffuse Reflectance Conference, July 2010, Chambersburg, PA, Gregory L. Klunder (LLNL), Lam K Nguyen (OPOTEK), and Eli Margalith (OPOTEK). INVITED

46. “CE with On-Line Portable NMR Spectroscopy for the Analysis of Pharmaceutical and Environmental Relevant Compounds”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2009, Louisville, KY, poster # 362, Joana Diekmann, Kristl L. Adams, Greg Klunder, Paul T. Steele, Christopher Harvey, Lee Evans, Carla Vogt, Julie L. Herberg. STUDENT POSTER AWARD WINNER.

45. “Advancements in a Portable Capillary Electrophoresis NMR System for Chemical Speciation”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2009, Louisville, KY, paper # 43, Julie L. Herberg, Kristl Adams, Greg Klunder, Paul Steele, Anthony Bernhardt, Lee Evans, Christopher Harvey, and Robert Maxwell.

44. “Propellant Stability Evaluations by Headspace Analysis”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2009, Louisville, KY, paper # 45, Gregory Klunder, Cindy Alviso.

43. “Solid-phase Microextraction (SPME) with Gas Chromatography-Mass Spectrometry (GCMS) to Determine Chemical Signatures of Unstable Propellant”, 16th Annual Global Demilitarization Symposium and Exhibition, May 5-9, 2008, Salt Lake City, UT, Gregory L. Klunder, Richard E. Whipple, David P. Fergenson.

42. “Standoff Detection of High Explosives with Near Infrared Spectroscopy” , 16th Annual Global Demilitarization Symposium and Exhibition, May 5-9, 2008, Salt Lake City, UT, Gregory L. Klunder.

41. “Developing a Capability to Detect and Identify Explosives Remotely”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2007, Memphis, TN, paper # 615, John Reaugh, Kambiz Salari, Gregory Klunder, Sorin Bastea, Richard Beherens, Jr., Sean Maharrey.

40. “Characterization of Chemical Vapor Signatures for Remote Detection of High Explosives”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2007, Memphis, TN, paper # 618, Marina L. Chiarappa-Zucca, Gregory L. Klunder, Richard A. Meissner, John E. Reaugh.

39. “Standoff Detection of High Explosives with Near Infrared Spectroscopy”, Federation of Analytical Chemistry and Spectroscopy Societies, September 2006, Lake Buena Vista, FL, paper # 227, G.L. Klunder.

38. “Separation of Uranyl Species by Capillary Electrophoresis”, Federation of Analytical Chemistry and Spectroscopy Societies, September 2006, Lake Buena Vista, FL, paper # 188, G.L. Klunder, E.L. Gjersing and J.L. Herberg.

37. “Trace Chemical Detection using Laser Ablation Ion-Storage Time-of-Flight Mass Spectrometry”, Federation of Analytical Chemistry and Spectroscopy Societies, September 2006, Lake Buena Vista, FL, paper # 396, J. Holt and G.L. Klunder. INVITED

36. “Chemical Analysis by Femtosecond Laser Ionization Mass Spectrometry”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2005, Quebec City, CANADA, paper # 641, J. Holt and G.L. Klunder.

35. “Next Generation Laser Ablation”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2005, Quebec City, CANADA, paper # 642, R. Russo, J. Gonzalez, X. Mao, C. Liu, S-B. Wen, G.L. Klunder, and D. Baldwin.

34. “Secondary Ion Mass Spectrometry Analysis of Laser Ablation Craters in NIST Glasses”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2005, Quebec City, CANADA, paper # 535, J. Holt, E. Nelson, and G.L. Klunder.

33. “Direct Laser Ablation and Ionization of Solids for Chemical Analysis by Mass Spectrometry”, Conference on Laser Ablation, September 2005, Banff, CANADA, poster #ThPO42, J. Holt and G.L. Klunder.

32. “Laser Ablation and Ionization Mass Spectrometry for the Chemical Analysis of Glasses”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2004, Portland, OR, paper # 143, G.L. Klunder.

31. “Analytical Technologies and Applications at the Forensic Science Center at LLNL”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2003, Ft Lauderdale, FL, paper # 30, G.L. Klunder.

30. “Laser Ablation Ion-Storage Time-of-Flight Mass Spectrometry”, Federation of Analytical Chemistry and Spectroscopy Societies, October 2001, Detroit, MI, paper # 575, G.L. Klunder, R.E. Russo, P. Grant, and B.D. Andresen.

29. “Quantitative Propellant Stabilizer Analysis in the Field”, Global Demilitarization Symposium and Exhibition, May 1999, Tulsa, OK, J. Haas, B. Andresen, G. Klunder, R. Whipple.

28. “Capillary Electrophoresis using Photothermal Deflection Spectroscopy for the Direct Detection of Lanthanides”, G.L. Klunder, J.D. Spear, S. Conradi, P.M. Grant, B.D. Andresen, and R.E. Russo.

27. “Field Portable High Throughput Separations with Color CCD Detection”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1998, Austin, TX, paper # 684, G.L. Klunder, J. Haas, F. Kelly, R. Whipple, and B.D. Andresen.

26. “Rapid Analysis of Propellant Stabilizers”, Global Demilitarization Symposium and Exhibition, May 1998, Coeur d’Alene, ID, J. Haas, B. Andresen, G. Klunder, R. Whipple.

25. “Determination of Lanthanides using Capillary Zone Electrophoresis with Photothermal Deflection Spectroscopy”, poster # P212, High Performance Capillary Electrophoresis ‘98, January 1998, Orlando, FL, S. Conradi, G.L. Klunder, M.N. Church, J.D. Spear, P.M. Grant, B.D. Andresen, and R.E. Russo.

24. “Radioisotope Probes for the Direct Detection of Metal Ions Separated by Capillary Electrophoresis”, poster # P225,High Performance Capillary Electrophoresis ‘98, January 1998, Orlando, FL, G.L. Klunder, J.M. Kenneally, P.M. Grant, B.D. Andresen, and R.E. Russo.

23. “Photothermal Deflection with a Low Noise Position Sensitive Detector for Detection in Capillary Electrophoresis”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1997, Providence, RI, G.L. Klunder, J.D. Spear, S. Conradi, P.M. Grant, B.D. Andresen, and R.E. Russo.

22. “Nuclear Forensics in Law Enforcement Applications”, Methods and Applications of Radioanalytical Chemistry IV, April 1997, Kona, HI, poster # 97-148, P.M. Grant, K.J. Moody, I.D. Hutcheon, R.E. Whipple, J.S. Haas, A. Alcaraz, J. E. Andrews, Jr., G.L. Klunder, R.E. Russo, T.E. Fickies, G.E. Pelkey, and B.D. Andresen.

21. “Nuclear Fission Product Analysis Using Capillary Separation Techniques”, Methods and Applications of Radioanalytical Chemistry IV, April 1997, Kona, HI, poster # 97-149, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

20. “Analysis of Lanthanides by Transient Isotachophoresis - Capillary Electrophoresis with Indirect Laser-Induced Fluorescence”, High Performance Capillary Electrophoresis ‘97, Anaheim, CA, poster # 404, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

19. “Analysis of Fission Products by Capillary Electrophoresis”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1996, Kansas City, MO, paper # 051, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

18. “Design Modifications of a Small On-line Radioactivity Detector for Capillary Electrophoresis”, High Performance Capillary Electrophoresis ‘96, Orlando, FL, poster # 153, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

17. “On-line Standard Addition in Capillary Electrophoresis”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1995, Cincinnati, OH, paper # 645, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

16. “A Fiber-optic Absorption Sensor for the Detection of Volatile Organic Compounds in Aqueous Solutions”, 4th International Symposium on Field Screening Methods for Hazardous Wastes and Toxic Chemicals, February 1995, Las Vegas, NV, poster # 22, G.L. Klunder, R.E. Russo.

15. “Large Volume Preconcentration of Small Ions for Analysis by Capillary Electrophoresis”, High Performance Capillary Electrophoresis ‘95, February 1995, Wuerzburg, Germany, poster # 623, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

14. “On-line Detection of Radioactive Ions Separated by Capillary Electrophoresis”, Workshop on Monitoring Nuclear Contamination in the Arctic Seas, January 1995, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

13. “Intrinsic Fiber Optic Chemical Sensors for the Detection of Volatile Organic Compounds”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1994, St. Louis, MO, paper # 856, G.L. Klunder, R.E. Russo,

12. “On-line Detection of Radioactive Fission Products by Capillary Electrophoresis”, Federation of Analytical Chemistry and Spectroscopy Societies, October 1994, St Louis, MO, paper # 259, G.L. Klunder, J. E. Andrews, Jr., R.E. Russo, P. Grant, and B.D. Andresen.

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