

**John Michael Ramsey, Ph.D.**

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**1. Personal**

Born: Mansfield, Ohio  
Citizenship: USA

**2. Education**

Ph.D.: January 1979  
Analytical Chemistry  
Thesis, "New Approaches for the Measurement of Subnanosecond Chemical Phenomena" (262 pages)  
GPA: 4.0/4.0  
Indiana University  
Bloomington, IN 47405

B.S.: June 1974  
Major: Chemistry  
Minor: Physics, Mathematics  
GPA: 3.9/4.0  
Bowling Green State University  
Bowling Green, OH 43403

**3. Professional Activities**

**ZeteoTech**

Sykesville, MD 21784

2021 – present: Member of Scientific Advisory Board

Advise company on environmental monitoring using mass spectrometry

**Codetta Bio Inc.**

Morrisville, NC 27560

2021 – present: Science Founder, Director and co-Chair of Scientific Advisory Board

Founding Scientist of Codetta Bio Inc., a venture financed company developing state-of-the-art digital multiomics assay platforms

**Genturi Inc.**

Woburn, MA 01801

2015 – 2020: Science Founder, Director and Chair of Scientific Advisory Board

Founding Scientist of Genturi Inc., a venture financed company developing tools for determining long range genetic variation.

**908 Devices Inc. (NASDAQ:MASS)**

Boston, MA 02210

2021 – present: Science Founder, Consultant, and co-Chair of Scientific Advisory Board

2012 – 2021: Science Founder, Director, and Chair of Scientific Advisory Board

Founding Scientist of 908 Devices Inc., a venture financed company developing miniaturized mass spectrometry and liquid phase separation products for diverse industries including environmental monitoring, life sciences, and biopharmaceuticals.

**University of North Carolina at Chapel Hill**

Chapel Hill, NC 27599-3290

2014 – present: Founding Professor of Applied Physical Sciences

2010 – present: Director, UNC-CH Center for Biomedical Microtechnologies

The Center for Biomedical Microtechnologies was established to foster interactions between clinicians and medical researchers with relevant biomedical technology developers.

2005 – present: Professor of Biomedical Engineering

The Department of Biomedical Engineering is a joint department between the UNC School of Medicine and North Carolina State University School of Engineering.

2004 – present: Minnie N. Goldby Distinguished Professor of Chemistry

Endowed Chair position in the Department of Chemistry with appointments in the Institute for Advanced Materials and the School of Medicine's Carolina Center for Genome Sciences. Research activities are focused on micro- and nanofluidic devices as well as other types of microfabricated technology for performing chemical and biochemical analysis and procedures.

**Caliper Technologies, Inc. (NASDAQ:CALP)**

Mountain View, CA 94043

1995 – 2003: Science Founder and Scientific Advisory Board Member

Founding Scientist of Caliper Technologies, later named Caliper Life Sciences and acquired by PerkinElmer November 2011. First company to commercialize microfluidics and Lab-on-a-Chip technologies, primarily focused on biotechnology applications.

**Oak Ridge National Laboratory (ORNL)**

Oak Ridge, TN 37831

1997 - 2004: Group Leader and Corporate Research Fellow

Continued responsibility for the direction and funding of the Laser Spectroscopy and Chemical Microtechnology Group. Major efforts in microfabricated chemical and biochemical measurement instrumentation, detection of single molecules in solution, and real-time chemical characterization of aerosol particles by laser desorption mass spectrometry. Additional projects involving diode laser-based chemical instrumentation and nonlinear spectroscopies are ongoing. Responsible for directing a group of scientists and engineers that has ranged from 24-36 in number over this time period. Group members have typically been uniformly distributed between permanent staff group members, permanent staff on loan from other ORNL organizations, and postdoctoral appointees. Over forty postdoctoral appointees have received training in the group. Funding is from successful proposals submitted to federal agencies including Department of Energy, Department of Defense, Department of Commerce Advanced Technology Program, National Science Foundation, National Institute of Justice, National Aeronautics and Space Administration, and the National Institutes of Health amounting to over \$63M aggregate funding FY92-04.

**1992 - 1996: Group Leader and Senior Staff Scientist II**

Lead the expansion of the Laser Spectroscopy Group into microfabricated fluidics and micro-instrumentation for chemical and biochemical analysis. Group size expanded by a factor of four and was renamed the Laser Spectroscopy and Microinstrumentation Group. Lead research projects in miniature chemical instrumentation, ultrasensitive laser-based detection techniques, resonant multiphoton ionization, nonlinear spectroscopies, diode laser-based chemical instrumentation, and real-time aerosol particle characterization.

**1989 - 1992: Group Leader and Senior Research Staff I**

Active in environmental monitoring issues associated with proliferation of weapons of mass destruction. Served as Oak Ridge representative on the advisory group to the DOE office responsible for nonproliferation issues. Research performed in areas of spectroscopy of trapped ions and molecules, single molecule detection in microdroplets, and single microparticle chemical characterization. Efforts in microfabricated fluidics devices were initiated.

**1986 - 1989: Group Leader and Research Staff II**

Continued to lead the Laser Spectroscopy Group. Initiated nonlinear spectroscopy studies for gas phase diagnostics of atomic and molecular species. Reported first analytical studies of degenerate four-wave mixing spectroscopy.

**1985 - 1986: R/D Group Leader II**

Appointed leader of the Laser Spectroscopy Group within the Analytical Chemistry Division.

**1982 - 1985: Research Staff I**

Independent research performed in the area of analytical spectroscopy. Experiments primarily involved laser-based measurements. Active in the field of Phase Conjugate Optics and its use for new laser designs and spectroscopic measurements. Work reported in the areas of microwave spectroscopy and probe ion luminescence of lanthanides and actinides.

**1981 - 1982: Research Associate III**

Converted to permanent staff member. Reported work on time-resolved luminescence measurements and laser intracavity kinetic measurements. Work was initiated on the above projects.

**1979 - 1981: Eugene P. Wigner Fellow**

Completed a geometrical optics study of atomic absorption spectroscopy. Also reported a new scheme for performing laser intracavity absorption measurements. Time-resolved luminescence studies were initiated.

**Indiana University**

Bloomington, IN 47405

**1974 - 1979: Associate Instructor (AI)**

Served three semesters as AI for a graduate level electronic instrumentation course, one of which was as head AI which involved supervising five course AI's and coordinating laboratory instructional material. Also served two semesters as general chemistry laboratory AI and one semester as AI for undergraduate analytical instrumentation course.

**1974 - 1979: Research Associate**

Research done under direction of Dr. Gary M. Hieftje has primarily involved the investigation of new approaches to luminescence lifetime determinations. The main emphasis in this work has been the application of fluctuation analysis to the problem of luminescence lifetime determinations. Work has also been performed in the areas of laser excited atomic fluorescence and microwave induced plasmas for excitation sources in atomic emission spectroscopy.

**Lawrence Livermore Laboratories (LLL)**

Livermore, CA 94550

**1977 - 1978: Summers Visiting Scientist**

Worked in the laser applications programs in the chemistry division of LLL. Work involved continuing studies in luminescence lifetime determinations.

#### 4. Honors and Memberships

##### HONORS AND FELLOWSHIPS:

- 2023 The Analytical Scientist Power List, #9
- 2021 The Analytical Scientist Power List, #5
- 2020 The Analytical Scientist Power List, North America top 10
- 2020 UNC-Chapel Hill Inventor of the Year
- 2019 Fellow, National Academy of Inventors
- 2017 The Analytical Scientist Power List, Giants of Nano
- 2017 Federal Laboratory Consortium Excellence in Technology Transfer Award, 908 Devices Inc.
- 2015 The Analytical Scientist Power List
- 2014 Member, National Academy of Engineering
- 2014 Hach Lecture, Colorado State University
- 2013 The Analytical Scientist Power List
- 2013 Battelle Distinguished Inventor Award
- 2013 Henry Werner Lecture, Kansas University
- 2013 Frontiers in Chemistry Lecture, Case Western Reserve University
- 2013 Ralph N. Adams Award in Bioanalytical Chemistry
- 2012 The CASSS Award for Outstanding Achievements in Separation Science
- 2011 Fellow, American Chemical Society
- 2009 Hach Lecture, University of Wyoming
- 2009 The Reilly Lectureship in Chemical Engineering, Notre Dame University
- 2009 Frank C. Mathers Lectures, Indiana University
- 2008 Fellow, American Institute for Medical and Biological Engineering
- 2007 W. Heinlen Hall Lecturer, Bowling Green State University
- 2007 American Chemical Society Award in Chromatography
- 2006 Pittsburgh Analytical Chemistry Award
- 2004 Federal Laboratory Consortium Excellence in Technology Transfer Award, Caliper Technologies, Inc.
- 2003 Southeast Region Federal Laboratory Consortium Technology Transfer Award
- 2003 R&D 100 Award,  $\mu$ TrapMS
- 2003 ACS Division of Analytical Chemistry Award in Chemical Instrumentation
- 2003 Marcel J. E. Golay Award in Capillary Chromatography
- 2003 Battelle Distinguished Inventor Award
- 2001 Jacob Heskell Gabbay Award in Biotechnology and Medicine
- 2001 A. J. P. Martin Gold Medal for Separation Science
- 2001 Energy@23 Award
- 2001 R&D 100 Top 40, Lab-on-a-Chip Technology
- 2000 Frederick Conference Capillary Electrophoresis Award
- 2000 Desty Memorial Lecture, The Royal Institution
- 2000 ORNL Technical Achievement Award
- 1999 National Academy of Engineering Frontiers
- 1999 Alexander von Humboldt Award for Senior Scientist
- 1999 Bayer Lecturer in Chemistry, Univ. of New Hampshire
- 1998 Dow Lecturer in Analytical Chemistry, Univ. of British Columbia
- 1998 ORNL, Publication Award
- 1998 Fellow, Optical Society of America

1997 ORNL, Corporate Research Fellow  
 1996 R&D 100 Award, Lab-on-a-Chip Technology  
 1996 Lockheed Martin, NOVA Award  
 1996 ORNL, Scientist of the Year Award  
 1996 ORNL, R&D Accomplishment Award  
 1996 ORNL, Publication Award  
 1996 The Fourteenth Barnett Lecturer, Barnett Institute, Northeastern University  
 1996 Discover Magazine Annual Technology Award  
 1994 ORNL, Publication Award  
 1992 Alumnus of Year Award, Department of Chemistry, Bowling Green State University  
 1992 Martin Marietta Energy Systems, Significant Achievement Award  
 1987 Martin Marietta Energy Systems, Significant Achievement Award  
 1986 Sigma Xi  
 1985 Martin Marietta Energy Systems, Publication Award  
 1979-1981 Eugene P. Wigner Fellowship, ORNL  
 1977 American Chemical Society, Division of Analytical Chemistry Summer Fellowship  
 1974 Graduated with Honor/Magna Cum Laude  
 1974 Toledo Section ACS Graduating Senior Award  
 1974 Undergraduate Award in Analytical Chemistry from Analytical Division of ACS  
 1974 American Institute of Chemists Award  
 1973 Delta Phi Alpha (German Honorary,  
 1973 Sigma Pi Sigma (Physics Honorary)  
 1973 Kappa Mu Epsilon (Math Honorary)  
 1971 Merck Index Award

### INDUSTRIAL ACTIVITIES

2021 – present Scientific Founder, Member of Board of Directors, and co-Chair of the Scientific Advisory Board, Codetta Bio Inc., Morrisville, NC  
 2018 – present Senior Advisor, Jiangbei New Area Sci-Tech Investment Group Co., Ltd.  
 2015 – 2020 Scientific Founder, Member of Board of Directors, and Chairman of Scientific Advisory Board, Genturi Inc., Woburn, MA  
 2012 – present Scientific Founder, Member of Board of Directors, and Chairman of Scientific Advisory Board, 908 Devices, Inc., Boston, MA (NASDAQ:MASS)  
 2007 – 2013 Member, Scientific Advisory Board, Quanterix, Cambridge, MA  
 2007 - 2012 Consultant, Waters Technology Corporation (NYSE:WAT), Milford, MA  
 2007 - 2013 Member, External Advisory Board, Tyndall National Institute, Cork, Ireland,  
 2006 – 2012 Member, Scientific Advisory Board, Liquidia, Research Triangle Park, NC  
 2006 – 2007 Member, Scientific Advisory Board, Advanced Liquid Logic, Research Triangle Park, NC  
 2006 – 2007 Consultant, Hatteras BioCapital, Research Triangle Park, NC  
 1995 - 2003 Scientific Founder and Member, Scientific Advisory Board, Caliper Technologies (NASDAQ:CALP), Mountain View, CA

### PROFESSIONAL MEMBERSHIPS

National Academy of Engineering  
 National Academy of Inventors  
 American Chemical Society  
 Analytical Division of American Chemical Society  
 American Institute of Biomedical Engineers  
 Sigma Xi (non-active)

## 5. Publications

### a. Books

#### BOOKS

1. J. Michael Ramsey and Albert van den Berg, "Micro Total Analysis Systems," Kluwer Academic Publishers, Dordrecht, The Netherlands (2001).

#### BOOK CHAPTERS

4. P. Fortina, J. Cheng, L.J. Kricka, L.C. Waters, S.C. Jacobson, P. Wilding, and J.M. Ramsey, "DOP-PCR Amplification of Whole Genomic DNA and Microchip-Based Capillary Electrophoresis," in *Capillary Electrophoresis of Nucleic Acids*, K. R. Mitchelson and J. Cheng, Ed., Humana Press, pg. 211 (2000).
3. S.C. Jacobson and J.M. Ramsey, "Microfabricated Chemical Separation Devices," in *High Performance Capillary Electrophoresis*, Ed. M.G. Khaledi, John Wiley & Sons, Inc., Chapter 18 (1998).
2. Stephen C. Jacobson and J. Michael Ramsey, "Microfabricated Devices for Performing Capillary Electrophoresis," in Handbook of Capillary Electrophoresis, CRC Press, James Landers, ed., Ch. 29, pg. 827 (1997). (invited)
1. Michael D. Barnes, Chung-Yi Kung, William B. Whitten, J. Michael Ramsey, and Stephen Arnold, "Molecular Fluorescence in a Microcavity: Solvation Dynamics and Single Molecule Detection," in Optical Processes in Microcavities, World Scientific Publishers, R. K. Chang and A. J. Campillo, eds., Ch. 4, pg. 135 (1996). (invited)

### b. Refereed papers/articles

#### PEER REVIEWED PUBLICATIONS (H-index=87, i10-index=214)

190. W. H. Henley, N. A. Siegfried, and J. M. Ramsey, "Spatially isolated reactions in a complex array: using magnetic beads to purify and quantify nucleic acids with digital and quantitative real-time PCR in thousands of parallel microwells," *Lab on a Chip*, 2020, 20, 1771-1779.
189. R. M. Schotzinger, L. D. Menard, and J. M. Ramsey, "Single-Molecule DNA Extension in Rectangular and Square Profile Nanochannels in the Extended de Gennes Regime," *Macromolecules*, 2020, 53, 1950-1956.
188. W. M. Gilliland and J. M. Ramsey, "Development of a Microchip CE-HPMS Platform for Cell Growth Monitoring," *Anal. Chem.*, 2018, 90, 13000-13006.
187. W. M. Gilliland, J. S. Mellors, and J. M. Ramsey, "Coupling Microchip Electrospray Ionization Devices. With High Pressure Mass Spectrometry," *Anal. Chem.*, 2017, 89, 13320-13325.
186. E. L. Fayer, W. M. Gilliland, J. M. Ramsey, N. L. Allbritton, M. L. Waters, "N-Gemini peptides: cytosolic protease resistance via N-terminal dimerization of unstructured peptides," *Chem. Commun.*, 2017, 54, 204-207.

185. W. H. Henley, Y. He, J. S. Mellors, N. G. Batz, J. M. Ramsey, and J. W. Jorgenson, "High-resolution separations of charge variants and disulfide isomers of monoclonal antibodies and antibody drug conjugates using ultra-high voltage capillary electrophoresis with high electric field strength," *J. Chromatogr. A.*, 2017, 1523, 72-70.
184. J. Zhou, Y. Wang, L. D. Menard, S. Panyukov, M. Rubinstein, J. M. Ramsey, "Enhanced nanochannel translocation and localization of genomic DNA molecules using three-dimensional nanofunnels," *Nat. Comm.*, 2017, 8, Article number: 807
183. H. Chun, P. J. Dennis, E. R. Ferguson Welch, J. P. Alarie, J. W. Jorgenson, J. M. Ramsey, "Development of a Conductivity-based Photothermal Absorbance Detection Microchip Using Polyelectrolytic Gel Electrodes," *J. Chromatogr. A.*, 2017, 1523, 140-147.
182. J. C. Gaiteri, W. H. Henley, N. A. Siegfried, T. H. Linz, and J. M. Ramsey, "Use of Ice-Nucleating Proteins to Improve the Performance of Freeze-Thaw Valves in Microfluidic Devices," *Anal. Chem.*, 2017, 89, 5998-6005.
181. T. H. Linz, W. H. Henley, and J. M. Ramsey, "Photobleaching kinetics-based bead encoding for multiplexed bioassays, *Lab Chip*, 2017, 17, 1076-1082.
180. K. H. Blakeman, C. A. Cavanaugh, W. M. Gilliland, and J. M. Ramsey, "High Pressure Mass Spectrometry of Volatile Organic Compounds with Ambient Air Buffer Gas," *Rapid Commun Mass Spectrom*, 2017, 31, 27-32.
179. K. H. Blakeman, D. W. Wolfe, C. A. Cavanaugh, and J. M. Ramsey, "High Pressure Mass Spectrometry: The Generation of Mass Spectra at Operating Pressures Exceeding 1 Torr in a Microscale Cylindrical Ion Trap," *Anal. Chem.*, 2016, 88, 5378-5384.
178. E. A. Redman, M. Ramos-Payan, J. S. Mellors, J. M. Ramsey, "Analysis of Hemoglobin Glycation Using Microfluidic CE-MS: A Rapid, Mass Spectrometry Compatible Method for Assessing Diabetes Management," *Anal. Chem.*, 2016, 88, 5324-5330.
177. E. A. Redman, J. S. Mellors, J. A. Starkey, and J. M. Ramsey, "Characterization of Intact Antibody Drug Conjugate Variants Using Microfluidic Capillary Electrophoresis-Mass Spectrometry," *Anal. Chem.*, 2016.
176. E. A. Redman, N. G. Batz, J. S. Mellors, and J. M. Ramsey, "Integrated Microfluidic Capillary Electrophoresis-Electrospray Ionization Devices with Online MS Detection for the Separation and Characterization of Intact Monoclonal Antibody Variants," *Anal. Chem.*, 2015, 87, 2264-2272.
175. W. A. Black, B. B. Stocks, J. S. Mellors, J. R. Engen, and J. M. Ramsey, "Utilizing Microchip Capillary Electrophoresis Electro spray Ionization for Hydrogen Exchange Mass Spectrometry," *Anal. Chem.* 2015, 87 6280-6287.
174. N. G. Batz, J. S. Mellors, J. P. Alarie, J. M. Ramsey, "Chemical Vapor Deposition of Aminopropyl Silanes in Microfluidic Channels for Highly Efficient Microchip Capillary Electrophoresis-Electrospray Ionization-Mass Spectrometry," *Anal. Chem.*, 2014, 86, 3493-3500.
173. S. Nie, W. H. Henley, S. E. Miller, H. Zhang, K. M. Mayer, P. J. Dennis, E. A. Oblath, J. P. Alarie, Y. Wu, F. G. Oppenheim, F. F. Little, A. Z. Uluer, P. Wang, J. M. Ramsey and D. R. Walt, "An

- automated integrated platform for rapid and sensitive multiplexed protein profiling using human saliva samples," *Lab Chip*, 2014, 14, 1087.
172. V. Iancu, X. Zhang, T-H. Kim, L. D. Menard, P. R. C. Kent, M. E. Woodson, J. M. Ramsey, A-P. Li, and H. H. Weitering, "Polaronic transport and current blockades in epitaxial silicide nanowires and nanowire arrays," *Nano Letters*, 2013, 13, 3684-3689.
171. R. A. Hunter, B. J. Privett, W. H. Henley, E. R. Breed, Z. Liang, R. Mittal, B. P. Yoseph, J. E. McDunn, E. M. Burd, C. M. Coopersmith, J. M. Ramsey, and M. H. Schoenfisch, "Microfluidic Amperometric Sensor for Analysis of Nitric Oxide," *Anal. Chem.*, 2013, 85, 6066-6072.
170. C. L. Cusack, V. Swahari, W. H. Henley, J. M. Ramsey, and M. Deshmukh, "Distinct Pathways Mediate Axon Degeneration during Apoptosis and Axon-Specific Pruning," *Nature Comm.*, 2013, 4, (1876), 1-11.
169. J. Scott Mellors, William A. Black, Andrew G. Chambers, Jason A. Starkey, Nathan A. Lacher, and J. Michael Ramsey, "A Hybrid Capillary/Microfluidic System for Comprehensive Online Liquid Chromatography-Capillary Electrophoresis-Electrospray Ionization-Mass Spectrometry," *Anal. Chem.*, 2013, 85, 4100-4106.
168. Nicholas C. Dobes, Rahul Dhopeswarkar, W. Hampton Henley, J. Michael Ramsey, Christopher E. Sims and Nancy L. Allbritton, "Laser-Based Directed Release of Array Elements for Efficient Collection into Targeted Microwells," *Analyst*, 2013, 138, 831-838.
167. E. Oblath, W. H. Henley, J. P. Alarie, and J. M. Ramsey, "A microfluidic chip integrating DNA extraction and real-time PCR for the detection of bacteria in saliva," *Lab Chip*, 2013, 13, 1325-1332.
166. L. D. Menard and J. M. Ramsey, "Electrokinetically-Driven Transport of DNA through Focused Ion Beam Milled Nanofluidic Channels," *Anal. Chem.*, 2013, 85 (2), 1146-1153.
165. L. D. Menard, C. E. Mair, M. E. Woodson, J. P. Alarie, and J. M. Ramsey, "A Device for Performing Lateral Conductance Measurements on Individual Double-Stranded DNA Molecules," *ACS Nano*, 2012, 6 (10), 9087-9094.
164. W. H. Henley and J. M. Ramsey, "High electric field strength two-dimensional peptide separations using a microfluidic device," *Electrophoresis*, 2012, 33 (17), 2718-2724.
163. Jeffrey R. SooHoo, Joshua K. Herr, J. Michael Ramsey, and Glenn M. Walker, "Microfluidic Cytometer for the Characterization of Cell Lysis," *Analytical Chemistry* 2012, 84 (5), 2195-2201.
162. Andrew G. Chambers and J. Michael Ramsey, "Microfluidic Dual Emitter Electrospray Ionization Source for Accurate Mass Measurements," *Analytical Chemistry* 2012, 84 (3), 1446-1451.
161. W. Hampton Henley, Patty J. Dennis, and J. Michael Ramsey, "Fabrication of Microfluidic Devices Containing Patterned Microwell Arrays," *Analytical Chemistry* 2012 84 (3), 1776-1780.
160. Hargis, A. D., Alarie, J. P., and Ramsey, J. M., "Characterization of cell lysis events on a microfluidic device for high-throughput single cell analysis," *Electrophoresis* 2012, 32, 3172-3179.
159. D. D. Dutta and J. M. Ramsey, "A Microfluidic Device for Performing Pressure-Driven Separations,"



Lab Chip, 2011, 11, 3081-3088.

158. L. D. Menard and J. M. Ramsey, "The Fabrication of Sub-5-nm Nanochannels in Insulating Substrates using Focused Ion Beam Milling," *Nano Lett.* 2011, 11, 512-517.
157. A. G. Chambers, J. S. Mellors, W. H. Henley, and J. M. Ramsey, "Monolithic Integration of Two-Dimensional Chromatography-Capillary Electrophoresis and Electrospray Ionization on a Microfluidic Device," *Anal. Chem.* 2011, 83, 842-849.
156. H. Chun, T. D. Chung, J. M. Ramsey, "High Yield Sample Preconcentration using a Highly Ion-Conductive Charge-Selective Polymer," *Anal. Chem.* 2010, 82, 6287-6292.
155. P. J. Dennis, E. R. Ferguson, J. P. Alarie, J. M. Ramsey, and J. W. Jorgenson, "Development of a Photothermal Absorbance Detector for Use with Microfluidic Devices," *Anal. Chem.* 2010, 82, 4063-4071.
154. J. S. Mellors, K. Jorabchi, L. M. Smith, and J. M. Ramsey, "Integrated Microfluidic Device for Automated Single Cell Analysis using Electrophoretic Separation and Electrospray Ionization Mass Spectrometry," *Anal. Chem.* 2010, 82, 967-973.
153. Branton, D.; Deamer, D. W.; Marziali, A.; Bayley, H.; Benner, S. A.; Butler, T.; Ventra, M. D.; Garaj, S.; Hibbs, A.; Huang, X.; Jovanovich, S. B.; Krstic, P. S.; Lindsay, S.; Ling, X. S.; Mastrangelo, C. H.; Meller, A.; Oliver, J. S.; Pershin, Y. V.; Ramsey, J. M.; Riehn, R.; Soni, G. V.; Tabard-Cossa, V.; Wanunu, M.; Wiggin, M.; Schloss, J. A., The potential and challenges of nanopore sequencing, *Nature Biotechnology* 2008, 26, 1146-1153.
152. Mellors, J. S.; Gorbounov, V.; Ramsey, R. S.; Ramsey, J. M., Fully integrated glass microfluidic device for performing high-efficiency capillary electrophoresis and electrospray ionization mass spectrometry, *Anal. Chem.* 2008, 80, 6881-6887.
151. S. Pau, W. B. Whitten, and J. M. Ramsey, "Planar Geometry for Trapping and Separating Ions and Charged Particles," *Anal. Chem.*, 79, 6857 (2007).
150. S. Pau, C. S. Pai, Y.L. Low, J. Moxom, P.T.A. Reilly, W. B. Whitten, and J. M. Ramsey, "Microfabricated Quadrupole Ion Trap for Mass Spectrometer Applications," *Phys. Rev. Lett.*, 96, 120801 (2006).
149. W. A. Harris, P. T. A. Reilly, W. B. Whitten, and J. M. Ramsey, "Transportable real-time single-particle ion trap mass spectrometer", *Rev. Sci. Instrum.*, 76, 064102 (2005).
148. C. T. Culbertson, Y. Tugawat, A. R. Meyer, G. T. Roman, J. M. Ramsey, and S. R. Gonda, "Microchip Separations in Reduced-Gravity and Hypergravity Environments," *Anal. Chem.*, 77, 7933 (2005).
147. Y. J. Liu, R. S. Foote, S. C. Jacobson, and J. M. Ramsey, "Sample Concentration on Microchips by SDS Sweeping and Stacking," *Lab Chip*, 5, 457 (2005).
146. C.R. Poulsen, C.T. Culbertson, S.C. Jacobson, and J.M. Ramsey, "Static and Dynamic Acute Cytotoxicity Assays on Microfluidic Devices," *Anal. Chem.*, 77, 667 (2005).
145. J. Moxom, P. T. A. Reilly, W. B. Whitten, J. M. Ramsey, "Sample Pressure Effects in a Micro Ion Trap Mass Spectrometer," *Rapid Commun. Mass Spectrom.*, 18, 721 (2004).

144. C.D. Thomas, S.C. Jacobson, and J.M. Ramsey, "Rapid Cycling Pinch Injections on Microfluidic Devices," *Anal. Chem.* **76**, 6053 (2004).
143. W. B. Whitten, P. T. A. Reilly, J. M. Ramsey, "High-pressure Ion Trap Mass Spectrometry," *Rapid Commun. Mass Spectrom.*, **18**, 1749 (2004).
142. R. P. Rodgers, P. T. A. Reilly, W. B. Whitten, J. M. Ramsey, "Real-time observation of metastable polymeric species formed from precursor soot," *Chem. Phys. Lett.*, **397**, 324 (2004).
141. R. J. Jamasbi, S. J. Kennel, L. C. Waters, L. J. Foote, J. M. Ramsey, "Genetic Analysis of Selected Isolates of *P. aeruginosa* Serotypes 0:3, 0:6 and 0:11 by ERIC-PCR and AP-PCR: Comparison of Traditional technique with the Emerging Technique of Microchip Gel Electrophoresis," *Control and Hospital Epidemiology*, **25**, 65-71 (2004).
140. J.D. Ramsey, S.C. Jacobson, C.T. Culbertson, and J.M. Ramsey, "High Efficiency, Two-Dimensional Separations of Protein Digests Using Microfluidic Devices," *Anal. Chem.*, **75**, 3758 (2003).
139. B.S. Broyles, S.C. Jacobson, and J.M. Ramsey, "Sample Filtration, Concentration, and Separation on Microchips," *Anal. Chem.* **75**, 2761 (2003).
138. Jun Xu, W. B. Whitten, and J. M. Ramsey, "Pulsed-ionization Miniature Ion Mobility Spectrometer," *Anal. Chem.*, **75**, 4206 (2003).
137. Jeremy Moxom, Peter T. A. Reilly, William B. Whitten, and J. Michael Ramsey, "Analysis of Volatile Organic Compounds in Air with a Micro Ion Trap Mass Analyzer," *Anal. Chem.*, **75**, 3739 (2003).
136. M.A. McClain, C.T. Culbertson, S.C. Jacobson, N.L. Allbritton, C.E. Sims, and J.M. Ramsey, "Microfluidic Devices for the High Throughput Chemical Analysis of Cells," *Anal. Chem.*, **75**, 5646 (2003).
135. C. Tsouris, C. T. Culbertson, D. W. DePaoli, S. C. Jacobson, and J. M. Ramsey, "Electrohydrodynamic Mixing in Microchannels," *AIChE J*, **49**, 2181 (2003).
134. Ryan P. Rodgers, Peter T. A. Reilly, William B. Whitten and J. Michael Ramsey, "Soot-Free Synthesis of C<sub>60</sub>." *Carbon*, **41**, 1469 (2003).
133. Jeremy Moxom, Peter T. A. Reilly, William B. Whitten, and J. Michael Ramsey, "Double Resonance Ejection in a Micro Ion Trap Mass Spectrometer," *Rapid Commun. Mass Spectrom.*, **16**, 755-760 (2002).
132. Christopher T. Culbertson, Stephen C. Jacobson, J. Michael Ramsey, "Diffusion Coefficient Measurements on Microfluidic Devices," *Talanta*, **56**, 365 (2002).
131. Norbert Gottschlich, Stephen C. Jacobson, Christopher T. Culbertson, and J. Michael Ramsey, "Two Dimensional Electrochromatography/Capillary Electrophoresis Microchip Device," *Anal. Chem.*, **73**, 2669 (2001).
130. Maxine A. McClain, Christopher T. Culbertson, Stephen C. Jacobson and J. Michael Ramsey, "Flow Cytometry of *E. coli* on Microfluidic Devices," *Anal. Chem.*, **73**, 5334 (2001).

129. Timothy E. McKnight, Christopher T. Culbertson, Stephen C. Jacobson, and J. Michael Ramsey, "Electroosmotically Induced Hydraulic Pumping with Integrated Electrodes on Microfluidic Devices," *Anal. Chem.*, *73*, 4045 (2001).
128. Iulia M. Lazar, Roswitha S. Ramsey, and J. Michael Ramsey, On-Chip Proteolytic Digestion and Analysis Using "Wrong-Way-Round" Electrospray Time-of-Flight Mass Spectrometry, *Anal. Chem.*, *73*, 1733 (2001).
127. Jean Pierre Alarie, Stephen C. Jacobson, and J. Michael Ramsey, " Electrophoretic Injection Bias in Microchip Valving," *Electrophoresis*, *22*, 312 (2001).
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85. "Flow Cytometry Using Electroosmotically Induced Pressures," 1-June-10, U.S. Patent No. 7,727,363, John M. Ramsey, Stephen C. Jacobson
84. "A Microfluidic Device and Method for Electrokinetic Focusing, Segmenting, and Dispensing of a Fluid Stream," 9-Sept-08, U.S. Patent No. 7,422,669, John M. Ramsey, Stephen C. Jacobson
83. "Microfluidic Systems and Methods for Transport and Lysis of Cells and Analysis," 02-Sept-08, U.S. Patent No. 7,419,575, J. Michael Ramsey, Stephen C. Jacobson, Maxine A. McClain
- 78.-82. "Microscale Ion Trap Mass Spectrometer," 11-June-08, (EP, DE, GB, FR, IT) European Patent No. 1218921, J. Michael Ramsey, William B. Whitten
77. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 28-May-08, German Patent No. 69938844.9-08, John M. Ramsey, Stephen C. Jacobson

- 75.-76. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 28-May-08, (EP, FR, GB) European Patent No. 1151267, John M. Ramsey, Stephen C. Jacobson
74. "Methods for Forming Small-Volume Electrical Contacts and Material Manipulations with Fluidic Microchannels," 20-Nov-07, U.S. Patent No. 7,297,243, Stephen C. Jacobson, John M. Ramsey
73. "Microfluidic Devices for the Controlled Manipulation of Small Volumes," 13-Nov-07, Canadian Patent No. 2,380,614, J. Michael Ramsey
72. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 12-Oct-07, Japanese Patent No. 4,023,819, John M. Ramsey
- 67.-71. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 03-Oct-07, (EP, GB, CH, DM, FR) European Patent No. 1162455, J. Michael Ramsey
66. "Microfluidic Devices for the Controlled Manipulation of Small Volumes," 03-July-07, U.S. Patent No. 7,238,268, J. Michael Ramsey
65. "A Microfabricated Device and Method for Multiplexed Electrokinetic Focusing of Fluid Streams and a Transport Cytometry Method using Same," 01-Dec-06, Japanese Patent No. 3885147, J. Michael Ramsey, Stephen C. Jacobson
64. "Ion Trap Array-Based Systems and Methods for Chemical Analysis," 23-Aug-05, U.S. Patent No. 6,933,498, William B. Whitten, J. Michael Ramsey
63. "Microscale Ion Trap Mass Spectrometer," 05-Aug-05, Japanese Patent No. 3704705, John Michael Ramsey, William B. Whitten
62. "Microscale Ion Trap Mass Spectrometer," 25-April-05, Canadian Patent No. 2,338,748, John Michael Ramsey, William B. Whitten
61. "Pulsed Discharge Ionization Source for Miniature Ion Mobility Spectrometers," 23-Nov-04, U.S. Patent No. 6,822,225, John M Ramsey, William B. Whitten, Jun Xu
- 53.-60. "Microfluidic Devices for the Controlled Manipulation of Small Volumes," 15-Sep-04, (EP, CH, FR, GB, IR, IT, LU, MC) European Patent No. 1202802, Stephen C Jacobson, John M Ramsey
52. "A Microfluidic Device and Method for Electrokinetic Focusing, Segmenting and Dispensing of a Fluid Stream," 14-Sep-04, U.S. Patent No. 6,790,328, Stephen C Jacobson, John M Ramsey
51. "Cell Transport, Lysis and Analysis on Microfluidic Devices," 31-Aug-04, U.S. Patent No. 6,783,647, Christopher T Culbertson, Stephen C Jacobson, John M Ramsey, Maxine A. McClain
50. "Microfluidic Devices for the Controlled Manipulation of Small Volumes," 18-Mar-04, Australian Patent No. 768135, Stephen C Jacobson, John M Ramsey
49. "Methods for Forming Small-Volume Electrical Contacts and Material Manipulations with Fluidic Microchannels," 03-Feb-04, U.S. Patent No. 6,685,809, Stephen C. Jacobson, John M. Ramsey

48. "Method and Apparatus for Analyzing Nucleic Acids," 09-Dec-03, U.S. Patent No. 6,660,480, Robert S Foote, John M Ramsey
47. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 28-Oct-03, Canadian Patent No. 2,355,084, Stephen C Jacobson, John Michael Ramsey
46. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 05-Sept-03, Japanese Patent No. 3467696, Stephen C Jacobson, John Michael Ramsey
45. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 20-March-2003, Australian Patent No. 755246, Stephen C Jacobson, John Michael Ramsey
44. "Microfluidic devices for the controlled manipulation of small volumes, 24-Feb-03, U.S. Patent No. 6,524,456, J. Michael Ramsey, Stephen C. Jacobson
43. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 13-Jan-03, Korean Patent No. 369497, John Michael Ramsey
42. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 05-Nov-02, U.S. Patent No. 6,475,363, John Michael Ramsey
41. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 30-Oct-02, German Patent No. 69528705.2-08, John M. Ramsey
- 27.-40. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis" 30-Oct-02, (EP, DK, IT, SE, ES, NL, FR, CH, AT, BE, IE, LU, MC, GB) European Patent No. 0775306, John Michael Ramsey
26. "Microscale Ion Trap Mass Spectrometer," 22-Oct-02, U.S. Patent No. 6,469,298, John Michael Ramsey, William B. Whitten
25. "Low Temperature Material Bonding Technique," 06-Aug-02, U.S. Patent No. 6,428,896, Robert S Foote, John Michael Ramsey
24. "Multiplexed Electrokinetic Focusing and Flow Cytometry in Microfabricated Channel Structures," 13-June-02, Australian Patent No. 744,627, Stephen C Jacobson, John Michael Ramsey
23. "Method and Apparatus for Analyzing Nucleic Acids," 23-April-02, U.S. Patent No. 6,376,181, Robert S Foote, John Michael Ramsey
22. "Low Temperature Material Bonding Technique," 12-Feb-02, U.S. Patent No. 6,346,305, Robert S. Foote, John Michael Ramsey
21. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis," 29-Jan-02, U.S. Patent No. 6,342,142, John Michael Ramsey
20. "Document Authentication Using Fluorescent Dichroic Fibers," 12-Jun-01, U.S. Patent No. 6,246,061, Leon N Klatt, John Michael Ramsey

19. "Material Transport Method and Apparatus," 15-May-01, U.S. Patent No. 6,231,737, John Michael Ramsey, Roswitha S Ramsey
18. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 08-May-01, Canadian Patent No. 2,196,429, John Michael Ramsey
17. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 10-Apr-01, U.S. Patent No. 6,213,151, Stephen C Jacobson, John Michael Ramsey
16. "Low Temperature Material Bonding Technique," 10-Oct-00, U.S. Patent No. 6,129,854, Robert S Foote, John Michael Ramsey
15. "Multiplexed Electrokinetic Focusing and Flow Cytometry in Microfabricated Channel Structures," 19-Sep-00, U.S. Patent No. 6,120,666, Stephen C Jacobson, John Michael Ramsey
14. "Material Transport Method and Apparatus," 29-Aug-00, U.S. Patent No. 6,110,343, John Michael Ramsey and Roswitha S Ramsey
13. "Microfluidic Devices for the Controlled Manipulation of Small Volumes," 10-Aug-00, German Patent No. 60013848-8, Stephen C Jacobson, John Michael Ramsey
12. "Microfluidic Circuit Designs for Performing Electrokinetic Manipulations That Reduce the Number of Voltage Sources and Fluid Reservoirs," 16-May-00, U.S. Patent No. 6,062,261, Stephen C Jacobson, John Michael Ramsey
11. "Method and Apparatus for Staining Immobilized Nucleic Acids," 02-May-00, U.S. Patent No. 6,056,859, Robert S Foote, Stephen C Jacobson, John Michael Ramsey
10. "Document Authentication Using Fluorescent Dichroic Fibers," 14-Mar-00, U.S. Patent No. 6,035,914, Leon N Klatt, John Michael Ramsey
9. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 07-Mar-00, U.S. Patent No. 6,033,546, John Michael Ramsey
8. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 22-Jan-00, Canadian Patent No. 54022, John Michael Ramsey
7. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 04-Jan-00, U.S. Patent No. 6,010,608, John Michael Ramsey
6. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 04-Jan-00, U.S. Patent No. 6,010,607, John Michael Ramsey
5. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis," 14-Dec-99, U.S. Patent No. 6,001,229, John Michael Ramsey
4. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 13-Dec-99, Mexican Patent No. 194601, John Michael Ramsey
3. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 28-Apr-99, Australian Patent No. 701348, John Michael Ramsey

2. "Electrodynamic Focusing on a Microchip," 12-Jan-99. U.S. Patent No. 5,858,187, Stephen C Jacobson, John Michael Ramsey
1. "Apparatus and Method for Performing Microfluidic Manipulations for Chemical Analysis and Synthesis," 12-Jan-99, U.S. Patent No. 5,858,195, John Michael Ramsey

## 6. Seminars and Papers Presented

### a. Invited Presentations

#### NAMED, PLENARY, and KEYNOTE LECTURES (108)

- |                |   |
|----------------|---|
| Oct. 28, 2020  | J. Michael Ramsey, "Microchip CE: Characterizing Molecules Large-to-Small using Mass Spectrometers Large-to-Small," 36 <sup>th</sup> International Symposium on Microscale Separations and Bioanalysis, Virtual, Sept. 27-30, 2020 (Keynote).   |
| March 27, 2019 | J. Michael Ramsey, "Microchip CE-ESI-MS: Characterization of Molecular Boulders," 35 <sup>th</sup> International Symposium on Microscale Separations and Bioanalysis, Corvallis, OR, March 25-28, 2019 (Keynote).   |
| Oct. 30, 2018  | J. Michael Ramsey, "Microtechnologies for Acquiring Biochemical Information," Translational Systems Medicine Symposium, Shanghai, China, Oct. 30, 2018 (Plenary).   |
| Oct. 28, 2018  | J. Michael Ramsey, "Microchip Electrophoresis Devices with Monolithically Integrated Electropray Emitters for Rapid Analysis of Biological Materials," International Symposium on Biomedical Big Data and Precision Medicine, Yangzi Sci-Tech Innovation Center, Nanjing, China, Oct. 28, 2018 (Plenary). |
| Feb, 20, 2018  | J. Michael Ramsey, "A Compact, Versatile Strategy for Multiplexed Digital Assays," Stratec Symposium: Bringing Ideas to Market 5.0 – Collaborations by Design, San Francisco, CA, Feb. 20, 2018 (Keynote).  |
| Oct. 29, 2017  | J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Biochemical Measurements," J. Clarence Karcher Lecture, The University of Oklahoma, Department of Chemistry, Oct. 29, 2017 (Named).  |
| May 19, 2017   | Yury Desyaterik, Tina E. Stacy, Jean Pierre Alarie, Kevin Schultze, J. Michael Ramsey, Microfabricated GC-HPMS, 41 <sup>st</sup> International Symposium on Capillary Chromatography, Fort Worth, TX, May 17-20, 2017 (Keynote).  |
| March 29, 2017 | J. Michael Ramsey, "Microfabricated technologies for accomplishing liquid phase separations and mass spectrometry," MSB2017, 33 <sup>rd</sup> International Symposium on Microscale Separations and Bioanalysis, Noordwijkerhout, The Netherlands, March 26-29, 2017 (Plenary).                           |
| Oct. 21, 2016  | J. Michael Ramsey, "Reconfigurable Multi-element Diagnostics: ReMeDx," 2 <sup>nd</sup> Microfluidics Conference, London, U.K., Oct. 20-21, 2016 (Keynote).  |



- Oct. 26, 2016 J. Michael Ramsey, "Microfabricated Technologies for Addressing Bioanalytical Measurement Problems," Greater Boston Mass Spectrometry Discussion Group, Andover, MA, Oct. 26, 2016 (Plenary)
- Sept. 29, 2016 J. Michael Ramsey, "Microfluidic Capillary Electrophoresis-Electrospray Devices for Analysis of Biopharmaceutical Materials," CE Pharm and Mass Spec 2016, San Diego, CA, Sept. 25-30 (Plenary).
- Aug. 23, 2016 J. Michael Ramsey, "Microfabricated Technologies for Addressing Molecular Measurements: Microchip CE-nESI and Highly Miniaturized MS," 21<sup>st</sup> International Mass Spectrometry Conference, Toronto, Canada, Aug. 20-26, 2016 (Keynote).
- Aug. 17, 2016 J. Michael Ramsey, "Integrated Microfluidic Capillary Electrophoresis-Electrospray Devices for Analysis of Intact mAbs and ADCs," Eighth Annual Bioprocessing Summit, Boston, MA, Aug. 15-19, 2016 (Keynote).
- July 12, 2016 J. Michael Ramsey, "Chemical Sensing using Miniaturized Chemical Measurement Instrumentation," The 16<sup>th</sup> International Meeting on Chemical Sensors, JeJu Island, Korea, July 10-13, 2016 (Plenary).
- June 25, 2016 J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Biochemical Measurements," Gordon Research Symposium on Bioanalytical Sensors, Newport, RI, June 25-26, 2016 (Keynote).
- June 21, 2016 J. Michael Ramsey, "Microfabricated Devices for Accomplishing High Efficiency Liquid Phase Separations Coupled to Mass Spectrometry," 44<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, San Francisco, CA, June 19-24, 2016 (Keynote).
- June 9, 2016 J. Michael Ramsey, "Academic R&D to Products," Biomedical Science & Technology for Special Operations Forces (SOF) – Human Performance and Portable Lab Diagnostics, Research Triangle Park, NC, June 9, 2016 (Keynote).
- June 2, 2016 J. Michael Ramsey, "Microfabricated CE-nESI Devices for the Analysis of Biopharmaceutical Materials," 40<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 29-June 3, 2016 (Plenary).
- Nov. 18, 2015 J. Michael Ramsey, "Micro- and Nanofabricated Molecular Measurement Devices," 15th Asia-Pacific International Symposium on Microscale Separations and Analysis, Tainan, Taiwan, Nov. 15-18, 2015 (Plenary).
- May 18, 2015 J. Michael Ramsey, "Microchip CE-ESI Devices for Rapid High Performance Separations," 39<sup>th</sup> International Symposium on Capillary Chromatography, Fort Worth, TX, May 16-21, 2015 (Keynote).
- May 7, 2015 J. Michael Ramsey, "Micro- and Nanofabricated Molecular Measurement Devices in the Ramsey Lab; Past, Present, and Future," Microfluidics in Biomedical Sciences Training Program Annual Meeting, Ann Arbor, MI, May 7, 2015 (Keynote).

- March 31, 2015 J. M. Ramsey, "Microfluidic Devices and Microscale Mass Spectrometry: Integration of Miniaturized Technologies for Acquiring Biological Information," Mass Spectrometry: Applications to the Clinical Lab, San Diego, CA, March 31 – April 1, 2015 (Plenary).
- Dec. 11, 2014 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Devices," Royal Australian Chemistry Institute National Congress, Adelaide, Australia, Dec. 7-12, 2014 (Keynote).
- Sept. 2, 2014 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for Acquiring Chemical and Biochemical Information," World Lecture Series on Micro/Nanofluidics, Kanagawa, Japan, Sept. 2, 2014 (Plenary).
- May 20, 2014 W. A. Gilliland, C. A. Cavanaugh, K. P. Schultze, J. S. Mellors, and J. M. Ramsey, "A Highly Miniaturized CE-ESI-HPMS System," 38<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 20-23, 2014 (Plenary).
- April 24, 2014 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Technology," Hach Lecture, Department of Chemistry, Colorado State University, Fort Collins, CO, April 24, 2014 (Named).
- April 15, 2014 L. D. Menard, J. Zhou, and J. M. Ramsey, "Nanofluidic Platforms for the Controlled Transport and High Throughput Analysis of Single DNA Molecules," 11<sup>th</sup> Annual Conference on Foundations of Nanoscience (FNANO14), Snowbird, UT, April 14-17, 2014 (Keynote).
- Sept. 27, 2013 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Devices," 2013 Henry Werner Lecture, Kansas University, Lawrence, KS, Sept. 27, 2013 (Named).
- June 20, 2013 J. M. Ramsey, "Microfluidic Separation Devices Coupled to Mass Spectrometry," HPLC2013: 39<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, Amsterdam, The Netherlands, June 16-20, 2013 (Plenary).
- May 14, 2013 L. D. Menard, J. Zhou, and J. Michael Ramsey, "Transport of Single DNA Molecules through Nanofluidic Channels," 37<sup>th</sup> International Symposium on Capillary Chromatography, Palm Springs, CA, May 12-16, 2013 (Plenary).
- April 11, 2013 J. Michael Ramsey, "Microfabricated Devices for Elucidating Chemical and Biochemical Information," Frontiers in Chemistry Lecture, Department of Chemistry, Case Western Reserve University, Cleveland, OH, April 11, 2013 (Named).
- March 20, 2013 J. Michael Ramsey, "Microfluidic Technology for the Elucidation of Biochemical Information," Ralph N. Adams Award Lecture, Pittcon 2013, Philadelphia, PA, March 17-21, 2013 (Named).
- Nov. 15, 2012 J. Michael Ramsey, "Fabricated Microfluidic Chemical Separation Devices – Twenty Years Running," CASSS Scientific Award, Berkeley, CA, Nov. 15, 2012 (Award Lecture).
- June 21, 2012 J. Michael Ramsey, "Microfluidic Separations Devices with Integrated Nano-Electrospray Emitters," HPLC 2012 – 38<sup>th</sup> International Symposium on High

- Performance Liquid Phase Separations and Related Techniques, Anaheim, CA, June 16 – 21, 2012 (Plenary).
- May 29, 2012 J. Michael Ramsey, "Characterization of single DNA molecule using molecular scale fluidic structures," 36<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 27 – June 1, 2012 (Plenary).
- Feb. 13, 2012 Scott Mellors, Andrew Chambers, Nick Batz, Will Black, Rose Ramsey, and J. Michael Ramsey, "Integrated Microfabricated Devices for Performing CE-ESI Coupled to Mass Spectrometry," 27<sup>th</sup> Issue of the International Symposium on MicroScale Bioseparations and Analyses, Geneva, Switzerland, Feb. 12-15, 2012 (Keynote).
- Jan. 11, 2012 J. Michael Ramsey, "Microfabricated Devices for Analytical and Bioanalytical Chemistry," 2012 Winter Conference on Plasma Spectrochemistry, Tucson, AZ, January 9-14, 2012 (Plenary).
- June 21, 2011 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Elucidating Chemical and Biochemical Information," NanoBio Europe, Cork, Ireland, June 21-23, 2011 (Keynote).
- March 28, 2011 J. Michael Ramsey, "Micro- and Nanofluidic Devices: Acquiring Chemical and Biochemical Information Quickly from Small Quantities of Material," SBS 17<sup>th</sup> Annual Conference and Exhibition, Orlando, FL, March 27-31, 2011 (Plenary).
- Aug. 31, 2010 J. Michael Ramsey, "Microfabricated Chemical Instrumentation: Systems for Acquiring Chemical and Biochemical Information, The 17<sup>th</sup> International Symposium on Capillary Electro-separation Techniques, Baltimore, MD, August 28 - September 1, 2010 (Keynote).
- June 3, 2010 P. J. Dennis, E. Oblath, J. K. Herr, W. H. Henley, J. P. Alarie, J. M. Ramsey, "Microfluidic Devices for Performing Clinical Diagnostic Assays," 34<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garde, Italy, May 30 – June 3, 2010 (Plenary).
- Nov. 7, 2009 J. Michael Ramsey, "Structural Analysis of Individual DNA Molecules using Nanofluidic Devices," The 9<sup>th</sup> International Symposium on Microchemistry and Microsystems, Kanazawa, Japan, November 7-8, 2009 (Plenary).
- Oct. 16, 2009 J. Michael Ramsey, "Characterizing Individual DNA Molecules using Nanofluidic Devices," Department of Chemistry, University of Wyoming, Laramie, WY, Oct. 16, 2009 (Named).
- Sept. 30, 2009 J. Michael Ramsey, "Characterizing Individual DNA Molecules using Nanofluidic Devices," Department of Chemical Engineering, Notre Dame University, South Bend, IN, Sept. 29 -30, 2009 (Named).
- Sept. 29, 2009 J. Michael Ramsey, "Microfluidic Devices for Biochemical Analysis," Department of Chemical Engineering, Notre Dame University, South Bend, IN, Sept. 29 -30, 2009 (Named).
- Sept. 23, 2009 Andrew Chambers, Scott Mellors, Roswitha Ramsey, Hampton Henley, and J. Michael Ramsey, "Microfluidic Separation Devices for the Analysis of Peptides and

Proteins," International Ion Chromatography Symposium, Dublin, Ireland, Sept. 20 – 24, 2009 (Keynote).

- April 24, 2009 J. Michael Ramsey, "Micro- and Nano-fluidic Devices for Acquiring Biochemical Information," Frank C. Mathers Lectures, Department of Chemistry, Indiana University, Bloomington, IN, April 24, 2009 (Named).
- Oct. 30, 2008 J. Michael Ramsey, Protein and Peptide Analysis using Microfabricated Fluidic Devices, Chemical and Pharmaceutical Structure Analysis (CPSA) 2008, Langhorne, PA, Oct. 27-30, 2008 (Keynote).
- June 28, 2008 Joshua K. Herr, J. P. Alarie, Jeffery Soohoo, Glenn M. Walker, Norman E. Sharpless, and J. Michael Ramsey, "Characterizing the Protein Content of Single Cells; Inside and Out," 32<sup>nd</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 26-27, 2008, (Keynote).
- Nov. 7, 2007 J. M. Ramsey, "Microfabricated Fluidic Devices for Rapid Access to Chemical and Biochemical Information," International Symposium on Recent Advances in Food Analysis, Prague, Czech Republic, Nov. 7-9, 2007 (Keynote).
- Aug. 21, 2007 J. M. Ramsey, "Microfabricated Chemical Separations Devices," 234<sup>th</sup> American Chemical Society National Meeting and Exposition, Boston, MA, Aug. 19-23, 2007 (Award Address)
- June 18, 2007 J. Michael Ramsey, "Single Cell Protein Assays using Microfluidic Devices," HPLC 2007, Ghent, Belgium, June 17-21, 2007 (Plenary).
- June 7, 2007 J. Michael Ramsey, "The Mass Spectrometer in a Shirt Pocket," W. Heinlen Hall Lecture, Bowling Green State University, Bowling Green, OH, June 4-7, 2007 (Named).
- June 6, 2007 J. Michael Ramsey, "Nanofluidics: Fundamentals and Potential Applications," W. Heinlen Hall Lecture, Bowling Green State University, Bowling Green, OH, June 4-7, 2007 (Named).
- June 5, 2007 J. Michael Ramsey, "High Throughput Single Cell Protein Analysis using Microfabricated Fluidics Devices," W. Heinlen Hall Lecture, Bowling Green State University, Bowling Green, OH, June 4-7, 2007 (Named).
- June 4, 2007 J. Michael Ramsey, "Microfabricated Fluidic Devices for Acquiring Chemical and Biochemical Information," W. Heinlen Hall Lecture, Bowling Green State University, Bowling Green, OH, June 4-7, 2007 (Named).
- Jan. 16, 2007 Scott Mellors, Hampton Henley, Valeri Gorbounov, Roswitha Ramsey and J. M. Ramsey, "Microfluidic Devices for Single Cell Proteome Analysis," 21<sup>st</sup> International Symposium on MicroScale Bioseparations, Vancouver, BC, Jan. 14-18, 2007 (Keynote).
- Oct. 2, 2006 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," American Electrophoresis Satellite Symposium on Fundamental and Advanced Electrophoresis, Jersey City, NJ, Oct 2, 2006 (Opening Plenary).

- July, 17, 2006 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," 2006 Analytical Research Forum of the Royal Society of Chemistry, Cork, Ireland, July 17-19, 2006 (Keynote).
- June 18, 2006 J. M. Ramsey, "Microfabricated Fluidic Devices for Biological Separations and Analysis," 30<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, San Francisco, CA, June 17-22, 2006 (Plenary).
- May 31, 2006 D. Dutta, N. J. Petersen, D. Xiao, and J. M. Ramsey, "Microchip Liquid Chromatography with Integrated Pumps," 29<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 29-June 2, 2006 (Plenary).
- Jan. 24, 2006 J. M. Ramsey, "Nanofabricated Fluidic Structures for Elucidation of Molecular Information," 20<sup>th</sup> International Symposium on Micro-Scale Bioseparations, Amsterdam, The Netherlands, Jan. 22-26, 2006 (Plenary).
- Dec. 9, 2005 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for Chemical and Biochemical Experimentation," NIST Staff Colloquium Series, National Institute of Standards and Technology, Gaithersburg, MD, Dec. 9, 2005 (NIST Colloquium).
- Oct. 6, 2005 J. M. Ramsey, "Smaller, Faster, Cheaper, Better: Lab-on-a-chip Technologies for Chemical and Biochemical Experimentation," Materials of the Future, The William and Ida Friday Center for Continuing Education, Chapel Hill, NC, Oct. 6, 2005 (Plenary).
- June 30, 2005 D. Dutta, N. J. Petersen, D. Xiao, and J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical Separations," 29<sup>th</sup> International Symposium on High Performance Liquid Phase Separations, Stockholm, Sweden, June 26-30, 2005 (Plenary).
- May 24, 2005 J. M. Ramsey, "Nanoscale Functional Fluidic Elements in Microfluidic Devices," 28<sup>th</sup> International Symposium on Capillary Chromatography, Las Vegas, NV, May 22-25, 2005 (Keynote).
- May 19, 2005 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Experimentation", Ninth Phillip J. Elving Lecture, University of Michigan, Ann Arbor, MI, May 19, 2005 (Named).
- May 11, 2005 J. M. Ramsey, "Micro and Nano-Scale Devices for the Acquisition of Chemical and Biochemical Information," 50<sup>th</sup> Annual Phillips Symposium, University of Pittsburgh, Pittsburgh, PA, May 11-13, 2005 (Named).
- Feb. 12, 2004 J. M. Ramsey, J. P. Alarie, N. J. Petersen, D. Dutta, "Nanofluidic Technology for Chemical Separations," 17<sup>th</sup> International Symposium on Microscale Separations and Capillary Electrophoresis, Salzburg, Austria, Feb. 8-12, 2004 (Plenary).
- Nov. 17, 2003 J. M. Ramsey, "Lab-on-a-Chip: Microscale Chemistry and Analysis," 2003 American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, Nov. 16-21, 2003 (Opening Plenary).

- June 16, 2003 J. M. Ramsey, "Molecular transport through nanoscale channels," 27<sup>th</sup> Symposium on High Performance Liquid Chromatography and Related Techniques, Nice, France, June 15-19, 2003 (Opening Plenary).
- June 5, 2003 J. M. Ramsey, "Micro and Nanofluidic Devices for Chemical and Biochemical Experimentation," Microfluidics/Biosensor Workshop at the University of Pennsylvania, Philadelphia, PA, June 5, 2003 (Keynote).
- May 19, 2003 J. M. Ramsey, "Microfabricated Fluidic Circuits: High Performance Chemical Separations and More," International Symposium on Capillary Chromatography, Las Vegas, NV, May 19-22 (Plenary: Award Lecture).
- Nov. 13, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Korean Conference on Innovative Science and Technology: Nanotechnology – Future Implications, Cheju Island, Korea, Nov. 13, 2002 (Plenary).
- Nov. 8, 2002 J. M. Ramsey, "Micro and Nanofluidic Devices for the Analysis of Biological Materials," CREST Workshop on Micro- and Nanotechnology for Genomic/Proteomic Analysis, Awaji Island, Japan, Nov. 8, 2002 (Plenary).
- Oct. 26, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," 2002 Ralph and Helen Oesper Symposium, University of Cincinnati, Cincinnati, OH, Oct. 26, 2002 (Plenary).
- Oct. 11, 2002 J. M. Ramsey, "Smaller, Faster, Cheaper, Better: Good for Electrons, Why not Molecules?," 58<sup>th</sup> Midland Section American Chemical Society Fall Scientific Meeting, Midland, MI, Oct. 11, 2002 (Keynote).
- Sept. 11, 2002 J. M. Ramsey, "Miniaturization of chemical and biochemical experimentation: smaller, faster, cheaper, and better?," Euroanalysis12, 50<sup>th</sup> Anniversary of Institut für Spektrochemie und Angewandte Spektroskopie, Dortmund, Germany, Sept 8-13, 2002 (Plenary).
- July 8, 2002 J. M. Ramsey, "Microfabricated Chemical Instrumentation: The Way of the Future?," 14<sup>th</sup> International Conference of Racing Analyst and Veterinarians, Orlando, FL, July 3-9, 2002 (Plenary).
- April 25, 2002 J. M. Ramsey, "Microtechnology for Chemical Measurement and Experimentation," Analytica 2002, Munich, Germany, April 22-25, 2002 (Plenary).
- April 22, 2002 J. M. Ramsey, "Biological Experimentation using Microfabricated Fluidic Devices," Drug Analysis 2002, Bruges, Belgium, April 22-25, 2002 (Plenary).
- April 18, 2002 J. M. Ramsey, J. P. Alarie, and S. C. Jacobson, "Molecular Transport through Nanoscale Fabricated Channels," 15<sup>th</sup> International Symposium on Microscale Separations and Analysis, HPCE 2002, Stockholm, Sweden, April 13-18, 2002, (Keynote).
- Sept. 11, 2001 J. M. Ramsey, "Microchip Devices for High Efficiency Separations," International Symposium on High Performance Liquid Phase Separations and Related Techniques, Kyoto, Japan, Sept. 11, 2001 (Plenary).

- May 30, 2001 J. M. Ramsey, "Microtechnology for the Acquisition of Chemical and Biochemical Information," 5<sup>th</sup> International Conference on Microreactor Technology, Strasbourg, France, May 30, 2001 (Plenary).
- Nov. 29, 2000 J. M. Ramsey, "Lab-on-a-Chip Technology in the New Millennium," 20<sup>th</sup> Symposium on Capillary Electrophoresis, Hyogo, Japan, Nov. 29, 2000 (Plenary).
- Oct. 16, 2000 J. M. Ramsey, "Microchip Devices for Chemical Separations: How far can we go?," Frederick Conference on Capillary Electrophoresis, Frederick, MD, Oct. 16, 2000 (Plenary: Award Address).
- Oct. 3, 2000 J. M. Ramsey, "Microfabricated Chemical Measurement Technology: The Way of the Future?," Desty Memorial Lecture, Royal Institution, London, U.K., Oct. 3, 2000 (Named).
- June 14, 2000 J. M. Ramsey, "Microfabricated fluidic devices: new approaches to environmental monitoring, 30<sup>TH</sup> International Symposium on Environmental Analytical Chemistry, Espoo, Finland, June 13-16, 2000 (Plenary).
- June 7, 2000 J. M. Ramsey, "Expanding the Horizons of Microchip-based Separations," 23<sup>rd</sup> International Symposium on Capillary Chromatography, Riva del Garde, Italy, June 5-9, 2000 (Plenary).
- Sept. 27, 1999 J. M. Ramsey, "The Laboratory on a Chip: A New Approach to Laboratory Experimentation," Council for Chemical Research 20<sup>th</sup> Annual Meeting, Baltimore, MD, Sept. 25-28, 1999 (Plenary).
- June 17, 1999 J. M. Ramsey, "Microfabricated Devices for Acquisition of Biochemical Information," Analytical Days Symposium, Uppsala, Sweden, June 17, 1999 (Keynote).
- June 14, 1999 J. M. Ramsey, "The Lab-on-a-Chip: A new approach to chemical and biochemical experimentation," Analytical Days Symposium, Uppsala, Sweden, June 14, 1999 (Plenary).
- June 2, 1999 J. M. Ramsey, S. C. Jacobson, C. T. Culbertson, R. S. Foote, J. Khandurina, and J. P. Kutter, "Integrated Microdevices for Sample Processing and Separations," 23<sup>rd</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, Granada, Spain, June 2, 1999 (Keynote).
- May 6, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Chemical and Biochemical Experimentation," Bayer Lecture Series in Chemistry, University of New Hampshire, Durham, NH, May 6, 1999 (Named).
- April 30, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices for High-throughput Biochemical Experimentation," Institute of Medicine & National Academy of Engineering, National Academy of Science, Washington, DC, April 29-30, 1999 (Invited).
- Nov. 18, 1998 J. Michael Ramsey, "High Performance Chemical Separations using Microfabricated Structures: Good, Fast, and Cheap?," Dow Lectures on Analytical Chemistry, University of British Columbia, Vancouver, BC, Nov. 17-18, 1998 (Named).

- Nov. 17, 1998 J. Michael Ramsey, "Applying the Microelectronics Paradigm to Chemical and Biochemical Measurements," Dow Lectures on Analytical Chemistry, University of British Columbia, Vancouver, BC, Nov. 17-18, 1998 (Named).
- Aug. 10, 1998 J. M. Ramsey, "Chemical and Biochemical Assays Using Microfabricated Devices," Drug Discovery'98, Boston, MA, Aug. 10, 1998 (Plenary).
- June 1, 1998 J. M. Ramsey, "Thinking Small About Chemical Measurements: Will Microinstrumentation be Visible in the Future?" 46th ASMS Conference, May 31-June 4, 1998 (Plenary).
- May 26, 1998 J. M. Ramsey, "Microfabricated Structures for the Elucidation of Chemical and Biochemical Information," 20th International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 26-29, 1998 (Plenary).
- Oct. 27, 1997 J. M. Ramsey, "The Lab-on-a-Chip: Applying the Microelectronics Paradigm to Chemistry," 24th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies, Providence, Rhode Island, October 26-30, 1997. (Plenary).
- Sep.17, 1997 J. M. Ramsey, "Lab-on-a-Chip Technologies for Performing Chemical and Biochemical Analysis," International Ion Chromatography Symposium (IICS) '97, Santa Clara, CA, September 14-17, 1997 (Plenary).
- June 27, 1997 J. M. Ramsey, "Integrated Microdevices for Biochemical Analysis," 21st Intl. Symp. On High Performance Liquid Phase Separations and Related Techniques," Birmingham, UK, June 22-27, 1997 (Keynote).
- May 12, 1997 J. Michael Ramsey, "Lab-on-a-Chip: Applying the Microelectronics Paradigm to Chemistry," 6th International Conference on Automation, Robotics, and Artificial Intelligence, Montreux, Switzerland, May 12-16, 1997 (Plenary).
- Jan. 30, 1997 J. Michael Ramsey, "Integrated Microstructures for Biochemical Analysis," HPCE '97, Anaheim, CA, January 26-30, 1997 (Plenary).
- March 26, 1996 J. Michael Ramsey, "Chemical and Biochemical Assays with Microfabricated Devices: The Laboratory on a Chip," 14th Barnett Lecture Series in Bioanalytical Chemistry, Northeastern University, Boston, MA, March 26, 1996 (Named).
- March 25, 1996 J. Michael Ramsey, "Micromachining and Chemistry -- Do They Mix?" 14th Barnett Lecture Series in Bioanalytical Chemistry, Northeastern University, Boston, MA, March 25, 1996 (Named).
- Dec.1, 1992 J. M. Ramsey, "Microdroplets, Microparticles, and Microchips," 2nd Symposium on Laser Spectroscopy, Merida, Venezuela, December 1-4, 1992 (Plenary).

#### ORAL PRESENTATIONS (481 invited)

- Oct. 13, 2022 J. Michael Ramsey, "Adventures in miniaturizing chemical and biochemical measurement tools," Indiana University, Bloomington, IN, Oct 13, 2022 (Invited).



- Oct 12, 2022 J. Michael Ramsey, "Adventures in miniaturizing chemical and biochemical measurement tools," Lilly, Indianapolis, IN, Oct. 12, 2022 (Invited).
- Dec. 20, 2021 J. Michael Ramsey, "Microfluidics-enabled digital assays: counting nucleic acid and protein molecules," The International Chemical Congress of Pacific Basin Societies 2021, Honolulu, HI, Dec. 16-21, 2021 (Invited).
- Dec. 19, 2021 J. Michael Ramsey, "Microfabricated chemical instrumentation: enabling new measurements in new locations," The International Chemical Congress of Pacific Basin Societies 2021, Honolulu, HI, Dec. 16-21, 2021 (Invited).
- Nov. 10, 2021 J. Michael Ramsey, "Adventures in miniaturizing chemical and biochemical measurement tools," University of Florida, Gainesville, FL, Nov. 10, 2021 (Invited).
- Aug. 26, 2021 J. Michael Ramsey, "Adventures in miniaturizing chemical and biochemical measurement tools," 262<sup>nd</sup> American Chemical Society National Meeting, Atlanta, GA, Aug. 22-26, 2021 (Invited).
- March 12, 2021 J. Michael Ramsey, "Counting Nucleic Acid and Protein Molecules using Microfluidic Circuits," Pittcon 2021 Conference and Exposition, Virtual, March 8-12, 2021 (Invited).
- Nov. 5, 2020 J. Michael Ramsey, "Digital Array PCR (daPCR): A highly multiplexed digital assay platform," 2<sup>nd</sup> Annual Digital PCR Congress, Virtual, Nov. 4-6, 2020 (Invited).
- March 2, 2020 J. Michael Ramsey, "MicrofluidicsEnabled Digital Biology: Counting Nucleic Acid and Protein Molecules," Pittcon 2020 Conference and Exposition, Chicago, IL, March 1-5, 2020 (Invited).
- Jan. 29, 2020 J. Michael Ramsey, "A Benchtop Biochemical Analyzer: Microchip Capillary Electrophoresis Coupled to High Pressure Mass Spectrometry (HPMS)," SLAS2020 International Conference & Exhibition, San Diego, CA, Jan. 25-29, 2020 (Invited).
- Nov. 19, 2019 J. Michael Ramsey, "A Versatile Biological Assay Platform: Multiplexed Digital Protein and Molecular Measurements, and more," Chemical and Biological Defense Science & Technology (CBD S&T) Conference, Cincinnati, OH, Nov. 18-21, 2019 (Invited).
- Aug. 6, 2019 J. Michael Ramsey, "Microfluidics-Enabled Digital Biology: Counting Nucleic Acid and Protein Molecules," Clinical Chemistry's Hot Topics of 2019, 71<sup>st</sup> American Association of Clinical Chemistry Meeting, Anaheim, CA, Aug. 4-8, 2019, (Invited).
- July 23, 2019 J. Michael Ramsey, "Microfabricated Tools for Biochemical Analysis," Abbvie Analytical Research Symposium, North Chicago, IL, July 22-23, 2019, (Invited).
- Oct. 3, 2018 J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Biochemical Measurements," Barnett Institute, Northeastern University, Boston MA, Oct. 3, 2018 (Invited).
- Sept. 9, 2018 J. Michael Ramsey, "Early Development of Microchip CE," CE Pharm, San Francisco, CA, Sept. 9-12 (Invited).

- Sept. 9, 2018 J. Michael Ramsey, "The Development of Microchip CE-ESI Devices," CE Pharm, San Francisco, CA, Sept. 9-12 (Invited).
- Feb. 28, 2018 J. Michael Ramsey, "Microchip Electrophoresis Devices with Monolithically Integrated Electrospray Emitters for Rapid Analysis of Biological Materials," Pittcon 2018, Orlando, FL, Feb. 26 – March 1, 2018 (Invited).
- June 6, 2017 J. Michael Ramey, "Adventures with Micro- and Nanofabricated Devices for Chemical and Biochemical Measurements; Early Days to Present!," Nobel Symposium on Microfluidics, Sönga-Säby, Sweden, June 5-8, 2017 (Invited).
- June 1, 2017 J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Biochemical Measurements," University of Gothenburg, Gothenburg, Sweden, June 1, 2017 (Invited).
- April 21, 2017 J. Michael Ramsey, "Microfabricated Technologies for Addressing Bioanalytical Measurement Problems," Merck, Rahway, NJ, April 21, 2017 (Invited).
- March 30, 2017 J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Biochemical Measurements," Amsterdam Institute for Molecules, Medicines, and Systems, Vrije University, Amsterdam, The Netherlands, March 30, 2017 (Invited).
- March 8, 2017 J. Michael Ramsey, "Integrated Microfabricated Systems for Performing Capillary Electrophoresis – Mass Spectrometry," Pittcon 2017, Chicago, IL, March 5-9, 2017 (Invited).
- March 6, 2017 J. Michael Ramsey, "High Pressure Mass Spectrometry: A Path to Handheld Analyzers with Specificity and Sensitivity," Pittcon 2017, Chicago, IL, March 5-9, 2017 (Invited).
- Aug. 1, 2016 J. Michael Ramsey, "The Potential for Versatile Benchtop Clinical Diagnostics: Microfluidics and High Pressure Mass Spectrometry," 68<sup>th</sup> AACCC Annual Scientific Meeting and Clinical Lab Expo, Philadelphia, PA, July 31-Aug. 4, 2016 (Invited).
- July 14, 2016 J. Michael Ramsey, "Micro- and Nanofluidic Technologies for Addressing Chemical and Biochemical Measurements," University of Tokyo, Tokyo, Japan, July 14, 2016 (Invited).
- March 9, 2016 J. Michael Ramsey, "Micro- and Nanofabricated Molecular Measurement Devices," Pittcon 2016, Atlanta, GA, March 6-10, 2016 (Invited).
- March 7, 2016 Erin A. Redman, William A. Black, and J. Michael Ramsey, "Integrated Microfluidic Separations Devices Interfaced to Mass Spectrometry," Pittcon 2016, Atlanta, GA, March 6-10, 2016 (Invited).
- Dec. 16, 2015 Laurent Menard, Oscar McCrate, Michael Tycon, and J. Michael Ramsey, "Nanofluidic devices for the manipulation and characterization of DNA: One molecule at a time," Pacifichem 2015, Honolulu, HI, Dec. 15-20, 2015 (Invited).
- Nov. 19, 2015 J. Michael Ramsey, "Micro- and Nanofabricated Technologies for Addressing Molecular Measurements," Genomics Research Center, Academia Sinica, Taipei, Taiwan, Nov. 19, 2015 (Invited).

- Sept. 18, 2015 J. Michael Ramsey, "Microfabricated Technologies for Addressing Molecular Measurements: Microchip CE-nESI and Highly Miniaturized MS, Abbvie,
- Sept. 14, 2015 J. Michael Ramsey, "Microfabricated Technologies for Addressing Molecular Measurements: Microchip CE-nESI and Highly Miniaturized MS, Biogen, Research Triangle Park, NC, Sept. 14, 2015 (Invited).
- April 8, 2015 J. Michael Ramsey, "Microfabricated Technologies for Addressing Molecular Measurements: Microchip CE-nESI and Highly Miniaturized MS," Triangle Area Mass Spectrometry Discussion Group, Research Triangle Park, NC, April 8, 2015 (Invited).
- March 9, 2015 J. M. Ramsey, "The Realization of Truly Handheld Mass Spectrometry," Pittcon 2015, New Orleans, LA, Feb. 8-12, 2015 (Invited).
- March 9, 2015 J. S. Mellors, E. A. Redman, W. A. Black, and J. M. Ramsey, "Microfluidic Separations Devices with Integrated Nano-Electrospray Ionization," Pittcon 2015, New Orleans, LA, Feb. 8-12, 2015 (Invited).
- Dec. 16, 2014 J. M. Ramsey, "Micro Ion Trap Mass Spectrometry," Defence Science and Technology Organization, Fishermans Bend, Australia, Dec. 16, 2014 (Invited).
- Dec. 15, 2014 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Technology," Trajan Scientific, Ringwood, Australia, Dec. 15, 2014 (Invited).
- Dec. 13, 2014 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Technology," 22<sup>nd</sup> Annual RACI R&D Topics Conference, Flinders University, Adelaide, Australia, Dec. 13-15, 2014 (Invited).
- Sept. 3, 2014 J. M. Ramsey, "Advancing Chemical and Biochemical Measurements using Micro- and Nanofabricated Devices," JASIS 2014, Tokyo, Japan (Invited).
- June 16, 2014 J. M. Ramsey, K. P. Schultze, K. H. Blakeman, "Handheld Mass Spectrometry Enabled by Ultrahigh Pressure Operation using Air Buffer Gas," 62<sup>nd</sup> ASMS Conference on Mass Spectrometry & Allied Techniques, Baltimore, MD, June 15-19, 2014.
- June 11, 2014 J. M. Ramsey, "Micro- and Nanofabricated Chemical Measurement Technology," Department of Pharmacy, University of Copenhagen, Copenhagen, Denmark, June 11, 2014 (Invited).
- Jan. 30, 2014 J. M. Ramsey, "Microfluidic Chemical Separations Devices," Hyphenated Techniques in Chromatography, HTC-13, Brugge, Belgium, Jan. 29 – 31, 2014 (Invited).
- Jan. 24, 2014 J. M. Ramsey, "Micro- and Nano-Technologies for Gathering Chemical and Biochemical Information," Cal Poly Graduate Symposium, Cal Poly, San Luis Obispo, CA, Jan. 24, 2014 (Invited).
- Oct. 8, 2013 J. M. Ramsey, "Microfabricated Devices for Elucidating Chemical and Biochemical Information," Tufts University, Department of Chemistry, Medford, MA, Oct. 8, 2013 (Invited).

- Sept. 30, 2013 L. D. Menard, J. Zhou, and J. M. Ramsey, "Electrokinetic Transport of Single DNA Molecules through Nanochannel Networks," Scix 2013, Milwaukee, WI, Sept. 29 – Oct. 4, 2013 (Invited).
- June 26, 2013 J. M. Ramsey, "Micro- and Nanofluidic Devices for Elucidating Biochemical Information," Kansas State University, Department of Chemistry, Manhattan, KS, June 26, 2013 (Invited).
- June 17, 2013 J. M. Ramsey, "Microfluidic Chemical Separations Devices," HPLC2013: 39<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques, Amsterdam, The Netherlands, June 16-20, 2013 (Invited).
- June 13, 2013 J. M. Ramsey, "Manipulation and Characterization of Single DNA Molecules using Nanofluidic Structures," Gordon Research Conference on the Physics and Chemistry of Microfluidics, Barga, Italy, June 9-14, 2013 (Invited).
- March 19, 2013 J. M. Ramsey, J. S. Mellors, N. Batz, W. Black, "Protein and Peptide analysis using Integrated Multifunctional Microfluidic Devices," Pittcon 2013, Philadelphia, PA, March 17-21, 2013 (Invited).
- Feb. 25, 2013 J. Michael Ramsey, "Micro- and nanofabricated chemical measurement devices," Department of Chemistry, Washington State University, Pullman, WA, Feb. 25, 2013 (Invited).
- Dec. 3, 2012 J. Michael Ramsey, "Technology Translation from Laboratory to Products: Personal Experiences," Inventor Week, Oak Ridge National Laboratory, Oak Ridge, TN, Dec. 3-7, 2012 (Invited).
- Oct. 12, 2012 J. Michael Ramsey, "Making BIG Measurements with Small Devices," 2012 Oesper Symposium, Cincinnati, OH, Oct. 12, 2012 (Invited).
- Oct. 1, 2012 S. Mellors, N. Batz, W. Black, R. Ramsey, and J. M. Ramsey, "Microfluidic Separation Devices with Integrated Nano-Electrospray Emitters," ITP 2012 – 19<sup>th</sup> International Symposium, Exhibit & Workshops on Electro- and Liquid Phase Separation Techniques, Baltimore, MD, Sept. 3 – Oct. 3, 2012 (Invited).
- Sept. 21, 2012 J. Michael Ramsey, "Microfabricated Devices for Analytical and Bioanalytical Chemistry," Department of Chemistry, Arizona State University, Tempe, AZ, Sept. 21, 2013 (Invited).
- June 19, 2012 J. Michael Ramsey, "Manipulation and Characterization of Single DNA Molecules using Nanofluidic Structures," Gordon Research Conference on Bioanalytical Sensors, Newport, RI, June 17-21, 2012 (Invited).
- Nov. 11, 2011 J. Michael Ramsey, "Micro- and Nanotechnologies for Performing Biological Experimentation and Assays: Smaller, Faster, Cheaper, Better!," Advanced Biomedical Methodologies and Technologies Lecture Series, School of Medicine, University of North Carolina, Chapel Hill, NC, Nov. 11, 2011 (Invited).
- Nov. 4, 2011 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Elucidating Chemical and Biochemical Information," Coulter Seminar Series, Joint Department of Biomedical Engineering, North Carolina State University, Raleigh, NC, Nov. 4, 2011 (Invited).

- Oct. 28, 2011 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Elucidating Chemical and Biochemical Information," Joint School of Nanoscience and Nanoengineering, University of North Carolina Greensboro, Greensboro, NC, Oct. 28, 2011 (Invited).
- Oct. 13, 2011 J. Michael Ramsey, "Micro- and Nanofabricated Devices for Elucidating Chemical and Biochemical Information," Department of Chemistry, University of Wisconsin, Madison, WI, Oct. 13, 2011 (Invited).
- July 27, 2011 J. Michael Ramsey, "Miniaturized Mass Spectrometers," The Nonproliferation & Arms Control Technology Working Group, Chemical Weapons Detection Focus Group, Field Portable Mass Spectrometers Workshop, McLean, VA, July 26-27, 2011 (Invited).
- May 2, 2011 Laurent Menard, Michael Woodson, Jinsheng Zhou, J.P. Alaire, Hanno Weitering, Max DiVentra, and J. Michael Ramsey, "Nanofluidic Devices for Characterizing Individual DNA Molecules," 26<sup>th</sup> International Symposium on Microscale Bioseparations, San Diego, CA, May 1-5, 2011 (Invited).
- March 28, 2011 J. Michael Ramsey, "Micro- and Nanofluidic Devices: Acquiring Chemical and Biochemical Information Quickly from Small Quantities of Material," Society for Laboratory Automation and Screening 17<sup>th</sup> Annual Conference & Exhibition, Orlando, FL, March 27-31, 2011 (Invited).
- March 17, 2011 Laurent Menard, Chad Mair, J.P. Alaire, Jinsheng Zhou, Hanno Weitering, J. Michael Ramsey, "Single Molecule DNA Characterization using Nanofabricated Fluidic Devices," Pittcon 2011, Atlanta, GA, March 12-17, 2011 (Invited).
- March 16, 2011 J. Michael Ramsey, "Microfabricated Chemical Instrumentation: Microsystems for Acquiring Chemical and Biochemical Information," Pittcon 2011, Atlanta, GA, March 12-17, 2011 (Invited).
- March 15, 2011 Scott Mellors, Andrew Chambers, Rose Ramsey, and J. Michael Ramsey, "Microfabricated Chemical Separation Devices with Integrated Electrospray Ionization," Pittcon 2011, Atlanta, GA, March 12-17, 2011 (Invited).
- March 14, 2011 J. Michael Ramsey, "The Miniaturization of Ion Trap Mass Spectrometers," Pittcon 2011, Atlanta, GA, March 12-17, 2011 (Invited).
- Dec. 17, 2010 J. Michael Ramsey, "Microfluidic and Nanofluidic Devices for Chemical and Biochemical Experimentation," Pacifichem 2010 Congress, Honolulu, HI, December 15 - 20, 2010 (Invited).
- Oct. 21, 2010 J. Michael Ramsey, J. Scott Mellors, Andrew Chambers, "Microchip Separations with Integrated Electrospray Ionization," Federation of Analytical Chemistry & Spectroscopy Societies 2010, Raleigh, NC, October 17 - 21, 2010 (Invited).
- Aug. 25, 2010 J. Michael Ramsey, "Characterizing Individual DNA Molecules using Nanofluidic Devices," American Chemical Society 240<sup>th</sup> National Meeting and Exposition, Boston, MA, Aug. 22-26, 2010 (Invited).
- June 21, 2010 J. Michael Ramsey, J. Scott Mellors, Andrew Chambers, "Microfabricated Electro

phoresis Devices with Integrated Electrospray Emitters," 35<sup>th</sup> International Symposium on High Performance Liquid Phase Separations and Related Techniques (HPLC 2010), Boston, MA, June 19-24, 2010 (Invited).

- June 16, 2010 J. Michael Ramsey, "Miniature Ion Traps and Mass Analyzers," Center for Analytical Instrumentation Development Meeting, Purdue, IN, June 15-16, 2010 (Invited).
- Apr. 26, 2010 J. Michael Ramsey, "Miniaturized Biochemical Assay Technologies," Future Diagnostics Conference, Irvine, CA, Apr. 26-27, 2010 (Invited).
- Mar. 4, 2010 Laurent Menard, Chad Mair, J.P. Alaire, Hanno Weitering, Max DiVentra, J. Michael Ramsey, "Nanofluidic Devices for Characterizing Individual DNA Molecules," Pittcon 2010, Orlando, FL, Feb. 28 – March 5, 2010 (Invited).
- Mar. 2, 2010 Joshua Herr, Soren Johnson, Jean Pierre Alarie, Norman Sharpless, and J. Michael Ramsey, Integrated Microfluidic Flow Cytometry Devices for Direct Analysis of Blood," Pittcon 2010, Orlando, FL, Feb. 28 – March 5, 2010 (Invited).
- Mar. 1, 2010 J. Michael Ramsey, William B. Whitten, Stanley Pau, Bonner Denton, "Highly Miniaturized Mass Spectrometers," Pittcon 2010, Orlando, FL, Feb. 28 – March 5, 2010 (Invited).
- Mar. 1, 2010 J. Michael Ramsey, Scott Mellors, Andrew Chambers, Rose Ramsey, "Microfabricated Fluidic Devices for Peptide and Protein Analysis," Pittcon 2010, Orlando, FL, Feb. 28 – March 5, 2010 (Invited).
- Nov. 6, 2009 J. Michael Ramsey, "Microfabricated Fluidic Devices for Biochemical Analysis," College of Engineering, University of Tokyo, Tokyo, Japan, Nov. 6, 2009 (Invited).
- Oct. 16, 2009 J. Michael Ramsey, "Conducting Scientific Research in National Laboratories, Academia, and Start-up Companies," Department of Chemistry, University of Wyoming, Laramie, WY, Oct. 16, 2009 (Invited).
- Sep. 24, 2009 J. Michael Ramsey, "Nanofluidic Devices for Characterizing Single Molecules of DNA," National Centre for Sensor Research, Dublin City University, Dublin, Ireland, Sept. 24, 2009 (Invited).
- Aug. 31, 2009 J. Michael Ramsey, "Micro- and Nanofabricated Fluidic Devices for Clinical Diagnostics," Centre de recherche en infectiologie, Laval University, Quebec City, Quebec, Canada, Aug. 31-Sept. 1, 2009 (Invited).
- Mar. 20, 2009 J. Michael Ramsey, "Micro- and Nanofabrication of Chemical and Biochemical Laboratories," Department of Chemistry, Louisiana State University, Baton Rouge, LA, March 20, 2009 (Invited).
- Mar. 9, 2009 J. Michael Ramsey, "Microfluidic Devices for Protein Identification in Small Volumes," Pittcon 2009, Chicago, IL, March 8 – 13, 2009 (Invited).
- Feb. 10, 2009 J. Michael Ramsey, "Protein and Peptide Analysis using Microfabricated Fluidic Devices," Genentech, South San Francisco, CA, Feb. 10, 2009 (Invited).

- Feb. 2, 2009 J. Michael Ramsey, "Microfluidic Devices for Addressing Proteomic Measurements," MicroScale Bioseparations 2009, Boston, MA, Feb. 1 – 5, 2009 (Invited).
- Sep. 30, 2008 J. Michael Ramsey, "Developing Chemical Instrumentation using Microelectronics Fabrication Tools," Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Reno, NV, Sept. 28-Oct. 2, 2008 (Invited).
- Aug. 18, 2008 J. Michael Ramsey, "Chemical instrumentation: How low (small) can we go?," 236th American Chemical Society National Meeting and Exposition, Philadelphia, PA, Aug. 17-21, 2008, (Invited).
- June 24, 2008 J. Michael Ramsey, "Chemical and Biochemical Analysis using MEMS-Based Platforms," Analytical Micro Electrical Mechanical Systems (AMEMS), Minneapolis, MN, June 24, 2008, (Invited).
- June 18, 2008 J. Michael Ramsey, "Protein and Peptide Analysis using Microfabricated Fluidic Devices," Pfizer, Groton, CT, June 18, 2008 (Invited).
- June 13, 2008 J. Michael Ramsey, "Highly Miniaturized Mass Spectrometry," Metabolon, Research Triangle Park, NC, June 13, 2008 (Invited).
- June 12, 2008 J. Scott Mellors, W. Hampton Henley, Andrew G. Chambers, Honggu Chun, Erin Ferguson, Roswitha S. Ramsey and J. Michael Ramsey, "Protein and Peptide Separations using Microfabricated Fluidic Devices," Waters Corp. Milford, MA, June 12, 2008, (Invited).
- May 13, 2008 J. Scott Mellors, W. Hampton Henley, Andrew G. Chambers, and J. Michael Ramsey, "Protein and Peptide Separations using Microfabricated Fluidic Devices," the 32nd International Symposium on High Performance Liquid Phase Separations and Related Techniques (HPLC 2008), May 10-16, 2008, (Invited).
- Apr. 1, 2008 J. M. Ramsey, "Protein and Peptide Analysis in Ultra-Small Volumes," Fitzpatrick Institute for Photonics Distinguished Seminar Series, Department of Engineering, Duke University, Durham, NC, April 1, 2008 (Invited).
- Mar. 5, 2008 J. M. Ramsey, "Microfabricated Chemical Measurement Instrumentation," Pittcon 2008, New Orleans, LA, March 2-6, 2008 (Invited).
- Mar. 5, 2008 J. M. Ramsey, "Single Molecule DNA Sequencing using Nanofluidics and Nanoelectrodes," Pittcon 2008, New Orleans, LA, March 2-6, 2008 (Invited).
- Oct. 30, 2007 J. M. Ramsey, "Microfluidic Devices for Point of Care Clinical Diagnostics," Medical Automation International '07, Lansdowne, VA, Oct. 28-30, 2007 (Invited).
- Sep. 25, 2007 J. M. Ramsey, "Micro- and Nanotechnology for Performing Bioanalytical Measurements," University of Georgia, Department of Chemistry, Athens, GA, Sept. 25, 2007 (Invited).
- May 17, 2007 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," University of Illinois, Department of Chemistry, Urbana-Champaign, IL, May 17, 2007 (Invited).

- Apr. 20, 2007 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," Truman State University, Department of Chemistry, Kirksville, MO, April 20, 2007 (Invited).
- Apr. 17, 2007 J. M. Ramsey, "Conducting Scientific Research in National Laboratories, Academia, and Start-up Companies," Indiana University, Department of Chemistry, Bloomington, IN, April 17, 2007 (Invited).
- Apr. 13, 2007 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems, University of Virginia, Department of Chemistry, Charlottesville, VA, April 13, 2007 (Invited).
- Mar. 6, 2007 J. M. Ramsey, "Micro- and Nanofluidic Devices for Performing Chemical Separations," Chromatography Forum of Delaware Valley, Media, PA, March 6, 2007 (Invited).
- Feb. 28, 2007 W. B. Whitten, J. Moxom, P.T.A. Reilly, C.S. Pai, Y. L. Low, M.A. Shupe, V. Gorbounov, and J. M. Ramsey, "Microfabricated Ion Trap Mass Spectrometers," Pittcon 2007, Chicago, IL, Feb. 5-March 1, 2007 (Invited).
- Feb. 28, 2007 J. M. Ramsey, "Micro- and Nanofluidic Devices for Biochemical Analysis," Pittcon 2007, Chicago, IL, Feb. 5-March 1, 2007 (Invited).
- Feb. 7, 2007 J. M. Ramsey, "Nanoscale Fluidic Technologies for Rapidly Sequencing Single DNA Molecules," National Human Genome Research Institute Sequencing Technology Development Grantee Meeting, Marco Island, FL, Feb. 5-7, 2007 (Invited).
- Jan. 31, 2007 J. M. Ramsey, "High Throughput Single Cell Proteomics using Microfabricated Fluidics Devices," Lab Automation 2007, Palm Springs, CA, Jan. 28-31, 2007 (Invited).
- Nov. 16, 2006 J. M. Ramsey, "Micro- and Nano-technologies for Accelerated Access to Biological Information," National Academy of Sciences Meeting on State of Science in Nuclear Medicine, San Francisco, CA, Nov. 15-16, 2006 (Invited).
- Nov. 3, 2006 J. M. Ramsey, "Nanofluidic Devices for High Throughput DNA Sequencing," Department of Chemistry Advisory Board Meeting, Chapel Hill, NC, Nov. 3-4, 2006 (Invited).
- Oct. 25, 2006 J. M. Ramsey, "Commercialization of Life Sciences Technologies: An Experience," NCI Alliance for Nanotechnology in Cancer Investigators Meeting, La Jolla, CA, Oct. 25-26, 2006 (Invited).
- Oct. 4, 2006 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for Chemical and Biochemical Analysis," DARPA Workshop on Microscale Liquid Analyzers, Keystone, CO, Oct. 4-5, 2006 (Invited).
- June 13, 2006 J. M. Ramsey, "Microfabricated Ion Trap Mass Spectrometry," Waters, Milford, MA, June 13, 2006 (Invited).
- June 13, 2006 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," Waters, Milford, MA, June 13, 2006 (Invited).



- May 19, 2006 J. M. Ramsey, "Miniaturized/microfabricated mass spectrometry," Merck, West Point, PA, May 19, 2006 (Invited).
- May 19, 2006 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," Merck, West Point, PA, May 19, 2006 (Invited).
- Apr. 28, 2006 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," PHI LAMBDA UPSILON Lecture, Kansas State University, Department of Chemistry, Manhattan, KS, April 28, 2006 (Invited).
- Apr. 11, 2006 J. M. Ramsey, "Nanofabricated Fluidic Systems," DARPA Workshop on Nano-Enabled Devices and Systems for Defense Applications, Colorado Springs, CO, April 11-12, 2006 (Invited).
- Apr. 7, 2006 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," University of Memphis, Department of Biomedical Engineering, Memphis, TN, April 7, 2006 (Invited).
- Mar. 14, 2006 J. M. Ramsey, "Fabricated Nanoscale Fluidics," Pittcon 2006 - Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 12-17, 2006 (Award Address).
- Mar., 13, 2006 J. M. Ramsey, M. A. Shupe, W. B. Whitten, J. Moxom, G. Verbeck, P. T. A. Reilly, S. Pau, "Miniaturized/microfabricated mass spectrometry," Pittcon 2006 - Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, March 12-17, 2006 (Invited).
- Dec. 17, 2005 J. M. Ramsey, "Microfluidic devices with integrated nanofluidic elements," Pacificchem 2006, Honolulu, HI, Dec. 17, 2005 (Invited).
- Dec. 2, 2005 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," Center for Optoelectronics and Optical Communications, University of North Carolina Charlotte, Charlotte, NC (Invited).
- Nov. 17, 2005 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Measurement Systems," Biomedical Engineering Distinguished Seminar Series, University of California at Irvine, Irvine, CA, Nov. 17, 2005 (Invited).
- Nov. 16, 2005 J. M. Ramsey, "Micro- and Nano-Fabricated Fluidic Systems for Chemical and Biochemical Experimentation," Department of Chemical Engineering, University of New Mexico, Albuquerque, NM, Nov. 16, 2005 (Invited).
- Nov. 10, 2005 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation." Department of Chemistry, University of Utah, Salt Lake City, UT, Nov. 10, 2005 (Invited).
- Oct. 13, 2005 J. M. Ramsey, "Micro- and Nano-Fabricated Fluidic Systems for Chemical and Biochemical Experimentation," Department of Chemistry, University of Massachusetts, Amherst, MA, Oct. 13, 2005 (Invited).
- Oct. 10, 2005 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical Separations," Central

- New England Chromatography Council Meeting, Cambridge, MA, Oct. 10, 2005 (Invited).
- Oct. 4, 2005 J. M. Ramsey, "Fluid, Charge, and Molecular Transport through Top-down Fabricated Nanochannels," ARO/ARL WORKSHOP ON NEW TOPICS IN BIOMOLECULAR TRANSPORT, Aberdeen, MD, Oct. 3-4, 2005 (Invited).
- Sep. 28, 2005 J. M. Ramsey, "Development of Novel Mass Spectrometry Tools for Individual Cell Proteome Analysis" Sixth NHLBI Proteomics Investigators Meeting, Bethesda, MD, Sept. 28-29 (Invited).
- Sep. 20, 2005 J. M. Ramsey, "Micro- and Nanofluidic devices for Chemical and Biochemical Measurements," Central North Carolina Section of the American Chemical Society Meeting, Greensboro, NC, Sept. 20, 2005 (Invited).
- Sep. 16, 2005 J. M. Ramsey, "Micro- and Nanofluidic devices for Chemical and Biochemical Measurements," Eastern Carolina University, Departments of Chemistry and Physics, Greenville, NC, Sept. 16, 2005 (Invited).
- Aug. 26, 2005 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for Acquiring Chemical and Biochemical Information," Agilent Technologies, Waldbronn, Germany, Aug. 26, 2005 (Invited).
- Aug. 24, 2005 J. M. Ramsey, "Nano- and Microscale Transport," Gordon Conference on the Chemistry and Physics of Microfluidics, Oxford, U.K., Aug. 21-26, 2005 (Invited).
- June 16, 2005 J. M. Ramsey, "Fluid and Molecular Transport through Top-down Fabricated Nanochannels," Nobel Symposium Number 131: Controlled Nanoscale Motion, Bäckaskog, Sweden, June 13-17, 2005 (Invited).
- June 13, 2005 Nickolaj Petersen, Debashis Dutta, Dasha Petersen, J.P. Alarie, Valeri A. Gourbonov and J. Michael Ramsey, "Transport through nanofabricated features," Gordon Research Conference on Analytical Chemistry, Roscoff, France, June 12-17, 2005 (Invited).
- Mar. 14, 2005 D. Xiao, D. Dutta, N. J. Petersen, J. M. Ramsey, "Chromatographic separations using microfabricated fluidic structures," 229<sup>th</sup> American Chemical Society National Meeting & Exposition, San Diego, CA, March 13-17, 2005.
- Mar. 2, 2005 J. M. Ramsey, "Microfluidics – What is left?," PITTCON 2005, Orlando, FL, Feb. 8 – March 4, 2005 (invited).
- Mar. 1, 2005 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical Experimentation," PITTCON 2005, Orlando, FL, Feb. 8 – March 4, 2005 (invited).
- Feb. 28, 2005 J. M. Ramsey, W. B. Whitten, P. T. A. Reilly, J. Moxom, G. Verbeck, "Highly Miniaturized Mass Spectrometry," PITTCON 2005, Orlando, FL, Feb. 8 – March 4, 2005 (invited).
- Sep. 28, 2004 D. Dutta and J. M. Ramsey, "Hydraulic Pumping Devices with Surface Modification Structures," 8<sup>th</sup> International Conference on Miniaturized Systems in Chemistry and Life Sciences, Malmö, Sweden, Sept. 26-30, 2004.

- June 16, 2004 N. J. Petersen, and D. Dutta, J. P. Alarie, J. M. Ramsey, "Molecular Transport Through Nanoscale Channels," HPLC 2004, Philadelphia, PA, June 13-18, 2004 (invited).
- June 2, 2004 J. Michael Ramsey, "Highly Miniaturized Mass Spectrometry," 27<sup>th</sup> International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 31 – June 4, 2004 (invited).
- May 3, 2004 J. Michael Ramsey, "Microscale Systems for the Acquisition of Biochemical Information," NIEHS Proteomics Initiative: 2004 Grantees Meeting, Research Triangle Park, NC, May 3-4, 2004 (invited).
- Apr. 29, 2004 J. Michael Ramsey, "Micro- and Nanofabricated Fluidic Structures for the Elucidation of Biochemical Information," Department of Chemistry, Pennsylvania State University, State College, PA, April 29, 2004 (invited).
- Apr. 23, 2004 J. Michael Ramsey, "Microfabricated Devices for Chemical and Biochemical Analysis," Department of Chemistry, University of Helsinki, Helsinki, Finland, April 23, 2004 (invited).
- Apr. 22, 2004 J. Michael Ramsey, "Microfabricated Devices for Chemical and Biochemical Analysis," GlaxoSmithKline, Harlow, U.K., April 22, 2004 (invited).
- Mar. 29, 2004 J. Michael Ramsey, "Micro and Nano-Scale Systems for the Acquisition of Chemical and Biochemical Information," NSF Workshop on Control and System Integration of Micro- and Nano-Scale Systems, Washington, DC, March 29-30, 2004 (invited).
- Mar. 9, 2004 Claus Poulsen, Christopher T. Culbertson, Maxine A. McClain, Stephen C. Jacobson, and J. Michael Ramsey, "Manipulation and Analysis of Single Cells using Microfabricated Fluidic Devices," Pittcon 2004, Chicago, IL, March 7-12, 2004 (invited).
- Mar. 8, 2004 J. Michael Ramsey, "Miniaturization of Chemical Measurement Technology," Pittcon 2004, Chicago, IL, March 7-12, 2004 (invited).
- Feb. 5, 2004 K. Huikko, R. S. Foote, J. M. Ramsey, "Comprehensive Multi-Dimensional Separations using Microfluidic Devices," Eighth International Symposium on Hyphenated Techniques in Chromatography and Hyphenated Chromatographic Analyzers, Brugge, Belgium, Feb. 4-6, 2004 (Invited).
- Feb. 5, 2004 J. M. Ramsey, "Microfabricated Fluidics Devices for Chemical and Biochemical Analysis," Eighth International Symposium on Hyphenated Techniques in Chromatography and Hyphenated Chromatographic Analyzers, Brugge, Belgium, Feb. 4-6, 2004 (Invited).
- Jan. 13, 2004 J. M. Ramsey, "Microfabrication of Chemical Measurement Instrumentation," International Conference for On-Site Analysis, Arlington, VA, Jan. 12-15, 2004 (Invited).

- Nov. 3, 2003 J. M. Ramsey, "Miniaturization of Ion Trap Mass Spectrometry," National Science Foundation Workshop on the Prospects of Miniaturization of Mass Spectrometry, Alexandria, VA, Nov. 3-4, 2003 (invited).
- Oct. 27, 2003 J. M. Ramsey, "Nanofluidics and the Artificial Cell," Council of American Science Writers, Oak Ridge, TN, Oct. 26-28, 2003 (Invited).
- Sep. 11, 2003 J. M. Ramsey, J. Xu, and W. B. Whitten, "Micro Ion Mobility Spectrometry," NA-22 Program Review, Albuquerque, NM, Sept. 10-11, 2003 (invited).
- Sep. 11, 2003 J. M. Ramsey, W. B. Whitten, P. T. A. Reilly, and G. Verbeck, "Microchip Mass Spectrometry," NA-22 Program Review, Albuquerque, NM, Sept. 10-11, 2003 (invited).
- Sep. 9, 2003 J. M. Ramsey, "There are Advantages of Thinking Small," 226<sup>th</sup> American Chemical Society National Meeting, New York, NY, Sept. 7-11, 2003 (invited).
- Aug. 26, 2003 J. M. Ramsey, J. P. Alarie, S. C. Jacobson, N. Petersen, D. Dutta, A. B. Hmelo, L. C. Feldman, "Molecular Transport in Nanoconfined Spaces," Gordon Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, Aug. 24-28, 2003 (invited).
- Aug. 26, 2003 J. M. Ramsey, "Single Molecule Detection – DNA," Gordon Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, Aug. 24-28, 2003 (invited).
- Aug. 12, 2003 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Structures for High Throughput Biochemical Experimentation," University of North Carolina Medical School, Chapel Hill, NC, Aug. 12, 2003 (invited).
- July 31, 2003 J. M. Ramsey, "Molecular Transport in Nanoscale Confined Channels," DARPA MOLDICE Kick-off Meeting, Colorado Springs, CO, July 30-31, 2003 (invited).
- July 20 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Biochemical Engineering (XIII), Boulder, CO, July 19-23, 2003 (invited).
- June 19, 2003 J. M. Ramsey, "Fabricated Nanofluidic Devices," Gordon Research Conference on Analytical Chemistry, New London, CT, June 15-20, 2003 (invited).
- May 15, 2003 J. M. Ramsey, "Thinking Small about Chemical Separations and More!," Triangle Chromatography Discussion Group Annual Meeting, Raleigh, NC, May 15, 2003 (invited).
- May 7, 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Caliper Technologies, Mountain View, CA, May 7, 2003 (invited).
- May 6, 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Amgen, Thousand Oaks, CA, May 6, 2003 (invited).
- Mar. 21, 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Department of Chemistry, University of North Carolina, Chapel Hill, NC, March 21, 2003 (invited).

- Mar. 13, 2003 J. M. Ramsey, "Molecular Transport through Nanoconfined Spaces," Pittcon 2003, Orlando, FL, March 9-14, 2003 (invited).
- Mar. 10, 2003 Jeremy Moxom, William B. Whitten, Peter T. A. Reilly, J. Michael Ramsey, "Micro Ion Trap Mass Spectrometry," Pittcon 2003, Orlando, FL, March 9-14, 2003 (invited).
- Mar. 10, 2003 J. M. Ramsey, "Lab-on-a-Chip Technologies: Past, Present, and Future," Pittcon 2003, Orlando, FL, March 9-14, 2003 (invited).
- Mar. 6, 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Department of Chemistry, Arizona State University, March 6, 2003 (invited).
- Feb. 21, 2003 J. Michael Ramsey, Christopher T. Culbertson, Maxine A. McClain, Luke Tolley, Steven R. Gonda, and Stephen C. Jacobson, 2003 NASA Cell Science Conference, Houston, TX, Feb. 20-22, 2003
- Jan. 31, 2003 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation, Department of Chemical Engineering, North Carolina State University, Raleigh, NC (invited).
- Jan. 19, 2003 J. Michael Ramsey, Stephen C. Jacobson, and J. P. Alarie, "Nanofluidics: Fundamental Transport and Applications, HPCE 2003, 16th International Symposium on Microscale Separations and Analysis, San Diego, CA, Jan. 17-22, 2003 (invited).
- Dec. 16, 2002 J. M. Ramsey and W. B. Whitten, "Microscale Ion Mobility and Mass Spectrometry Devices," DARPA Workshop and Gas Phase Sensing, Monterey, CA, Dec. 16-17, 2002 (invited).
- Dec. 4, 2002 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for Biochemical Experimentation," NIH, NSF, NASA, ARO Biosensing Workshop, Bethesda, MD, Dec. 4, 2002 (invited).
- Dec. 2, 2002 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Experimentation, University of Tennessee Physics Colloquium, Knoxville, TN, Dec. 2, 2002 (invited).
- Dec. 2, 2002 J. M. Ramsey, "Applying Microtechnology to Chemistry and Biology: The Fluidic Microprocessor," Sigma Xi, Oak Ridge, TN, Dec. 2, 2002 (invited).
- Nov. 21, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Microchemical Systems Seminar Series, University of Illinois, Urbana-Champaign, IL, Nov. 21, 2002. (invited)
- Nov. 4, 2002 J. M. Ramsey, J. P. Alarie, S. C. Jacobson, N. J. Petersen, "Molecular Transport through Nanometer Confined Channels," Sixth International Conference on Miniaturized Chemical and Biochemical Analysis Systems, Nara, Japan, Nov. 3-7, 2002.
- Oct. 11, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," 58<sup>th</sup> Midland Section American Chemical Society Fall Scientific Meeting, Midland, MI, Oct. 11, 2002 (Invited).

- Oct. 3, 2002 J. M. Ramsey, "Micro- and Nanofabricated Devices for Chemical and Biochemical Experimentation," Institute of Chemical Biology Colloquium, Vanderbilt University, Nashville, TN, Oct. 3, 2002 (Invited).
- Sep. 16, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Chemical and Biochemical Experimentation," Department of Chemistry, Swiss Federal Institute of Technology (ETH) Zurich, Zurich, Switzerland, Sept. 16, 2002 (invited).
- Sep. 13, 2002 J. M. Ramsey, "Micro- and Nanofluidic Devices for Performing Biochemical Experimentation," University of Barcelona, Sept. 13, 2002 (invited).
- Sep. 8, 2002 J. M. Ramsey, "Electrokinetically Driven Micro- and Nanofluidic Devices for the Analysis of Biological Materials," BioDevice Interface Science and Technology Workshop, Phoenix, AZ, Sept. 7-9, 2002 (invited).
- Sep. 4, 2002 J. M. Ramsey, "Innovative Detection Technologies II: Microfabricated Fluidic Devices," Workshop on Indicators for Waterborne Pathogens, National Research Council, National Academies of Science, Washington, DC, Sept. 4, 2002 (invited).
- Aug. 27, 2002 Stephen C. Jacobson, Jean Pierre Alarie, and J. Michael Ramsey, "Electrokinetic Transport through Nanometer Deep Channels," IEEE-NANO2002, Crystal City, VA, Aug. 25-28, 2002.
- July 30, 2002 J. P. Alarie, Stephen C. Jacobson, Shengting Cui, Hank D. Cochran, Arthur P. Baddorf, Leonard C. Feldman, and J. Michael Ramsey, "Electrokinetically Driven Molecular Transport through Nanoscale Channels," SmallTalk2002, San Diego, CA, July 28-31, 2002 (invited).
- July 24, 2002 J. M. Ramsey, "Biological Experimentation using Microfabricated Fluidic Devices," Wyeth, Sanford, NC, July 24, 2002 (invited).
- July 11, 2002 J. M. Ramsey, "Microfabricated Fluidic Devices for the Acquisition of Chemical and Biochemical Information," Amphora Discovery Corp., Research Triangle Park, NC, July 1, 2002 (invited).
- July 10, 2002 J.M. Ramsey, R.S. Ramsey, R.S. Foote, J.D. Ramsey, "Microfabricated Fluidic Devices for Protein and Peptide Mapping," 3rd Meeting for Innovative Molecular Analysis Technologies, Chantilly, VA, July 8-10, 2002 (invited).
- May 22, 2002 J. M. Ramsey, "Micro- and Nanofabricated Fluidic Devices for the Acquisition of Biochemical Information," Institute for Nanoscale Science and Engineering Colloquium, Vanderbilt University, Nashville, TN, May 22, 2002 (invited)
- Apr. 17, 2002 Christopher T. Culbertson, Maxine A. McClain, Stephen C. Jacobson, and J. Michael Ramsey, "Single Cell Analysis on Microfluidic Devices," 15th International Symposium on Microscale Separations and Analysis, HPCE 2002, Stockholm, Sweden, April 13-18, 2002.
- Mar. 21, 2002 J. M. Ramsey, "Coupling Microfluidics to Mass Spectrometry: Will there be Synergy?," Pittcon 2002, New Orleans, LA, March 17-21, 2003 (invited).

- Mar. 18, 2002 Jeremy Moxom, William B. Whitten, Peter T. A. Reilly, J. Michael Ramsey, "Miniaturizing ion trap mass spectrometers," Pittcon 2002, New Orleans, LA, March 17-21, 2003 (invited).
- Jan. 30, 2002 K. A. Swinney, R. S. Foote, C.T. Culbertson, S. C. Jacobson and J. M. Ramsey, "Microfabricated Fluidic Devices for the Analysis of Genomic Materials," Dept. of Energy's 9th Genome Contractor and Grantee Workshop, Oakland, CA, Jan. 30, 2002. (invited).
- Jan. 11, 2002 J. M. Ramsey, "Fluidic Circuits for Chemical and Biochemical Experimentation: Micro to Nano," Fifth Southeastern Ultrafast Conference, Vanderbilt University, Nashville, TN, Jan. 11, 2002. (invited).
- Dec. 13, 2001 J. M. Ramsey, "Microfabricated Fluidics Devices: Technology Needs and New Directions," DARPA Workshop on Novel Applications of Microfluidics, Dulles, VA, Dec. 13, 2001 (invited).
- Dec. 10, 2001 J. M. Ramsey, "Microscale Devices for Chemical and Biochemical Experimentation," Depts. of Chemistry and Chemical Engineering, Washington State University, Pullman, WA, Dec. 10, 2001 (invited).
- Nov. 8, 2001 J. M. Ramsey, "Smaller, Faster, Cheaper, Better: Good for Electrons, why not Molecules?," Jacob Heskell Gabbay Award Address, Brandeis University, Waltham, MA, Nov. 8, 2001 (invited).
- Sep. 17, 2001 J. M. Ramsey, "Microfabricated Devices for Chemical Measurement and Experimentation," International Symposium on Microchemistry and Microsystems, Kawasaki, Japan, Sept. 17, 2001 (invited).
- Aug. 27, 2001 J. M. Ramsey, "High Efficiency Separations on Microfabricated Fluidic Structures," 222nd ACS National Meeting, Chicago, IL, August 27, 2001 (invited).
- May 23, 2001 J. M. Ramsey, "Microfabricated Devices for Chemical Measurement and Experimentation," International Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, NV, May 23, 2001 (invited).
- May 23, 2001 R. S. Ramsey, N. Gottschlich, C.T. Culbertson, S. C. Jacobson, I.M. Lazar, and J. M. Ramsey, "Rapid Protein Analysis using Microchip Devices," International Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, NV, May 23, 2001 (invited).
- Apr. 25, 2001 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," University of Minnesota, Department of Chemistry, Minneapolis, MN, April 25, 2001 (invited).
- Apr. 20, 2001 J. M. Ramsey, "Microfabricated Fluidic Devices: A new approach to chemical and biochemical experimentation," Arizona State University, Department of Chemistry, Tempe, AZ, April 20, 2001 (invited).
- Apr. 19, 2001 J. M. Ramsey, "Acquisition of Chemical and Biochemical Information Using Microfabricated Instrumentation," University of Arizona, Department of Chemistry, Tucson, AZ, April 19, 2001 (invited).

- Apr. 6, 2001 J. Michael Ramsey, Stephen C. Jacobson, Christopher T. Culbertson, Hank D. Cochran, Tony E. Haynes, David M. Zehner, Shengting Cui, and Leonard C. Feldman, "Molecular Transport in Fabricated Nanoscale Channels," DOE Workshop for Separations and Analysis, San Diego, CA, April 6, 2001 (invited).
- Apr. 5, 2001 J. Michael Ramsey, Stephen C. Jacobson, Christopher T. Culbertson, Roswitha S. Ramsey, Maxine McClaine, Robert S. Foote, "Biochemical Experimentation on Microfabricated Devices," 221st ACS National Meeting, San Diego, CA, April 5, 2001 (invited).
- Mar. 8, 2001 J. M. Ramsey, "Miniaturized Analytical Systems: Microchip devices for high throughput screening," Pittcon 2001, New Orleans, LA, March 8, 2001 (invited).
- Mar. 6, 2001 J. M. Ramsey, "Miniaturized Analytical Systems: How Wide - How Deep?," Pittcon 2001, New Orleans, LA, March 6, 2001 (invited).
- Feb. 9, 2001 J. M. Ramsey, "Lab-on-a-chip devices: A new approach to chemical and biochemical experimentation," Florida State University, Department of Chemistry, Tallahassee, FL, Feb. 9, 2001 (invited).
- Jan. 30, 2001 J. M. Ramsey, "Miniaturized Devices for Biochemical Experimentation," LabAutomation 2001, Palm Springs, CA, Jan. 30, 2001 (invited).
- Jan. 17, 2001 J. M. Ramsey, S. C. Jacobson, C. T. Culbertson, and T. E. McKnight, "Microchip Devices for the Manipulation of Nanoliter Volumes," 14th International Symposium on Microscale Separations and Analysis, Boston, MA, Jan. 17, 2001 (invited).
- Dec. 17, 2000 J. M. Ramsey, "Analytical Chemistry in Small-Volumes at Low-Concentration," Pacifichem 2000, Honolulu, Hawaii, Dec. 17, 2000 (invited).
- Dec. 15, 2000 J. M. Ramsey, "High Performance Chemical Separations on Microfabricated Fluidic Devices," Pacifichem 2000, Honolulu, Hawaii, Dec. 15, 2000 (invited).
- Dec. 5, 2000 J. M. Ramsey, "Microfabricated Chemical Measurement Technology: The Way of the future?," Kanagawa Academy of Science and Technology, Kawasaki, Japan, Dec. 5, 2000 (invited).
- Dec. 4, 2000 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," University of Tokyo, Institute of Industrial Science, Tokyo, Japan, Dec. 4, 2000 (invited).
- Dec. 2, 2000 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," University of Tokushima, Tokushima, Japan, Dec. 2, 2000 (invited).
- Oct. 5, 2000 J. Michael Ramsey, S. C. Jacobson, C. T. Culbertson, R. S. Ramsey, N. Gottschlich, "High Efficiency Separations on Microfabricated Fluidic Devices," 23<sup>rd</sup> International Symposium on Chromatography, London, UK, Oct. 5, 2000 (invited).
- Sep. 21, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," Northwestern University, Dept. of Chemical Engineering, Evanston, IL, Sept. 21, 2000 (invited).



- Aug. 1, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," Pfizer Analytical R&D, Groton, CT, Aug. 1, 2000 (invited).
- Aug. 1, 2000 J. M. Ramsey, "Microchip-based Chemical Separations: Fundamental Advantages," Pfizer Analytical R&D, Groton, CT, Aug. 1, 2000 (invited).
- July 27, 2000 J. M. Ramsey, "Chemical and Biochemical Experimentation using Microfabricated Devices," Merck Automated Biotechnology Dept., West Point, PA, July 27, 2000 (invited).
- July 25, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," USDA Advisory Committee Meeting, Raleigh, NC, July 25, 2000 (invited).
- July 6, 2000 J.M. Ramsey, R.S. Ramsey, R.S. Foote, M. I. Lazar, and N. Gottschlich, "Microfabricated Fluidic Devices for Protein and Peptide Mapping," Innovative Molecular Analysis Technologies Program Meeting, Chantilly, VA, July 6-7, 2000 (invited).
- May 16, 2000 J. M. Ramsey, "Microfabricated Fluidic Channel Structures with Intrachannel Electrical Contacts for Material Transport Control," Micrototal Analysis Systems '00, Twente, The Netherlands, May 14-18, 2000.
- Apr. 29, 2000 J. M. Ramsey, "Lab-on-a-Chip Technologies: Moving the Laboratory to the Sample," Tripartite Symposium on Chemical Sensing for the New Millennium, Pittsburgh, Pa (invited).
- Apr. 24, 2000 J. M. Ramsey, "Miniaturized Chemical and Biochemical Measurement Technologies: The Past, Present, and Future," Department of Chemistry, Univ. of Texas, Austin, TX, April 24, 2000 (invited).
- Apr. 18, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," Department of Molecular Biotechnology, Univ. of Washington, Seattle, WA, April 18, 2000 (invited).
- Apr. 12, 2000 J. M. Ramsey, "Microfabricated Devices for Acquiring Chemical and Biochemical Information," Department of Chemistry, Univ. of Tennessee, Knoxville, TN, April 12, 2000 (invited).
- Apr. 5, 2000 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," Glaxo Welcome, Research Triangle Park, NC, April 5, 2000 (invited).
- Apr. 4, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," Department of Chemistry, North Carolina State Univ., Raleigh, NC, April 4, 2000 (invited).
- Apr. 3, 2000 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," Department of Chemistry, Univ. of North Carolina, Chapel Hill, NC, April 3, 2000 (invited).

- Mar. 30, 2000 J. M. Ramsey, "Electrokinetic Transport in Microfluidic Devices," 219th ACS National Meeting, San Francisco, CA, March 26-30, 2000 (invited).
- Mar. 29, 2000 J. M. Ramsey, "Microfabricated Devices for Chemical Processing and Separation," 219th ACS National Meeting, San Francisco, CA, March 26-30, 2000 (invited).
- Mar. 13, 2000 J. M. Ramsey, "Sample Preparation Procedures for Lab-on-a-Chip Devices," Pittcon'00, New Orleans, LA, March 12-16, 2000 (invited).
- Feb. 22, 2000 J. M. Ramsey, "Microfabricated Devices and Mass Spectrometry," 13th International Symposium on High Performance Capillary Electrophoresis and Related Microscale Techniques, Saarbrücken, Germany, Feb. 20-24, 2000 (invited).
- Feb. 17, 2000 J. M. Ramsey, "Microfluidics: Providing Access to Chemical and Biochemical Information," Workshop on Microfluidics, Espoo, Finland, Feb. 17, 2000 (invited).
- Feb. 11, 2000 J. M. Ramsey, "Microfabricated fluidic devices: new approaches to chemical measurements," Optical Society of America Topical Meeting on Laser Applications to Chemical and Environmental Analysis, Santa Fe, NM, Feb. 11-14, 2000 (invited).
- Jan. 27, 2000 J. M. Ramsey, "Transforming the laboratory into a sensor: The Laboratory-on-a-Chip," Gordon Research Conf. On Chemical Sensors, Ventura, CA, Jan. 24-27, 2000 (invited).
- Jan. 24, 2000 O. Kornienko, J. Xu, P. T. A. Reilly, W. B. Whitten, J. M. Ramsey, "Microscale Devices for Identification of Gas Phase Ions," American Society of Mass Spectrometry Sanibel Conf., Sanibel Island, FL, Jan. 22-25, 2000 (invited).
- Dec. 14, 1999 J. M. Ramsey, "Microfluidic Technologies: Providing Access to Chemical and Biochemical Information," Department of Manufacturing Engineering, Boston Univ., Boston, MA, Dec. 14, 1999 (invited).
- Dec. 3, 1999 J. M. Ramsey, "Microfluidic Technologies: Providing Access to Chemical and Biochemical Information," Department of Chemistry, Univ. of Florida, Gainesville, FL, Dec. 3, 1999 (invited).
- Nov. 17, 1999 O. Kornienko, J. Xu, P. T. A. Reilly, W. B. Whitten, J. M. Ramsey, "Microdevices for Measuring the Size-to-Charge Ratio of Gas Phase Ions," 38<sup>th</sup> Eastern Analytical Symposium and Exposition, Somerset, NJ, Nov. 17, 1999 (invited).
- Nov. 17, 1999 J. M. Ramsey, "Microfabricated Fluidic Devices for the Generation of Genetic Information," 38<sup>th</sup> Eastern Analytical Symposium and Exposition, Somerset, NJ, Nov. 17, 1999 (invited).
- Nov. 13, 1999 J. M. Ramsey, "The Laboratory-on-a-Chip: A new approach to chemical and biochemical experimentation," Department of Faculty of Sciences, Himeji Institute of Technology, Himeji, Japan Nov. 13, 1999 (invited).
- Nov. 12, 1999 J. M. Ramsey, "Lab-on-a-Chip Technologies: Providing Access to Chemical and Biochemical Information," 22<sup>nd</sup> International Symposium on Capillary Chromatography," Gifu, Japan, Nov. 12, 1999 (invited).

- Nov. 10, 1999 J. M. Ramsey, " The Laboratory-on-a-Chip: A new approach to chemical and biochemical experimentation," Department of Micro Systems Engineering, Nagoya University, Nagoya, Japan Nov. 10, 1999 (invited).
- Nov. 8, 1999 J. M. Ramsey, " The Laboratory-on-a-Chip: A new approach to chemical and biochemical experimentation," Department of Medicinal Chemistry, The University of Tokushima, Shomachi, Tokushima, Japan Nov. 8, 1999 (invited).
- Nov. 3, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices for High-Throughput Chemical Analysis," 16th Montreux LC/MS Symposium, Hilton Head, SC, Nov. 3-5, 1999 (invited).
- Nov. 1, 1999 J. M. Ramsey, "Lab-on-a-Chip: Microtechnology for Chemical Sensing," American Institute of Chemical Engineers 1999 Annual Meeting, Dallas, TX, Nov. 1-5, 1999 (invited).
- Oct. 28, 1999 J. M. Ramsey, "Microfabricated Devices for the Acquisition of Chemical and Biochemical Information," University of Texas, Austin, TX, Oct. 28, 1999 (invited).
- Oct. 21, 1999 J. M. Ramsey, "Microfabricated Devices for Chemical and Biochemical Experimentation," Texas A&M University, College Station, TX, Oct. 21, 1999 (invited).
- Oct. 14, 1999 J. M. Ramsey, "Microfabricated Fluidic Devices for Chemical and Biochemical Experimentation," Analytical Separations 2000, Vaals, Netherlands, Oct. 14-15, 1999 (invited).
- Oct. 7, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Chemical and Biochemical Experimentation," Parke-Davis Ninth Annual Analytical Chemistry Symposium, Holland, MI, Oct. 6-7, 1999 (invited).
- Sep. 28, 1999 J. M. Ramsey, "Microfabricated Devices for Chemical and Biochemical Experimentation," Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, Sept. 28, 1999 (invited).
- Aug. 12, 1999 J. M. Ramsey, "Microfabricated Devices for Chemical and Biochemical Experimentation," Department of Chemistry, Indiana University, Bloomington, IN, Aug. 12, 1999 (invited).
- June 21, 1999 J. M. Ramsey, "Lab-on-a-Chip and More: New Approaches to Experimental Chemistry and Biology," Merck KGaA, Darmstadt, Germany, June 21, 1999. (invited)
- June 11, 1999 J. M. Ramsey, "The Lab-on-a-Chip: A new approach to chemical and biochemical experimentation" The Microelectronics Center, The Technical University of Denmark, Lyngby, Denmark, June 11, 1999. (invited)
- May 14, 1999 J. M. Ramsey, "Lab-on-a-Chip: Microtechnology for Acquiring Chemical Information," Association of Indiana University Chemists 50th Anniversary Symposium, Indiana University, Bloomington, IN, May 14, 1999 (invited).
- Apr. 22, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," New Technologies Seminar Series, National Cancer Institute, Bethesda, MD, April 22, 1999 (invited).

- Mar. 24, 1999 P.T.A. Reilly, W.B. Whitten, and J.M. Ramsey, "Real-Time Analysis of Combustion Derived Aerosols using Tandem Mass Spectrometry," 217th ACS National Meeting March 21 - 25, 1999, Anaheim, CA (invited).
- Mar. 23, 1999 J. M. Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," Zeneca Conference on Analytical Sciences and New Technology," Zeneca Western Research Center, March 22-23, 1999, Richmond, CA (invited).
- Mar. 22, 1999 W.B. Whitten, P. Reilly, and J.M. Ramsey, "Real-Time Size and Chemical Characterization of Environmental Particles using Ion Trap Mass Spectrometry," 217th ACS National Meeting March 21 - 25, 1999, Anaheim, CA (invited).
- Mar. 10, 1999 J. Michael Ramsey, "The Lab-on-a-Chip: Smaller, Faster, Cheaper?," Pittcon'99, Orlando, FL (invited).
- Jan. 28, 1999 J. Michael Ramsey, "Development and Integration of Miniaturized Functional Elements for Lab-on-a-Chip Devices," 12th International Symposium on High Performance Capillary Electrophoresis and Related Microscale Techniques, Palm Springs, CA (invited).
- Jan. 14, 1999 J. Michael Ramsey, "Lab-on-a-Chip Devices: A New Approach to Biochemical Experimentation," Parke-Davis, Alameda, CA (invited).
- Dec. 8, 1998 J. Michael Ramsey, "Microfabricated Devices for Acquiring Biochemical Information," Lilly Pharmaceuticals, Indianapolis, IN (invited).
- Dec. 3, 1998 J. Michael Ramsey, "Lab-on-a-chip Technologies," MASINT EXPO, Washington, DC (invited).
- Oct. 29, 1998 J. Michael Ramsey, "Lab-on-a-Chip devices for acquisition of chemical and biochemical information," 4th International Micromachine Symposium, Tokyo, Japan, Oct. 29-30, 1998 (invited).
- Oct. 15, 1998 J. M. Ramsey, "Integrated Microfabricated Devices for Biochemical Measurements," NCCR Workshop on Integrated Genomics Technologies, National Center for Research Resources, National Institutes of Health, Washington, DC, Oct. 16-16, 1998 (invited).
- Oct. 13, 1998 J. Michael Ramsey, "Microfabricated Fluidic Structures for Chemical Analysis: The Challenges of Increasing Complexity,"  $\mu$ TAS '98, Banff, Canada, Oct. 12-16, 1998 (invited).
- Oct. 8, 1998 J. M. Ramsey, P. T. A. Reilly, and W. B. Whitten, "Real-Time Identification of Illicit Materials in Aerosol Particles by Laser Desorption Mass Spectrometry," Optical Society of America National Meeting, Baltimore, MD, Oct. 4-9, 1998 (invited).
- Oct. 6, 1998 J. Michael Ramsey, "Applying the Microelectronics Paradigm to Chemical and Biochemical Measurements: The Lab-on-a-Chip and More," Optical Society of America National Meeting, Baltimore, MD, Oct. 4-9, 1998 (invited tutorial).
- Oct. 4, 1998 J. Michael Ramsey, "Microfabricated Structures for High Performance Chemical Separations: Can Mass Spectrometry Meet the Challenges?," Asilomar Conference on Mass Spectrometry, Oct. 1-6, 1998 (invited).

- Sep. 15, 1998 J. Michael Ramsey, "Microfabricated devices for High-Speed Electrically Driven Separations," 22nd International Symposium on Chromatography, Rome, Italy, Sept. 13-18, 1998 (invited).
- Sep. 16, 1998 J. Michael Ramsey, "Microfabricated Structures for Performing Chemical Separations and Analysis Procedures," 22nd International Symposium on Chromatography, Rome, Italy, Sept. 13-18, 1998 (invited).
- Aug. 27, 1998 J. Michael Ramsey, "Microchip Separations: Small and Fast," 216th ACS National Meeting, Boston, MA, Aug. 23-27, 1998 (invited).
- Aug. 26, 1998 J. Michael Ramsey, "Microdomain Chemical Analysis," 216th ACS National Meeting, Boston, MA, Aug. 23-27, 1998 (invited).
- Aug. 11, 1998 J. Michael Ramsey, "Microfabricated Devices for Acquiring Biochemical Information," Millennium Pharmaceuticals, Boston, MA, (invited).
- Aug. 6, 1998 J. M. Ramsey, "Lab-on-a-Chip Devices for Acquiring Chemical Information," 1998 American Association of Clinical Chemistry National Meeting, Chicago, IL, Aug. 6, 1998 (invited).
- June 11, 1998 J. M. Ramsey, "Microfabricated Fluidic Devices for Monitoring CW Related Materials in Water," 1998 MASINT Chemical Defense Science and Technology Symposium, US Army Edgewood Research, Development and Engineering Center, Aberdeen, MD, June 11, 1998.
- May 22, 1998 J. M. Ramsey, "Microchip Devices for DNA Fingerprinting," Third Annual National Conference on the Future of DNA: Implications for the Criminal Justice System," Chicago, IL, May 21-22, 1998 (invited).
- May 14, 1998 J. M. Ramsey, "Microfabricated Fluidic Structures for the Elucidation of Chemical and Biochemical Information," Molecular Dynamics, Sunnyvale, CA, May 14, 1998 (invited).
- May 1, 1998 J. M. Ramsey, "How Big is the Lab-on-a-Chip?" University of Illinois, Urbana, IL, May 1, 1998 (invited).
- Apr. 28, 1998 J. M. Ramsey, "Lab-on-a-Chip Devices for Acquiring Chemical and Biochemical Information," Institut für Spektrochemie und Angewandte Spektroskopie, Dortmund, Germany, April 27-29, 1998 (invited).
- Apr. 24, 1998 J. M. Ramsey, "Lab-on-a-Chip Devices for Acquiring Chemical and Biochemical Information," Technical University of Munich, Munich, Germany, April 24, 1998 (invited).
- Apr. 23, 1998 J. M. Ramsey, "Microchip Devices for High-Throughput Chemical and Biochemical Assays," Analytica '98, Munich, Germany, April 23-24, 1998 (invited).
- Apr. 22, 1998 J. M. Ramsey, "Lab-on-a-Chip Devices for Acquiring Chemical and Biochemical Information," Imperial College, London, United Kingdom, April 22, 1998 (invited).

- Mar. 11, 1998 J. M. Ramsey, "Applications of Microprocessing in Chemical Analysis and Diagnosis/Lab-on-a-Chip," Second International Conference on Microreaction Technology, New Orleans, LA, March 8-12, 1998 (invited).
- Mar. 9, 1998 J. M. Ramsey, "Lab-on-a-Chip Devices: Thinking Small About Chemical and Biochemical Measurements," Laser Applications to Chemical and Environmental Analysis Meeting, Orlando, FL, March 8-11, 1998 (invited).
- Mar. 6, 1998 J. M. Ramsey, "Lab-on-a-Chip: Applying the Microelectronics Paradigm to Chemistry" Vision 2020 Workshop, New Orleans, LA, March 5-8, 1998 (invited).
- Mar. 5, 1998 J. M. Ramsey, "Real-Time Microparticle Analysis Using Tandem Mass Spectrometry," PittCon '98, New Orleans, LA, March 1-6, 1998 (invited).
- Mar. 2, 1998 J. M. Ramsey, "Capillary Electrophoresis: A Valuable Component for the Lab-on-a-Chip," PittCon '98, New Orleans, LA, March 1-6, 1998 (invited).
- Feb. 8, 1998 J. M. Ramsey, "Microchip DNA Fingerprinting Devices," NIJ Forensic Sciences Program, San Francisco, CA, February 8-9, 1998 (invited).
- Feb. 5, 1998 J. M. Ramsey, "Laboratory-on-a-Chip Devices for Chemical and Biochemical Analysis," 11th International Symposium on High Performance Capillary Electrophoresis and Related Microscale Techniques, Orlando, FL, Feb. 5, 1998 (invited).
- Jan. 21, 1998 J. M. Ramsey, "Lab-on-a-Chip: Doing Chemistry and Biochemistry from the Keyboard," LabAutomation'98, San Diego, CA, Jan. 21, 1998 (invited).
- Nov. 24, 1997 J. M. Ramsey, "Chemical and Biochemical Assays Using Microfabricated Fluidic Structures," Tennessee Eastman, Kingsport, TN, Nov. 24, 1997 (invited).
- Oct. 29, 1997 W. B. Whitten, P. T. A. Reilly, R. A. Gieray, and J. M. Ramsey, "Real-Time MS/MS Characterization of Individual Aerosol Particles," 24th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies, Providence, Rhode Island, October 26-30, 1997 (invited).
- Oct. 23, 1997 J. M. Ramsey, "Lab-on-a-Chip Devices for Biochemical Measurements," SmithKline Beecham Pharmaceuticals Seminar, King of Prussia, PA, October 23, 1997 (invited).
- Oct. 16, 1997 J. M. Ramsey, "Microfabricated Chemical Systems," Nanoengineering Workshop sponsored by Corning, Inc., Paris, France, October 16-17, 1997 (invited).
- Oct. 7, 1997 J. M. Ramsey, "Applying the Microelectronics Paradigm to Chemistry: The Lab-on-a-Chip," ISA Tech/97, Anaheim, CA, October 7-9, 1997 (invited).
- Sep. 23, 1997 J. M. Ramsey, "Detection of Single Fluorescent Molecules in Microdroplet Streams," XXX CSI, Melbourne, Australia, September 21-25, 1997 (invited).
- July 30, 1997 J. M. Ramsey, "Sensors Based upon Laboratory-on-a-Chip Concepts," Gordon Conference on Bioanalytical Sensors, New England College, NH, July 27-31, 1997 (invited).

- July 9, 1997 J. M. Ramsey, "Monolithically Integrated Microdevices for Performing Chemical and Biochemical Analysis," Tenth Intl. Symposium on HPCE & Related Microscale Techniques, Kyoto, Japan, July 8-11, 1997 (invited).
- June 18, 1997 J. Michael Ramsey, Andrew G. Hadd, and Stephen C. Jacobson, "Applications o Precise Fluid Control on Microchips," Ninth International Conference on Solid-State Sensors and Actuators, Chicago, IL, June 16-19, 1997.
- June 11, 1997 J. Michael Ramsey, "Lab-on-a-Chip Devices for Monitoring Water Borne CW Related Materials," 1997 MASINT Chemical Defense Science and Technology Symposium, Kansas City, MO, June 10-12, 1997 (invited).
- May 19, 1997 J. Michael Ramsey, "Fluidic Manipulations and Separations Using Microchips," 19th Intl. Symposium on Capillary Chromatography and Electrophoresis, Wintergreen, VA, May 18-22, 1997 (invited).
- May 6, 1997 J. Michael Ramsey, "Lab-on-a-Chip: Miniaturization of the Biochemistry Laboratory," Biomarkers, the Genome and the Individual, Charleston, SC, May 4-8, 1997 (invited).
- Apr. 16, 1997 J. Michael Ramsey, "Microfabricated Chemical Separation and Analysis Devices," American Chemical Society 213th National Meeting, San Francisco, CA, April 13-17, 1997 (invited).
- Apr. 14, 1997 Detection of Single Fluorescent Molecules in Microdroplets: Experiment and Photophysics," American Chemical Society 213th National Meeting, San Francisco, CA, April 13-17, 1997 (invited).
- Mar. 19, 1997 J. Michael Ramsey, "Integrated Microfabricated Devices for Chemical and Biochemical Analysis," Pittsburgh Conference and Exposition, Atlanta, GA, March 16-21, 1997 (invited).
- Feb. 27, 1997 J. Michael Ramsey, "Integrated Microdevices for Performing Chemical and Biochemical Analysis," Louisiana State University Symposium Series, Baton Rouge, LA, February 27, 1997 (invited).
- Feb. 25, 1997 J. Michael Ramsey, S. C. Jacobson, and R. S. Foote, "Microfabricated Devices for Performing Chemical and Biochemical Analysis," First International Conference on Microreaction Technology, Frankfurt, Germany, February 23-25, 1997 (invited).
- Feb. 21, 1997 J. Michael Ramsey, "Chemical and Biochemical Assays Using Microfabricated Fluidic Structures," BASF Symposium, Ludwigshafen, Germany, February 21, 1997 (invited).
- Jan. 30, 1997 J. Michael Ramsey, "Integrated Microstructures for Biochemical Analysis," HPCE '97, Anaheim, CA, January 26-30, 1997 (Plenary).
- Jan. 14, 1997 J. M. Ramsey, S. C. Jacobson, and R. S. Foote, "Microdevices for DNA Analysis," 1997 MASINT Biological Defense Science and Technology Symposium, Patrick Air Force Base, FL, January 14-16, 1997 (invited).
- Nov. 20, 1996 J. Michael Ramsey, "Miniature Chemical Measurement Systems," 2nd International Symposium on Micro Total Analysis Systems, Basel, Switzerland, November 19-22, 1996 (invited).

- Nov. 8, 1996 J. Michael Ramsey, Detection of Single Fluorescent Molecules in Microdroplets: Experiment and Photophysics," Fourth Korean Symposium on Laser Spectroscopy, KAERI, Taejon, South Korea, November 8-9, 1996 (invited).
- Nov. 6, 1996 J. Michael Ramsey, "Small Volume Chemical Analysis: Single Molecules and Microchips," Pohang University, Pohang, South Korea, November 6, 1996 (invited).
- Nov. 5, 1996 J. Michael Ramsey, "Single Molecule Detection in Microdroplets," Seoul National University, Seoul, South Korea, November 5, 1996 (invited).
- Oct. 25, 1996 J. Michael Ramsey, "The Chemistry Laboratory on a Chip: What are the Prospects?" University of Nebraska, Lincoln, NE, October 25, 1996 (invited).
- Oct. 24, 1996 J. Michael Ramsey, "Integrated Micro-Devices for Chemical and Biochemical Analysis," Microfabrication Technology for Biomedical Applications Conference, San Jose, CA, October 24-25, 1996 (invited).
- Oct. 16, 1996 J. Michael Ramsey, "Microfabricated Devices for Chemical and Biochemical Analysis," 43rd National Symposium of American Vacuum Society, Philadelphia, PA, October 13-16, 1996 (invited).
- Oct. 13, 1996 J. Michael Ramsey, "DNA Analysis Using Microfabricated Devices," 24th Annual Florida Medical Examiners Conference: DNA Past, Present, and Future, St. Petersburg, FL, October 10-13, 1996 (invited).
- Sep. 20, 1996 J. Michael Ramsey, "Lab-on-a-Chip Technologies: Present Status," Waters Corporation, Milford, MA, Sept. 20, 1996 (invited).
- Sep. 10, 1996 J. Michael Ramsey, "The "Lab-on-a-Chip": What are the Prospects?," Indiana University, Bloomington, IN, August 26, 1996 (invited).
- Aug. 26, 1996 J. Michael Ramsey, "Biochemical Assays on Microfabricated Devices," 212th ACS National Meeting, Orlando, FL, August 25-29, 1996 (invited).
- Aug. 12, 1996 J. Michael Ramsey, "Chemical & Biochemical Assays Using Microfabricated Devices," IBC Microfabrication and Microfluidics Conferences, San Francisco, CA, August 12-14, 1996 (invited).
- Aug. 8, 1996 J. Michael Ramsey, "Laboratory on A Chip Technologies for Environmental Monitoring," CMO MASINT Chemical Defense '96 Science and Technology Review, Battelle Memorial Institute, Columbus, OH, August 8, 1996 (invited).
- Aug. 4, 1996 J. Michael Ramsey, "Microfabricated Chemical Instruments," Gordon Research Conference on Biomolecular Recognition and Immobilization, Colby-Sawyer College, New London, NH, August 4-9, 1996 (invited).
- July 30, 1996 J. M. Ramsey, "Microfabricated Devices for Performing Chemical and Biochemical Analysis ", Searle Research and Development Company, Skokie, IL, July 30, 1996 (invited).



- June 18, 1996 Stephen C. Jacobson and J. Michael Ramsey, "Integrated Microdevices for Chemical Analysis," 20th International Symposium on High Performance Liquid Phase Separations, San Francisco, CA, June 16-21, 1996 (invited).
- June 19, 1996 Stephen C. Jacobson, J. C. Fister, and J. Michael Ramsey, "High Sensitivity Fluorescence Detection on Microchip Capillary Electrophoresis Devices," 20th International Symposium on High Performance Liquid Phase Separations, San Francisco, CA, June 16-21, 1996 (invited).
- May 21, 1996 J. Michael Ramsey, "The Microfabricated Chemical Bench: Separations and More," 18th International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 20-24, 1996 (invited).
- May 21, 1996 J. Michael Ramsey, S. C. Jacobson, R. S. Foote, D. E. Raymond, M. J. Doktycz, K. B. Jacobson, and L. C. Waters, "Microchip Devices for Performing Biochemical Assays," 18th International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 20-24, 1996 (invited).
- May 10, 1996 J. Michael Ramsey, "Chemical Laboratory on a Chip: What Are the Prospects?" ORNL Showcase Lecture, Oak Ridge, TN, May 10, 1996 (invited).
- Apr. 19, 1996 J. Michael Ramsey, "Microfabrication of a Chemical Laboratory: What Are the Prospects?" Colloquium at State University of New York-Buffalo, Buffalo, NY, April 19, 1996 (invited).
- Mar. 26, 1996 J. Michael Ramsey, "Chemical and Biochemical Assays with Microfabricated Devices: The Laboratory on a Chip," 14th Barnett Lecture Series in Bioanalytical Chemistry, Northeastern University, Boston, MA, March 26, 1996 (invited).
- Mar. 25, 1996 J. Michael Ramsey, "Micromachining and Chemistry -- Do They Mix?" 14th Barnett Lecture Series in Bioanalytical Chemistry, Northeastern University, Boston, MA, March 25, 1996 (invited).
- Mar. 4, 1996 J. Michael Ramsey, "Counting Molecules in Microdroplets," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, Illinois March 4, 1996 (invited).
- Feb. 28, 1996 J. Michael Ramsey, "Chemistry on Microfabricated Devices," American Institute of Chemical Engineers 1996 Spring Meeting, New Orleans, LA, February 28, 1996 (invited).
- Feb. 22, 1996 J. Michael Ramsey, "Chemical and Biochemical Assays Using Microfabricated Devices," Glaxo/Wellcome, Research Triangle Park, NC, February 22, 1996 (invited).
- Jan. 23, 1996 J. Michael Ramsey, "Microfabricated Capillary Electrophoresis Systems," HPCE 8th International Symposium, Orlando, FL, January 21-25, 1996 (invited).
- Dec. 21, 1995 J. Michael Ramsey, "Single Molecule Detection," ACS Pacificchem Symposium on Lasers in Analytical Chemistry, Honolulu, Hawaii, December 21, 1995 (invited).

- Dec. 20, 1995 J. Michael Ramsey, "Chemistry on Microfabricated Devices," ACS Pacificchem Symposium on Chemical Analysis with Micromachined and Miniaturized Systems, Honolulu, Hawaii, December 20, 1995 (invited).
- Nov. 14, 1995 J. Michael Ramsey, S. C. Jacobson, A. W. Moore, H. Wang, M. T. Carter, and D. E. Raymond, "Microfabricated Chemical Analysis Devices," Eastern Analytical Symposium Special Session for Award for Achievements in Separation Science, Somerset, NJ, November 14, 1995 (invited).
- Oct. 20, 1995 J. Michael Ramsey, "Placing the Chemical Analysis Laboratory on a Chip: What Are the Prospects?" Procter & Gamble Analytical Colloquium on Miniaturization Techniques for the Analysis of Small Volumes, Cincinnati, OH, October 20, 1995 (invited).
- Oct. 19, 1995 J. Michael Ramsey, "Microfabricated Devices for Performing Capillary Electrophoresis," FACSS Meeting, Cincinnati, OH, October 19, 1995 (invited).
- Sep. 28, 1995 J. Michael Ramsey, "Microfabricated Devices for Performing Medical Diagnostic Measurements," Cambridge Health Institute's Meeting on Microfabrication Technology for Research and Diagnostics, San Francisco, CA, September 28-29, 1995 (invited).
- Sep. 19, 1995 J. Michael Ramsey, "Microfabricated Chemical Measurement Systems," Lachat Instruments, Milwaukee, WI, September 19, 1995 (invited).
- Sep. 12, 1995 J. Michael Ramsey, "Small Volume Chemical Analysis: Single Molecules and Microchips," Affymax Corporation, Santa Clara, CA, September 12, 1995 (invited).
- Aug. 23, 1995 J. Michael Ramsey, "Ultrasensitive Small Volume Analysis," ACS National Meeting, 1995 Award Symposium in Chemical Instrumentation Honoring Richard N. Zare, Chicago, IL, August 20-25, 1995 (invited).
- Aug. 18, 1995 J. Michael Ramsey, "Chemistry and Chemical Analysis on Microfabricated Devices," VIth Workshop on Targetry and Target Chemistry, Vancouver, British Columbia, August 16-20, 1995 (invited).
- Aug. 8, 1995 J. Michael Ramsey, "The Miniaturization of Chemical Analysis: Single Molecules and Microchips," Gordon Research Conference on Analytical Chemistry, New Hampton, NH, August 8, 1995 (invited).
- July 24, 1995 J. Michael Ramsey, "Miniature Integrated Systems for Chemical Processing & Analysis," ARPA Defense Sciences Research Council Workshop on On-Chip Chemical Analysis, La Jolla, CA, July 24, 1995 (invited).
- June 12, 1995 J. Michael Ramsey, "Chemical Processing and Analysis on Microfabricated Devices," CW MASINT Science and Technology Review, Columbus, OH, June 12-14, 1995 (invited).
- June 8, 1995 J. Michael Ramsey, "Ultrasensitive Detection of Fluorescent Molecules in Microdroplets," Second DOE/BES Conference on Separations Research, Santa Fe, NM, June 7-9, 1995 (invited).

- May 22, 1995 J. Michael Ramsey, Mo Yang, Peter T. Reilly, and William B. Whitten, "Tandem Mass Spectrometry of Airborne Particles," ASMS Symposium on Mass Spectrometry and Allied Topics, Atlanta, GA, May 22-26, 1995 (invited).
- May 9, 1995 J. Michael Ramsey, S. C. Jacobson, and A. W. Moore, "Micromachined Devices for Performing Chemical Reactions and Separations," Conference on Capillary Chromatography and Electrophoresis, Wintergreen, VA, May 7-11, 1995 (invited).
- Apr. 20, 1995 J. Michael Ramsey, "Microchip Based Chemistry and Chemical Analysis," University of Massachusetts Chemistry Department Seminar, Amherst, MA, April 20, 1995 (invited).
- Apr. 3, 1995 J. Michael Ramsey, "Microinstruments for Chemical Sensing," ACS Spring Meeting, Anaheim, CA, April 3-5, 1995 (invited).
- Mar. 8, 1995 J. Michael Ramsey, Mo Yang, and W. B. Whitten, "Trapped Particle Laser Spectroscopy," Pittsburgh Conference and Exposition, New Orleans, LA, March 5-10, 1995 (invited).
- Mar. 6, 1995 J. Michael Ramsey, Stephen C. Jacobson, Alvin W. Moore, Jr., and Michael T. Carter, "Microfabricated Chemical Instruments -- The Next Generation?" Pittsburgh Conference and Exposition, New Orleans, LA, March 5-10, 1995 (invited).
- Feb. 6, 1995 J. Michael Ramsey, "Microfabricated Chemical Instruments -- The Next Generation?" Society of Analytical Chemists of Pittsburgh Meeting, Pittsburgh, PA, February 6, 1995 (invited).
- Jan. 29, 1995 J. Michael Ramsey, S. C. Jacobson, and A. W. Moore, "Integration of Chemistry and Capillary Electrophoresis on Microchips," HPCE '95 Meeting, Wurzburg, Germany, January 29-February 3, 1995 (invited).
- Jan. 27, 1995 J. Michael Ramsey, "Microfabricated Devices for Performing Chemical Reactions and Separations," Symposium at ISAS, Dortmund, Germany, January 27, 1995 (invited).
- Jan. 19, 1995 J. Michael Ramsey, "Chemical Measurements, Chemical Sensing, and Micromachines," UT Department of Chemistry, Knoxville, TN, January 19, 1995 (invited).
- Dec. 9, 1994 J. M. Ramsey, "Single Molecules and Microchips," University of South Carolina, Columbia, SC (invited).
- Nov. 15, 1994 J. M. Ramsey, "Micromachined Devices for Performing Chemical Reactions and Separations," Seminar at NIST, Gaithersburg, MD (invited).
- Oct. 25, 1994 J. M. Ramsey, "Miniaturization of the CE Process," Advanced Lab Exposition and Conference (ALEX '94), San Jose, CA, October 25-27, 1994 (invited).
- Oct. 13, 1994 J. M. Ramsey, "Microfabricated Chemical Instrumentation for Chemical Sensing," Section Meeting of American Institute of Chemical Engineers, Knoxville, TN (invited).
- Oct. 3, 1994 J. M. Ramsey, "Miniature Instruments for Liquid Phase Analysis," Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) '94 Meeting, St. Louis, MO, October 3-7, 1994 (invited).

- Sep. 1, 1994 J. M. Ramsey, "Miniature Chemical Instrumentation: The Next Generation," Stanford University, Stanford, CA, September 1, 1994 (invited).
- Aug. 30, 1994 J. M. Ramsey, "Miniature Chemical Instrumentation: The Next Generation," Perkin-Elmer Corporation, Foster City, CA (invited).
- Aug. 29, 1994 J. M. Ramsey, "Miniature Chemical Instrumentation: The Next Generation," Hewlett Packard, Palo Alto, CA (invited).
- Aug. 11, 1994 J. M. Ramsey, "Miniature Chemical Instrumentation: The Next Generation," Abbott Laboratories, Chicago, IL (invited).
- July 19, 1994 J. M. Ramsey, "Analysis of Ultradilute Solutions Based on Single Molecule Detection in Microdroplets," Gordon Conference on Bioanalytical Sensors, Colby-Sawyer College, New London, NH, July 17-22, 1994 (invited).
- July 18, 1994 J. M. Ramsey, "Microfabricated Chemical Instruments," Gordon Conference on Bioanalytical Sensors, Colby-Sawyer College, New London, NH, July 17-22, 1994 (invited).
- July 11, 1994 J. M. Ramsey, "Microfabrication of Chemical Instrumentation," Fourth International Workshop on Bioanalysis, University of Kansas, Lawrence, KS, July 10-13, 1994 (invited).
- Apr. 19, 1994 J. M. Ramsey, "Chemical Measurements of the Future: Think Small," Glaxo Corporation, Research Triangle Park, NC (invited).
- Apr. 18, 1994 J. M. Ramsey, "Chemical Measurements of the Future: Think Small," University of North Carolina, Chapel Hill, NC (invited).
- Apr. 13, 1994 J. M. Ramsey, "Analytical Chemistry on a Small Scale: Microdroplets, Microchips, and Microparticles," SAS Speakers Tour, Penn-York Section, Corning, New York (invited).
- Apr. 12, 1994 J. M. Ramsey, "Analytical Chemistry on a Small Scale: Microdroplets, Microchips, and Microparticles," SAS Speakers Tour, Minnesota Section, Mendota Heights, MN (invited).
- Apr. 11, 1994 J. M. Ramsey, "Counting Molecules: The Ultimate Approach to Chemical Analysis," SAS Speakers Tour, Detroit Section, Dearborn, MI (invited).
- Mar. 8, 1994 J. M. Ramsey, J. M. Dale, M. Yang, and W. B. Whitten, "Mass Spectrometry of Individual Microparticles in an Ion Trap," LACA IV Meeting, Jackson Hole, WY, March 8-11, 1994.
- Feb. 27, 1994 Roland Hergenröder, S. C. Jacobson, L. B. Koutny, and J. M. Ramsey, "Microminiaturized Chemical Instruments: The Ultimate Chemical Sensors?" Pittsburgh Conference, Chicago, IL, February 27-March 4, 1994 (invited).
- Feb. 21, 1994 J. M. Ramsey, "Ongoing Activities in Micromachining at ORNL," Micromanufacturing Technology Center Workshop, ORNL, Oak Ridge, TN (invited).

- Jan. 31, 1994 J. M. Ramsey, S. C. Jacobson, R. Hergenröder, and L. B. Koutny, "Microchip Liquid Phase Analysis Devices," Sixth International Symposium on HPCE '94, San Diego, CA, January 31-February 3, 1994.
- Dec. 7, 1993 J. M. Ramsey, "Microminiature Chemical Instrumentation: The Chemical Sensor of the Future," Microsensors and Micromachines Conference, Alexandria, VA, December 6-7, 1993 (invited).
- Oct. 29, 1993 J. M. Ramsey, "Microchemical Measurements: Single Molecules to Microchips," Southern Illinois University, Carbondale, IL (invited).
- Oct. 19, 1993 S. C. Jacobson, R. Hergenröder, L. B. Koutny, and J. M. Ramsey, "Microchip Capillary Electrophoresis Devices," Fourth Annual Frederick Conference on Capillary Electrophoresis, Frederick, MD, October 19-20, 1993 (invited).
- Oct. 18, 1993 M. D. Barnes, W. B. Whitten, and J. M. Ramsey, "Digital Molecular Detection of Fluorescent Molecules in Liquid Microspheres," 20th Annual FACSS Meeting, Detroit, MI, October 17-22, 1993 (invited).
- Oct. 3, 1993 J. M. Ramsey, M. D. Barnes, W. B. Whitten, "Microdroplet-Based Ultrasensitive Analysis," Optical Society of America Annual Meeting, Toronto, Canada, October 3-8, 1993.
- Aug. 22, 1993 M. Yang, J. M. Dale, W. B. Whitten, and J. M. Ramsey, "Optical and Mass Spectrometry of Individual Microparticles in Electrodynamic Traps," ACS Fall 1993 Meeting, Chicago, IL, August 22-27, 1993 (invited).
- Aug. 9, 1993 J. M. Ramsey, M. D. Barnes, W. B. Whitten, "Fluorescence Spectroscopy in Microspheres: Fundamentals and Applications," Intl. Conf. on Luminescence and Optical Spectroscopy of Condensed Material, Storrs, CT August 9-13, 1993 (invited).
- July 21, 1993 Roland Hergenröder, S. C. Jacobson, L. B. Koutny, and J. M. Ramsey, "Liquid Chromatography on a Microchip," Analytical Chemistry Division Information Meeting, ORNL, Oak Ridge, TN, July 21-23, 1993 (invited).
- June 29, 1993 J. M. Ramsey, "Microdroplet Fluorescence Spectroscopy: Detection and Photophysics," 28th Colloquium Spectroscopicum Internationale, York, United Kingdom, June 29-July 4, 1993 (invited).
- June 1, 1993 J. M. Ramsey, "Microminiaturized Instrumentation for Chemical Separations," 41st ASMS Conference on Mass Spectrometry and Allied Topics, San Francisco, CA, May 30-June 4, 1993 (invited).
- May 24, 1993 J. M. Ramsey, Roland Hergenröder, S. C. Jacobson, and L. B. Koutny, "Microchip Liquid Phase Separation Devices," 15th Intl. Symp. on Capillary Chromatography, Riva del Garda, Italy, May 24-28, 1993.
- May 6, 1993 J. M. Ramsey, "Chemical Measurement of the Future: Think Small," University of Wisconsin, Madison, WI (invited).
- Apr. 21, 1993 J. M. Ramsey, "Fluorescence Detection of Single Molecules in Solution," Bowling Green State University, Bowling Green, OH, April 20-21, 1993 (invited).

- Apr. 19, 1993 J. M. Ramsey, "Chemical Measurements at the Micron Scale," University of Toledo, Toledo, OH (invited).
- Apr. 13, 1993 J. M. Ramsey, "Chemical Characterization of Microparticles Using Electrodynamic Traps," East Tennessee Mass Spectrometry Discussion Group Meeting, Knoxville, TN (invited).
- Apr. 8, 1993 J. M. Ramsey, "The Adventures of Fluorescence Spectroscopy in Microspheres," University of Utah, Salt Lake City, UT (invited).
- Apr. 6, 1993 J. M. Ramsey, "Chemical Measurements on the Micron Scale," Brigham Young University, Salt Lake City, UT (invited).
- Feb. 23, 1993 J. M. Ramsey, "Detection of Single Fluorescent Molecules in Solution," University of British Columbia, Edmonton, Alberta (invited).
- Jan. 25, 1993 Roland Hergenröder, S. C. Jacobson, L. B. Koutny, R. J. Warmack, and J. M. Ramsey, "Microchip Capillary Electrophoresis," 5th International Conference on HPCE, Orlando, FL, January 25-28, 1993.
- Jan. 20, 1993 Michael D. Barnes, K. C. Ng, William B. Whitten, Stephen Arnold, and J. M. Ramsey, "Detection of Single Molecules in Microspheres," SPIE Conference '93, Los Angeles, CA, January 20-21, 1993 (invited).
- Dec. 15, 1992 J. M. Ramsey, "Fluorescence Spectroscopy at the Limit: Digital Molecular Detection," ORNL Executive Committee (invited).
- Dec. 1, 1992 J. M. Ramsey, "The Ultimate Approach to Spectrochemical Analysis: Digital Molecular Detection," 2nd Symposium on Laser Spectroscopy, Merida, Venezuela, December 1-4, 1992 (invited).
- Dec. 1, 1992 J. M. Ramsey, "Microdroplets, Microparticles, and Microchips," 2nd Symposium on Laser Spectroscopy, Merida, Venezuela, December 1-4, 1992 (Plenary).
- Dec. 1, 1992 M. D. Barnes, W. B. Whitten, J. M. Ramsey, K. C. Ng, and S. Arnold, "Fluorescence Spectroscopy at the Limit: Detection of Single Molecules in Microdroplets," 2nd Symposium on Laser Spectroscopy, Merida, Venezuela, December 1-4, 1992 (invited).
- Nov. 18, 1992 M. D. Barnes, W. B. Whitten, K. Ng, S. Arnold, and J. M. Ramsey, "Digital Molecular Detection: The Chemist Learns to Count," Eastern Analytical Symposium, Somerset, NJ (invited).
- Sep. 21, 1992 J. M. Dale, M. Yang, W. B. Whitten, and J. M. Ramsey, "Optical and Mass Spectroscopy of Single Microparticles Using the Electrodynamic Trap," 1992 OSA Annual Mtg./ILS Interdisciplinary Laser Science Conference, Albuquerque, NM, September 20-25, 1992 (invited).
- Sep. 21, 1992 M. D. Barnes, K. Ng, W. B. Whitten, S. Arnold, and J. M. Ramsey, "Digital Molecular Detection in Levitated Microdroplets," 1992 OSA Annual Mtg./ILS Interdisciplinary Laser Science Conf., Albuquerque, NM, September 20-25, 1992 (invited).

- June 23, 1992 M. D. Barnes, K. Ng, W. B. Whitten, S. Arnold, and J. M. Ramsey, "Laser Induced Fluorescence Spectroscopy of Microparticles: Digital Molecular Detection," ACS 45th Annual Summer Symposium on Analytical Chemistry, Logan, UT, June 23-25, 1992 (invited).
- June 2, 1992 J. M. Dale, M. Yang, W. B. Whitten, and J. M. Ramsey, "Laser Desorption/Mass Spectrometry of Single Microparticles in an Ion Trap Mass Spectrometer," 40th ASMS Conference on Mass Spectrometry and Allied Topics, Washington, DC, May 31-June 5, 1992.
- Apr. 28, 1992 J. M. Ramsey, "Progress in Laser Spectroscopy," DOE/BES Site Review, ORNL, Oak Ridge, TN (invited).
- Apr. 7, 1992 J. M. Dale, W. B. Whitten, and J. M. Ramsey, "Laser Ablation from Microparticles in an Ion Trap Mass Spectrometer," ACS Symposium on Laser Material Interactions, San Francisco, CA, April 5-10, 1992 (invited).
- Apr. 2, 1992 J. M. Ramsey, "Digital Molecular Detection: The Chemist Learns to Count," Georgia Tech University, Atlanta, GA (invited).
- Mar. 27, 1992 J. M. Ramsey, "Optical and Mass Spectrometry of Microparticles in the Electrodynamic Trap: Analysis of Picomoles to Yoctomoles," Clemson University, Clemson, SC (invited).
- Mar. 18, 1992 J. M. Ramsey and W. B. Whitten, "Digital Molecular Detection: The Analyst Learns to Count," Analytical Chemistry Division Information Meeting, ORNL, Oak Ridge, TN, March 18-20, 1992 (invited).
- Feb. 18, 1992 W. B. Whitten, J. M. Ramsey, K. C. Ng, and S. Arnold, "Digital Molecular Detection," Institute für Spectrochemistry and Spectroscopy, Dortmund, Germany (invited).
- Feb. 10, 1992 J. M. Ramsey, W. B. Whitten, S. Arnold, and K. C. Ng., "An Ultrasensitive Fluorescence Detector for Capillary Electrophoresis," Fourth Intl. Symposium on High Performance Capillary Electrophoresis (HPCE) '92, Amsterdam, The Netherlands, February 9-13, 1992 (invited).
- Jan. 27, 1992 J. M. Dale, W. B. Whitten, and J. M. Ramsey, "Laser Desorption from Single Microparticles in an Ion Trap Mass Spectrometer," ASMS 4th Sanibel Conference on Mass Spectrometry, Sanibel Island, FL, January 25-28, 1992 (invited).
- Nov. 20, 1991 J. M. Ramsey, "Micro-Instrumentation for Liquid Phase Analysis," EXPO 91, Albuquerque, NM (invited).
- Nov. 20, 1991 J. M. Dale, L. N. Klatt, and J. M. Ramsey, "Document Tagging Using Dichroic Fibers," EXPO 91, Albuquerque, NM (invited).
- Nov. 20, 1991 J. M. Ramsey, "Advanced Techniques for Characterization of Microparticles," EXPO 91, Albuquerque, NM (invited).
- Nov. 6, 1991 J. M. Ramsey, W. B. Whitten, and R. S. Ramsey, "Microscale Chemical Instrumentation: Microchip Liquid Chromatography," AFTAC Briefing, Oak Ridge, TN (invited).

- Nov. 6, 1991 J. M. Ramsey, J. M. Dale, and W. B. Whitten, "Chemical Characterization of Microparticles by Laser Ablation in an Ion Trap Mass Spectrometer," AFTAC Briefing, Oak Ridge, TN (invited).
- Nov. 4, 1991 J. M. Ramsey, "Micro-Spectrochemical Analysis: Single Particles to Single Molecules," Seminar at University of Delaware, Newark, DE (invited).
- Oct. 10, 1991 J. M. Ramsey, W. B. Whitten, S. Arnold, and B. V. Bronk, "Single Molecule Detection in Microdroplets," Federation of Analytical Chemistry and Spectroscopy Societies XVII Meeting, Anaheim, CA (invited).
- Oct. 7, 1991 R. W. Shaw, W. B. Whitten, and J. M. Ramsey, "Chemical Vapor Deposition Diagnostics Using Resonance Ionization Mass Spectrometry," Federation of Analytical Chemistry and Spectroscopy Societies XVII Meeting, Anaheim, CA (invited).
- Aug. 21, 1991 J. M. Ramsey, "Microchip Liquid Chromatograph," DOE LAGER Meeting, Washington, DC (invited).
- Aug. 20, 1991 J. M. Ramsey, J. M. Dale, and W. B. Whitten, "Chemical Characterization of Microparticles by Laser Ablation in an Ion Trap Mass Spectrometer," DOE LAGER Meeting, Washington, DC (invited).
- July 9, 1991 J. M. Ramsey, J. M. Dale, and W. B. Whitten, "Chemical Characterization of Microparticles by Laser Ablation in an Ion Trap Mass Spectrometer," DOE S&T Optics Workshop, Washington, DC (invited).
- May 1, 1991 J. M. Ramsey, "Lasers and Electrodynamic Traps," DOE/OBES Site Review, Oak Ridge, TN (invited).
- Apr. 8, 1991 J. M. Ramsey, J. M. Dale, and W. B. Whitten, "Chemical Characterization of Microparticles by Laser Ablation in an Ion Trap Mass Spectrometer," U.S. DOE Particle Workshop, Sacramento, CA (invited).
- Mar. 26, 1991 J. M. Ramsey, W. B. Whitten, S. Arnold, and B. V. Bronk, "Ultrasensitive Fluorescence Spectroscopy in Microdroplets," Seminar at Northeastern University, Boston, MA (invited).
- Feb. 19, 1991 J. M. Ramsey, W. B. Whitten, G. M. Brown, M. L. Garrity, K. B. Jacobson, and R. L. Sachleben, "Ultrasensitive Luminescence Detection of Lanthanide Ion Labels for DNA Sequencing and Mapping", DOE Human Genome Workshop, Santa Fe, NM (invited).
- Jan. 23, 1991 J. M. Ramsey, W. B. Whitten, S. Arnold, and B. V. Bronk, "Ultrasensitive Fluorescence Measurements in Microdroplets," OE/LASE 91, Los Angeles, CA (invited).
- Nov. 14, 1990 J. M. Ramsey, W. B. Whitten, S. Arnold, and B. V. Bronk, "Ultrasensitive Molecular Fluorescence Spectroscopy in Levitated Microdroplets", DOE Workshop on Advanced Laser Technology for Chemical Measurements, Oak Ridge, TN (invited).
- Nov. 9, 1990 J. M. Ramsey and W. B. Whitten, "Fluorescence Detection at the Single Molecule Level Using Levitated Microdroplets", Waters Chromatography, Boston, MA (invited).



- Oct. 30, 1990 J. M. Ramsey, "Ultrasensitive Spectroscopic Measurements in Electrodynamic Traps", Department of Chemistry, Indiana University, Bloomington, IN (invited).
- Oct. 8, 1990 J. M. Ramsey and W. B. Whitten, "Fluorescence Spectroscopy of Microdroplets: An Approach to Single Molecule Detection," 1990 Federation of Analytical Chemistry and Applied Spectroscopy Societies, Cleveland, OH (invited).
- Oct. 10, 1990 J. M. Ramsey, W. B. Whitten, and D. E. Goeringer, "Multiphoton Ionization in an Ion Trap Mass Spectrometer," 1990 Federation of Analytical Chemistry and Applied Spectroscopy Societies, Cleveland, OH (invited).
- Sep. 19, 1990 J. M. Ramsey, W. B. Whitten, and D. E. Goeringer, "Resonance Ionization in an Ion Trap Mass Spectrometer," Fifth International Symposium on Resonance Ionization Spectroscopy and Its Applications, Varese, Italy (invited).
- June 18, 1990 J. M. Ramsey, "Approaching Single Molecule Detection in Condensed and Gas Phase Measurements Using Electrodynamic Traps," Department of Chemistry, University of British Columbia, Vancouver, British Columbia (invited).
- June 14, 1990 J. M. Ramsey and W. B. Whitten, "Looking for Single Molecules In Levitated Microdroplets," Analytical Chemistry Division Information Meeting, Oak Ridge, TN (invited).
- Apr. 24, 1990 J. M. Ramsey and W. B. Whitten, "Ultrasensitive Fluorescence Analysis in Levitated Microdroplets," 199th National Meeting of The American Chemical Society, Boston, MA (invited).
- Apr. 12, 1990 J. M. Ramsey, "Optical Spectroscopy in Electrodynamic Traps," Department of Chemistry, Michigan State University, East Lansing, MI (invited).
- Feb. 7, 1990 J. M. Ramsey and W. B. Whitten, "Fluorescence Analysis of Microdroplets: An Approach to Single Molecule Detection," Laser Applications to Chemical Analysis, Incline Village, NV.
- Feb. 4, 1990 D. E. Goeringer, W. B. Whitten, and J. M. Ramsey, "Laser Photoionization in an Ion Trap Mass Spectrometer," Laser Applications to Chemical Analysis, Incline Village, NV.
- Jan. 28, 1990 D.E. Goeringer, W. B. Whitten, and J. M. Ramsey, "Laser-Based Detection of Atoms and Molecules in Electrodynamic Traps, ASMS Conference on Ion Trapping, Sanibel Island, FL (invited).
- Oct. 26, 1989 J. M. Ramsey, "Spectrochemical Analysis in Electrodynamic Traps: Particles, Neutrals and Ions," Dept. of Chemistry, University of Tennessee, Knoxville, TN (invited).
- Oct. 24, 1989 J. M. Ramsey, "Laser Analytical Atomic Spectroscopy", ACD Brown Bag Seminar, Oak Ridge, TN (invited).
- Oct. 11, 1989 D. E. Goeringer, W. B. Whitten, and J. M. Ramsey, "Photoionization Spectroscopy in an Ion Trap Mass Spectrometer," 31st Conference on Analytical Chemistry in Energy Technology, Gatlinburg, TN

- Oct. 2, 1989 J. M. Ramsey, W. B. Whitten, and P. R. Blazewicz, "One and Two-Color Multiphoton Ionization in a Low Pressure Sampling Cell," 1989 Federation of Analytical Chemistry and Applied Spectroscopy Societies, Chicago, IL (invited).
- Sep. 11, 1989 J. M. Ramsey and W. B. Whitten, "Looking for Single Molecules in Small Droplets," 198th National ACS Meeting, Miami Beach, FL (invited).
- Apr. 7, 1989 J. M. Ramsey, "Non-linear Optics and Spectrochemical Analysis," Randolph T. Major Memorial Lecture Series, Univ. of Connecticut, Storrs, CT (invited).
- Apr. 25, 1989 J. M. Ramsey, "Progress in Laser Spectroscopy," DOE-BES Chemical Sciences Site Review, ORNL, Oak Ridge, TN (invited).
- Mar. 6, 1989 J. M. Ramsey, P. R. Blazewicz, and W. B. Whitten, "Spectrochemical Analysis by Multiphoton Ionization in a Low Pressure Sampling Interface," The Pittsburgh Conference and Exhibition on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA (invited).
- Feb. 17, 1989 J. M. Ramsey, "Nonlinear Analytical Laser Spectroscopy," Varian Research Center, Palo Alto, CA (invited).
- Nov. 3, 1988 J. M. Ramsey, W. B. Whitten, and P. R. Blazewicz, "Multiphoton Ionization in a Low Pressure Cell," 15th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Boston, MA
- Oct. 6, 1988 J. M. Ramsey and W. B. Whitten, "Frequency and Bandwidth Control of CW Dye Lasers Using Intracavity Photorefractive Elements," Fourth International Laser Science Conference, Atlanta, GA.
- June 28, 1988 J. M. Ramsey and W. B. Whitten, "Analytical Laser Spectroscopy at High Resolution: New Techniques," ACS Summer Symposium, Stanford, CA (invited).
- Apr. 26, 1988 J. M. Ramsey, "Analytical Spectroscopy Using Optical Phase Conjugation," Universidad Central de Venezuela, Caracas, Venezuela (invited).
- Apr. 25, 1988 J. M. Ramsey, "Analytical Spectroscopy Using Time-Domain Measurements," Universidad de Los Andes, Merida, Venezuela (invited).
- Apr. 25, 1988 J. M. Ramsey, "Nonlinear Optics in Chemical Measurement Systems," Universidad de Los Andes, Merida, Venezuela (Plenary).
- Apr. 11, 1988 J. M. Ramsey, T. G. Nolan, W. B. Whitten, "Laser Based Chemical Analysis," DOE-BES Chemical Sciences Site Review, ORNL, Oak Ridge, TN (invited).
- Feb. 29, 1988 J. M. Ramsey, "Applications of Nonlinear Optics to Chemical Analysis," North Carolina State University, Department of Chemistry, Raleigh, NC (invited).
- Nov. 4, 1987 J. M. Ramsey, W. B. Whitten, T. G. Nolan, C. C. Chang, "Laser-Based Measurements Using Photorefractive Optical Elements," Advanced Laser Technology for Chemical Measurements Workshop, Gaithersburg, MD (invited).

- Oct. 4, 1987 J. M. Ramsey, W. B. Whitten, and T. G. Nolan, "Applications of Laser-Induced Gratings to Chemical Measurements," 1987 Federation of Analytical Chemistry and Spectroscopy Societies, Detroit, MI (invited).
- June 24, 1987 J. M. Ramsey and W. B. Whitten, "Analytical Laser Spectroscopy Using Optical Phase Conjugation," XXV Colloquium Spectroscopicum Internationale, Toronto, Canada (invited).
- Apr. 24, 1987 J. M. Ramsey, "Spectrochemical Analysis using Laser Induced Gratings," Dept. of Chemistry, Bowling Green State University, Bowling Green, OH (invited).
- Apr. 7, 1987 J. M. Ramsey, "Data Processing I: Correlation," 193rd National Meeting of the American Chemical Society, Denver, CO (invited).
- Apr. 7, 1987 J. M. Ramsey, W. B. Whitten, and T. G. Nolan, "Laser Spectroscopy by Degenerate Four-Wave Mixing," 193rd National Meeting of The American Chemical Society, Denver, CO (invited).
- Mar. 10, 1987 J. M. Ramsey, W. B. Whitten and T. G. Nolan, "Degenerate Four Wave Mixing in an Analytical Flame," 1987 Pittsburgh Conference & Exposition, Atlantic City, NJ.
- Feb. 18, 1987 J. M. Ramsey and W. B. Whitten, "Control of CW Dye Lasers using Photorefractive Optical Elements," Analytical Chemistry Division Information Meeting, Oak Ridge National Laboratory, Oak Ridge, TN (invited)
- Jan. 29, 1987 J. M. Ramsey and W. B. Whitten, "Spectrochemical Analysis Using Degenerate Four Wave Mixing," Optical Society of America, Topical Meeting on Laser Applications to Chemical Analysis, Incline Village, NV.
- Jan. 28, 1987 T. G. Nolan, J. M. Ramsey and W. B. Whitten, "Refractive Index Detector Based on Two-Wave Mixing in Photorefractive Materials," Optical Society of America, Topical Meeting on Laser Applications to Chemical Analysis, Incline Village, NV.
- Oct. 20, 1986 J. M. Ramsey, "Analytical Applications of Nonlinear Optics Including Phase Conjugation," Eastern Analytical Symposium, New York, NY (invited).
- Oct. 1, 1986 J. M. Ramsey and W. B. Whitten, "Degenerate Four Wave Mixing as a Spectrochemical Analysis Tool," Analytical Chemistry in Energy Technology Conference, Knoxville, TN (invited).
- Sep. 16, 1986 J. M. Ramsey, "Uses of Nonlinear Optical Phase Conjugation in Analytical Spectroscopy," Dept. of Chemistry, Texas A&M, College Station, TX (invited).
- July 24, 1986 J. M. Ramsey, L. N. Klatt, D. A. Bostick, and W. B. Whitten, "Fiber Optics Research in the Laser Spectroscopy and Instrumentation Group," Fiber Optics Workshop, University of Tennessee, Knoxville, TN (invited).
- June 4, 1986 J. M. Ramsey and W. B. Whitten, "A Novel Fourier Transform Microwave Spectrometer," American Chemical Society, 18th Central Regional Meeting, Bowling Green, OH (invited)

- Apr. 28, 1986 J. M. Ramsey and W. B. Whitten, "Spectrochemical Analyses Using Degenerate Four-Wave Mixing," Advanced Laser Technology for Chemical Measurements Workshop, Pacific Northwest Conference Center, Seattle, WA (invited).
- Mar. 28, 1986 J. M. Ramsey, "High-Resolution Spectroscopy," Office of Energy Research Site Review, Oak Ridge National Laboratory, Oak Ridge, TN (invited).
- Jan. 28, 1986 J. M. Ramsey, "Uses of Optical Phase Conjugation in Analytical Spectrometry," Chemical Technology Division, Argonne National Laboratory, Argonne, IL (invited).
- Oct. 1, 1985 J. M. Ramsey and W. B. Whitten, "Fourier Transform Microwave Spectroscopy," Analytical Chemistry Conference on Energy Technology, Knoxville, TN (invited).
- Sep. 9, 1985 J. M. Ramsey and W. B. Whitten, "Degenerate Four-Wave Mixing: A New Approach to Spectrochemical Analysis," 190th National Meeting of the American Chemical Society, Chicago, IL (invited).
- July 23, 1985 J. M. Ramsey and W. B. Whitten, "High-Resolution Laser Spectroscopy," Analytical Chemistry Division Information Meeting, Oak Ridge National Laboratory, Oak Ridge, TN (invited).
- Apr. 16, 1985 J. M. Ramsey and W. B. Whitten, "High-Resolution Laser Spectroscopy," Basic Energy Sciences Site Review, Oak Ridge National Laboratory, Oak Ridge, TN (invited).
- Feb. 26, 1985 J. M. Ramsey and W. B. Whitten, "Atomic Spectroscopy by Degenerate Four Wave Mixing," 36th Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA.
- Dec. 7, 1984 J. M. Ramsey, "Passively Controlled High-Resolution Dye-Lasers: A New Spectroscopic Source?" Dept. of Chemistry, Univ. of Illinois, Urbana, IL (invited).
- Sep. 19, 1984 J. M. Ramsey and W. B. Whitten, "Phase Conjugate Optics and Atomic Spectroscopy," 11th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Philadelphia, PA (invited).
- June 18, 1984 J. M. Ramsey, "New Laser Based Spectrochemical Measurements," The Upjohn Company, Kalamazoo, MI (invited).
- Apr. 17, 1984 J. M. Ramsey, "Chemical Analysis Using Phase Conjugate Optical Techniques," Department of Chemistry, University of North Carolina, Chapel Hill, NC (invited).
- Apr. 9, 1984 J. M. Ramsey, "Spectroscopic Instrumentation Developments at ORNL," 2nd Workshop on Remote Instrumentation and Dosimetry, Knoxville, TN (invited).
- Mar. 5-9, 1984 J. M. Ramsey and W. B. Whitten, "High Resolution Spectroscopy with a Self-Scanning CW Dye Laser," 1984 Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Jan. 31, 1984 J. M. Ramsey, "A Narrow-Bandwidth Self-Scanning CW Dye Laser-Analytical Applications," 1984 Analytical Chemistry Division Information Meeting, ORNL, Oak Ridge, TN (invited).

- Nov. 18, 1983 J. M. Ramsey, "Time-Domain Spectrochemical Analysis," Department of Chemistry, University of New Mexico, Albuquerque, NM (invited).
- Nov. 17, 1983 J. M. Ramsey, "Phase Conjugate Optics and Chemical Analysis?" Los Alamos National Laboratory, Los Alamos, NM (invited).
- Oct. 6, 1983 J. M. Ramsey and W. B. Whitten, "Optical Absorbance Through Temporal Measurements," 30th Annual Conference of the Spectroscopy Society of Canada, Vancouver, BC (invited).
- July 25, 1983 J. M. Ramsey, "Laser Intracavity Absorption with Phase Conjugate Optics," ORNL Chemical Physical Seminar, Oak Ridge TN (invited).
- July 8, 1983 J. M. Ramsey and D. L. Donohue, "New Laser Techniques for Analytical Chemistry," New Directions in Analytical Chemistry Summer Seminar Series, Oak Ridge, TN (invited).
- June 8-9, 1983 J. M. Ramsey and W. B. Whitten, "Laser Intracavity Absorption by Time Domain Measurements," Department of Energy Workshop on Advanced Laser Technology for Chemical Measurements, Livermore, CA (invited).
- June 3, 1983 J. M. Ramsey, "Lasers and Their Properties," ORNL ACD Mass and Emission Spectrometry Section Seminar, Oak Ridge, TN (invited).
- Mar. 7-11, 1983 J. M. Ramsey and W. B. Whitten, "Delayed Lasing with Tunable Gain Media," 1983 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Mar. 7-11, 1983 J. M. Ramsey, "Picosecond Phase Fluorimetry with a Self-Modulated Argon-Ion Laser," 1983 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ (invited).
- Mar. 7-11, 1983 J. M. Ramsey and W. B. Whitten, "A Field Correlation Technique for Microwave Spectrometry," 1983 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Jan. 25, 1983 J. M. Ramsey, "Chemical Analysis by Time-Domain Measurements," Department of Measurements," Department of Chemistry, Ohio State University, Columbus, OH (invited).
- Sep. 20-24, 1982 J. M. Ramsey, "Fluorescence Lifetime Measurements Using Self-Modulated Argon-Ion Lasers," 9th Annual Meeting, Federation of Analytical Chemistry and Spectroscopy Societies, Philadelphia, PA (invited).
- Aug. 16-20, 1982 J. M. Ramsey and W. B. Whitten, "A New Approach to Fourier Transform Spectroscopy," 1982 Gordon Research Conference on Analytical Chemistry, New Hampton, NH (invited).
- July 13, 1982 J. M. Ramsey and W. B. Whitten, "Fourier Transform Microwave Spectroscopy," 1982 Analytical Chemistry Division Information Meeting, ORNL, Oak Ridge, TN (invited).

- Mar. 8-13, 1982 J. M. Ramsey and W. B. Whitten, "Recent Advances in Delayed Lasing Measurements," 1982 Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Mar. 8-13, 1982 J. M. Ramsey, "Subnanosecond Phase Fluorimetry with a Self-Modulated Argon-Ion Laser," 1982 Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Nov. 4-6, 1981 G. C. Pippin, D. D. Ensor, J. P. Young, and J. M. Ramsey, "Selective Laser Excitation of Terbium (III) in Lanthanum (III) Fluoride Precipitates," 33rd Southeastern Regional Meeting of the American Chemical Society, Lexington, KY.
- Sep. 20-25, 1981 G. M. Hieftje, G. R. Haugen, R. E. Russo, J. M. Ramsey and T. Lilley, "Use of Linear Response Theory in High-Speed Measurements on Chemical Systems," 8th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Philadelphia, PA.
- July 27-28, 1981 J. M. Ramsey, "Laser-Based Analytical Activities," Analytical Chemistry Division Information Meeting, Oak Ridge National Laboratory, Oak Ridge, TN (invited).
- Mar. 9-13, 1981 J. M. Ramsey and W. B. Whitten, "Delayed Lasing Measurements: A New Approach to Absorption Spectroscopy," 1981 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- July 21, 1980 J. M. Ramsey and W. B. Whitten, "Delayed Lasing: A New Approach to Absorption Spectroscopy," Analytical Chemistry Division Information Meeting, Oak Ridge National Laboratory, Oak Ridge, TN (invited).
- June 5, 1980 J. M. Ramsey, "Correlation Methods for the Measurements of Fluorescence Lifetimes," 33rd Annual Summer Symposium on Analytical Chemistry, Duke University, Durham, NC (invited).
- Mar. 24, 1980 W. B. Whitten and J. M. Ramsey, "Multiphonon Relaxation Rates from Delayed Laser Emission in Nd-YAG Crystals," March Meeting of American Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Mar. 14, 1980 J. M. Ramsey, "Spatial and Temporal Sample Wedging in Flame Atomic Absorption Spectrometry," 1980 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ.
- Oct. 1979 J. M. Ramsey, G. M. Hieftje, and G. R. Haugen, "A New Approach to Luminescence Lifetime Determinations," Fifth Annual Meeting, Federation of Analytical Chemistry and Spectroscopy Societies, paper #164.
- July 3, 1979 G. M. Hieftje, J. M. Ramsey, and G. R. Haugen, "A New, Simple Method for Measuring Atomic and Molecular Excited-State Lifetimes," 8th International Conference on Atomic Spectroscopy, Cambridge, England.
- May 29, 1979 J. M. Ramsey, "New Approaches to Luminescence Lifetime Determinations," University of Tennessee, Knoxville, TN (invited).

- Oct. 1978 J. M. Ramsey, G. M. Hieftje, and G. R. Haugen, "A New Approach to Luminescence Lifetime Determinations," 22nd Oak Ridge National Laboratory Conference on Analytical Chemistry in Energy Technology, Gatlinburg, TN (invited).
- Nov. 1977 J. M. Ramsey, G. M. Hieftje, and G. R. Haugen, "New Method for the Measurement of Subnanosecond Photodetector Response Times," Fourth Annual Meeting, Federation of Analytical Chemistry and Spectroscopy Societies, paper #59.
- Mar. 1977 G. M. Hieftje, G. R. Haugen, and J. M. Ramsey, "New Method for the Determination of Luminescence Lifetimes by Using Laser Mode Noise as a Multifrequency Modulated Excitation Source," 173rd National American Chemical Society Meeting.
- Nov. 1976 J. M. Ramsey and G. M. Hieftje, "New Applications of Fluorescence Correlation Spectroscopy," Third Annual Meeting, Federation of Analytical Chemistry and Spectroscopy Societies, paper #313.

## **b. Posters**

### MicroTas 2010 (October 2010)

H. Chun, J.P. Alarie, and J.M. Ramsey

"Development of a Microfluidic Device for Performing Sample Preconcentration and Capillary Electrophoresis Separation"

### 57th American Society for Mass Spectrometry Conference, Philadelphia, PA (May 2009)

Andrew G. Chambers, J. Scott Mellors, Honggu Chun, and J. Michael Ramsey

"Characterization of Nano-Electrospray Ionization Directly from Glass Microfluidic Devices for Low Flow Rate Liquid Separation Applications"

J. Scott Mellors and J. Michael Ramsey

"Comprehensive LC-CE-MS with Capillary Chromatography coupled to a Microfabricated Device with Integrated Lossless Sample Transfer, Electrophoretic Separation, and Electrospray Ionization"

### 26th Triangle Chromatography Discussion Group Conference, Raleigh, NC (May 2009)

Andrew G. Chambers, J. Scott Mellors, W. Hampton Henley, and J. Michael Ramsey

"Online LC/CE-MS using a Microfluidic Device"

\*1st place in the poster competition\*

### 60th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL (March 2009)

Erin R. Ferguson, Patty J. Dennis, J. P. Alarie, J. Michael Ramsey, and James W. Jorgenson

"Sensitive Optical Absorbance Measurements on a Microfluidic Device using Conductivity-based Photothermal Detection"

### 23rd International Symposium on Microscale Bioseparations, Boston, MA (February 2009)

Patty J. Dennis, Emily Oblath, Wm. Hampton Henley, J. P. Alarie, Timothy M. Blicharz, David R. Walt and J. Michael Ramsey

"Multiplexed Microfluidic Immunoassays for the Detection of Biomarkers in Saliva"

\*1st place in the poster competition\*

### North Carolina American Chemical Society Local Section Meeting, Research Triangle Park, NC (October 2008)

Laurent D. Menard, Steven A. Soper, Kevin L. Braun, Chengsi Huang and J. Michael Ramsey  
*"Analysis Of Single DNA Molecules Translocating Through Nanochannels Fabricated In SiO<sub>2</sub>"*  
\*3rd place in the poster competition\*

12th International Conference on Miniaturized Systems for Chemistry and Life Sciences, San Diego, CA (October 2008)

J. K. Herr, J.P. Alarie, J. Soo Hoo, G.M. Walker, N.E. Sharpless, and J.M. Ramsey  
*"Integrated Microfluidic Cytometer for the Direct Analysis of Leukocytes in Whole Blood"*

Andrew G. Chambers and J. Michael Ramsey  
*"Gradient Elution Microchip Electrochromatography Using a Monolith Stationary Phase"*

Erin R. Ferguson, Patty J. Dennis, J. P. Alarie, J. Michael Ramsey, James W. Jorgenson  
*"Sensitive Optical Absorbance Measurements on a Microfluidic Device Using Conductivity-based Photothermal Detection"*

Laurent D. Menard, Steven A. Soper, Kevin L. Braun, Chengsi Huang and J. Michael Ramsey  
*"Analysis of Single DNA Molecules Translocating Through Nanochannels Fabricated in SiO<sub>2</sub>"*

Honggu Chun, Patty J. Dennis, Erin R. Ferguson, Jean Pierre Alarie, James W. Jorgenson and J. Michael Ramsey  
*"Development and Analysis of a Microfluidic Photothermal Absorbance Detector Using Polyelectrolytic Gel Electrodes"*

A. D. Hargis, C. Sims, N.L. Allbritton, J.M. Ramsey  
*"Study of Single Cell Kinase Activity Using An Automated Microfluidic Device"*

3rd NCI Nanotechnology Alliance Investigators Meeting, Chicago, IL (September 2008)

J. K. Herr, J.P. Alarie, J. Soo Hoo, G.M. Walker, N.E. Sharpless, and J.M. Ramsey  
*"Microfluidic Flow Cytometry for Point of Care Blood Analysis"*

32nd International Symposium on Capillary Chromatography, Riva del Garda, Italy (May 2008)

J. Scott Mellors, W. Hampton Henley, Andrew G. Chambers, Rose S. Ramsey, and J. Michael Ramsey  
*"Microchip LC-CE-MS"*

\*1st place in the Pfizer Analytical Research Centre best contribution award for "Innovation in Pharmaceutical Analysis"\*

Andrew G. Chambers and J. Michael Ramsey  
*"Gradient Elution Microchip Electrochromatography of Peptides"*

21st International Symposium on Microscale Bioseparations, Berlin, Germany (March 2008)

A. Hargis, C. Sims, N.L. Allbritton, J.M. Ramsey  
*"Development of an Automated High-Throughput Microfluidic Device for the Study of Single Cell Kinase Activity"*

J. K. Herr, J.P. Alarie, J. Soo Hoo, G.M. Walker, N.E. Sharpless, and J.M. Ramsey  
*"Rapid Lymphocyte Enumeration by Microfluidic Flow Cytometry"*

Institute of Biological Engineering Annual Conference, Chapel Hill, NC (March 2008)

Honggu Chun, Patty J. Dennis, Erin R. Ferguson, Jean Pierre Alarie, James W. Jorgenson, and J. Michael Ramsey



*“Development of a Microfluidic Photothermal Absorbance Detector Using Polyelectrolytic Gel Electrodes”*

## 7. Teaching Record

### a. Course Assignments

#### Courses Developed

CH446, Analytical Spectroscopy; 2006

CH449, Microfabricated Chemical Measurement Systems; 2005

#### Courses Taught (No. of Students)

CH446, Analytical Spectroscopy; 2006 (25), 2008 (15), 2010 (17), 2012 (14), 2014 (19), 2016 (10)

CH449, Microfabricated Chemical Measurement Systems; 2005 (13), 2006 (20), 2007 (6), 2008 (18), 2010 (21), 2012 (14), 2014 (11), 2016 (7), 2018 (6)

MOPH738, Nanomedicine; diagnostics lecture, 2009 (20), 2011 (25)

### b. Dissertations and Theses

#### i. Ph.D. Dissertations (name, dissertation title, degree, year)

William M. Gilliland, Jr., Development and Applications of a Microchip Capillary Electrophoresis-High Pressure Mass Spectrometry Platform, 2017

Dmitriy Chernookiy, Optimization of Cylindrical Ion Trap Geometry for Mass Analysis at High Pressure, 2017

Andrew Hampton, Improving the Selectivity of High Pressure Mass Spectrometry, 2016

Erin A. Redman, Development of a Microfluidic Capillary Electrophoresis-Mass Spectrometry Platform for the Characterization of Biotherapeutic Proteins, 2016

Craig A. Cavanaugh, The Microionizer – A Solid State Ion Source for High Pressure Mass Spectrometry, 2016

Kenion H. Blakeman, Development of High Pressure Mass Spectrometry for Handheld Instruments, Ph.D. 2015

Kevin P. Schultze, Advanced System Components for the Development of a Handheld Mass Spectrometer, Ph. D. 2014

Joseph C. Gaiteri, Development of a Microfluidic Immunoassay for Determination of Kinase Phosphorylation, Ph.D. 2014

Nicholas G. Batz, Development and Application of Surface Coatings for Microchip Capillary Electrophoresis-Electrospray Ionization Mass Spectrometry Analysis of Biological Analytes, Ph.D., 2014

Jinsheng Zhou, *Single Molecule DNA Manipulations and Analysis using Nanofluidic Circuits*, Ph.D., 2013

April L. R. Holland, *Single-Channel Recording of Biological Targets using Surface Modified Nanochannels*, Ph.D. 2013

Derek W. Wolfe, *High-Pressure Cylindrical Ion Trap Mass Spectrometry*, Ph.D., 2012

Emily A. Oblath, *Microfluidic Devices for Performing Multiplexed Immunoassays and Nucleic Acid Tests*, Ph.D., 2012

Joshua K. Herr, *Design and Characterization of a Microfluidic Flow Cytometer*, Ph.D., 2010

Amy Diane Hargis, *Development of an Automated Microfluidic Device for High-Throughput Single Cell Kinase Analysis*, Ph.D., 2010

Andrew George Chambers, *Development of Multidimensional Separations Using Microfluidic Devices for Proteomics Applications*, Ph.D., 2010

ii. M.S./M.A. Theses (name, thesis title, degree, year)

Olivia Sanchez-Felix, *Development of a Microfluidic Bead-Based Immunoassay for the Quantification of Proteins*, M.S. 2020

Davey West, *Development of a Microwell Device for High-Throughput Screening of Human Induced Pluripotent Stem Cells by PCR*, M.S. 2018

Kristina M. Herrera, *Applications for a Thermally Controlled Microchip Capillary Electrophoresis-Mass Spectrometry System*, M.S. 2017

Shelly R. Beard, *Multiwell PCR Device for the Screening of Clonal Colonies Grown on Microcup Arrays*, M.S. 2014

Joshua Ferring, *Development of a Microfluidic Chip for Protein Analysis using Single Molecule Digital ELISA*, M.S., 2013

Tyler K. Davis, *Characterization of Microfluidic Nanoelectrospray Performance*, MS 2011

Matthew Burkhead, *Edman Degradation on a Chip*, M.S. 2010

Matthew Johnson, *Focused Electron Beam Milling of Nanoslits*, M.S. 2009

M. Alyson Shupe, *Mass Spectrometry with Miniature Ion Traps*, M.S., 2007

Xiaoming Liang, *Nanopore Sensing of Small Molecules*, M.S., 2006

Jody Lynn Karol, *Microfluidic Device for Edman Sequencing of Proteins*, M.S., 2006

Kristen L. Serumgard, *High Speed Electrophoretic Separations on a Microchip*, M.S. 2006

iii. Undergraduate Honors Theses (name, thesis title, degree, year)

Stephen Barilovits IV, *Nanofluidic Structures and Surface Modifications for Addressing Complex Protein Separations*, B.S., 2012

**c. Research Group****i. Current Group****1. Graduate Students**

Name                      undergrad. degree and institution                      current year in group

**2. Undergraduate Students**

Name                      current year in group                      class, indicate if honors thesis student

**3. Postdoctoral Research Associates**

Name                      current year in group                      graduate institution

**4. Staff Members****ii. Former Students****POSTDOCTORAL ASSOCIATES (92)**

<u>Name</u>	<u>Year</u>	<u>Last known location</u>
Xuefei Gao	2020	Viartis
Bidhan Dhar	2020	Unknown
Meisha Mandel	2017	RTI
Justin Godinho	2016	Advanced Materials Technology
Dmitriy Chernookiy	2016	UNC-CH
Greg Brabeck	2016	Excellims Corp.
Larry Zaino	2016	Intel
Ambalika Khadria	2016	UNC-CH
Liang Wang	2016	908 Devices
Claudia Sanabria	2015	Corpoica, Columbia
Adam Pfefferle	2015	UNC-CH
Yi-Hsuan Su	2015	Zepto Life Technology
Esme Candish	2015	Sciex
Russell Bornschein	2015	William Peace University
Nate Siegfried	2014	Eurofins
Joe Gaiteri	2014	Alveo Technologies
María Ramos Payán	2013	University of Seville, Spain
Maxine McClain	2013	Fluidigm
Oscar McCrate	2013	Northshore University Health Systems
Thomas Linz	2013	Wayne State University
Michael Tycon	2013	BD
John Perry	2013	UNC-CH
Joshua Guerrette	2013	908 Devices Inc.
Jinsheng Zhou	2013	Eli Lilly
Michael Tolocka	2013	Rowan State University
Derek Wolfe	2013	Agilent
Emily Oblath	2013	US DOJ
Bruno Coupier	2011	CNRS
Andrew Chambers	2010	University of Victoria Proteomics Centre
Michael Woodson	2009	University of Texas Medical Branch
Travis Falconer	2008	U.S. Food & Drug Administration, Cincinnati, OH

Chad Mair	2008	Intel, Phoenix, AZ
Patty Dennis	2007	Northrup Grumman, Baltimore, MD
Laurent Menard	2007	Genturi Inc.
Honggu Chun	2006	Seoul National University, Seoul, Korea
Kevin Braun	2006	Faculty, Beloit College
Scott Mellors	2005	908 Devices Inc.
Hampton Henley	2005	Staff, University of North Carolina
Claus Poulson	2004	Staff, Dublin City University, Ireland
Nickolaj Petersen	2004	Faculty, University of Copenhagen
Daria Petersen	2004	Danish Patent Office
Deqing Xiao	2004	Pfizer
Ken Wright	2004	Inficon
Kelly Swinney	2003	Johnson & Johnson
Jeremy Ramsey	2003	Faculty, Lycoming College
Luke Tolley	2003	Faculty, Southern Illinois University
Guido Verbeck	2003	Faculty, University of North Texas
Debashis Dutta	2003	Faculty, University of Wyoming
T. D. Chung	2002	Faculty, Seoul National University
Scott Broyles	2002	Pharmacy School
Jeremy Moxom	2002	Staff, North Carolina State University
Jess Ford	2001	Industry
Norbert Gottschlich	2001	Greiner One
Ryan Rodgers	2001	Staff, Florida State University
David Schrum	2000	Faculty, University of the Redlands
Alexandru Lazar	2000	Immunogen
Yulia Lazar	2000	Faculty, Virginia Tech
Julia Khandurina	2000	Genomatica
Natasha Kroutchinina	2000	Quiagen
Serguei Ermakov	2000	Applied BioSystems
Mahdavi Martin	1999	Staff, Oak Ridge National Laboratory
Rainer Gieray	1999	Industry
Haiming Xiao	1999	Industry
Andrew Post Zwicker	1999	Industry
Chris Daugerty	1999	Verionix
Oleg Kornienko	1999	Merck
Yingjie Lui	1999	Applied BioSystems
Peter Reilly	1998	Staff, Oak Ridge National Laboratory
Hongying Wang	1998	Seagate
Yuan Lee	1998	Industry
Noah Lermer	1998	Corning
Julius Fister	1998	Patent Attorney
Andy Hadd	1998	Asuragen
Chris Culbertson	1998	Faculty, Kansas State University
Dan Raymond	1997	Industry
Michael Carter	1996	Industry
Chung-yi Kung	1995	Motorola
Mo Yang	1994	Industry
Jörg Kutter	1994	Faculty, University of Copenhagen
Zhidan Li	1994	Industry
Alvin Moore	1994	Industry
Sheng Dai	1993	Staff, Oak Ridge National Laboratory
Jim Coffield	1993	Industry

Lance Koutny	1992	Industry
Roland Hergenröder	1992	Staff, Institute for Analytical Sciences, Dortmund Germany
Stephen Jacobson	1992	Faculty, Indiana University
Perry Blazewicz	1991	Industry
Michael Barnes	1991	Faculty, Univ. Massachusetts Amherst
Brian Buckley	1990	Faculty, Rutgers
Thomas Nolan	1988	Anadys
William Tong	1985	Faculty, San Diego State University

#### Ph.D. STUDENTS GRADUATED (18)

Michael Schotzinger	2019	Cone Health Ventures
William Gilliland	2017	UNC-CH
Dmitriy Chernookiy	2017	UNC-CH
Andrew Hampton	2016	Auburn University
Erin Redman	2016	908 Devices Inc.
Craig Cavanaugh	2016	unknown
Kenion Blakeman	2015	908 Devices Inc.
William A. Black	2015	Triangle Insights Group LLC
Kevin P. Schultze	2014	908 Devices Inc.
Joseph C. Gaiteri	2014	UNC-CH
Nicholas G. Batz	2014	FDA
Jinsheng Zhou	2013	Indiana University
April Holland	2013	unknown
Derek Wolfe	2012	Agilent
Emily Oblath	2012	US-FDA
Andrew Chambers	2010	University of Victoria Proteomics Centre
Amy Hargis	2010	Stiefel
Joshua Herr	2010	Becton Dickinson

#### MASTERS STUDENTS GRADUATED (11)

Olivia Sanchez-Felix	2020	unknown
Davey West	2018	unknown
Kristina Herraria	2017	UNC
Zachery Dyer	2016	unknown
Shelly Beard	2014	unknown
Joshua Ferring	2013	unknown
Tyler Davis	2011	unknown
Matthew Burkhead	2010	unknown
Matthew Johnson	2009	unknown
Alyson Shupe	2007	GSK
Kristen Serumgard	2006	US Coast Guard Academy
Jody Karol	2006	USPTO
Xiaoming Liang	2006	Armstrong Pharmaceuticals

#### UNDERGRADUATE RESEARCHERS

Jeremie Rossier	2012	
Kelsey Nott	2012	
William J. Schreiner	2012	UNC School of Pharmacy
Josephine Cunningham	2011	University of Texas-Austin
Steve Barilovits	2010	

Michael Brady	2009	UNC School of Pharmacy
Tamoore Arshad	2009	
Sarah Dowd	2009	University of Illinois, Urbana-Champaign
Nicole Burke	2009	
Michael Bogart	2008	Pharmacy School, UNC-CH
Michelle Wang	2007	Graduate School, University of Arizona
Andrew Timmons	2007	Medical School
Ben Kuhn	2006	unknown
Colin Simpson	2006	Graduate School, University of West Virginia

iii. **Awards, Honors, and Special Achievements of Graduate, Postdoctoral, and Undergraduate students.**

Graduate Students

Amy Hargis	2007-2008	Merck Analytical/Physical Graduate Fellowship Award,
	2008	Schering-Plough Science and Innovation Award
Derek Wolfe	2009	Eastman Chemical Company Travel Grant

Undergraduate

Sarah Dowd	2009	National Science Foundation
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**8. Grant Acquisitions**

**a. Current Extramural Funding**

<u>Title</u>	<u>Agency</u>	<u>Project Period</u>	<u>Total Award</u>
Improved scalability, sensitivity, and interpretability of pathogen detection, including SARS-CoV-2, in wastewater using high-throughput, highly multiplexed digital array PCR technology	NIH	1/21 – 5/24	\$1,701,026

**b. Proposals Submitted and Pending**

<u>Title</u>	<u>Agency</u>	<u>Project Period</u>	<u>Total Award</u>
None	-	-	-

**c. Proposal Submitted and Funded**

<u>Title</u>	<u>Agency</u>	<u>Project Period</u>	<u>Total Award</u>
A Highly Multiplexed Point-of-Care Digital Protein Assay Platform with Digital Molecular Capability	DTRA	10/19-03/23	\$5,589,750
Development and application of a novel digital array PCR assay for evaluation of minimal residual disease in acute myeloid leukemia	UCRF	8/20 – 7/22	\$193,750
A Highly Multiplexed Point-of-Care Digital Protein Assay Platform with Digital Molecular Capability – COVID-19 Supplement	DTRA	9/20-3/22	\$1,899,843
	NIIMBL	03/19-09/20	\$2,664,726

Development of a microchip CE-HPMS analyzer for bioreactor monitoring	NCPD	5/20 – 12/20	\$586,632
Highly Multiplexed, High Capacity SARS-CoV-2 Screening	NHGRI	09/13-05/19	\$2,049,841
Nanofluidic Platforms for High Resolution Mapping of Genomic DNA	NIH	07/14-06/19	\$3,703,769
Generation of a Gene-Targeted Human iPS Cell Library for Macular Degeneration			
Reconfigurable Multi-element Diagnostics: ReMedx	DARPA	05/13-09/18	\$19,569,564
Development of Simple and Inexpensive Point-of-Care Technology for Blood Glucose Measurement	UNC-TraCS	7/12-6/13	\$75,000

<u>Title</u>	<u>Agency</u>	<u>Project Period</u>	<u>Total Award</u>
Reconfigurable Multi-element Diagnostics: ReMedx	DARPA	11/11-5/13	\$1,000,000
LC/CE-MS for Analysis of Post-Translational Modifications, Epitope Density, and Linker Disposition in Protein Therapeutics	Pfizer	11/10 – 11/11	\$100,000
Microscale Ion Trap Mass Spectrometry System	DTRA	08/10-09/11	\$947, 724
Microscale Ion Trap Mass Spectrometry	DARPA	08/09 – 09/11	\$3,800,000
Rapid Genetic Engineering of Stem Cells	NIH/NHGRI	10/08-09/13	\$428,239
UNC Clinical Translational Science Award	NIH/CTSA	7/08-6/13	\$77,758,894
Microsensor Arrays for Salivary Diagnostics	NIH/NIDCR	7/07-6/12	\$1,315,593
Nanoscale Fluidic Technologies for Rapidly Seq. Single DNA Molecules	NIH/NHGRI	10/06-9/13	\$4,822,521
CCNE Project 5 Nanofluidics for Cancer Diagnostics	NIH/NCI	9/05-8/11	\$1,603,302
Microchip ESI- $\mu$ MS	DARPA	2/09-1/10	\$280,000
Microfluidics for Biologics Characterization	Pfizer	07/09-12/09	\$25,000
High Throughput Measurement of Cellular Signaling	NIH/GMS	10/04-9/09	\$1,708,398
Microscale Ion Trap Mass Spectrometer	DARPA	10/04-9/09	\$476,001
Development of Novel MS Tools for Proteome Analysis	NIH/NHLBI	9/04-9/09	\$2,319,653
Nanopore Detector for Small Molecule Chromatography	Pfizer	10/06-9/08	\$60,000
Nanotechnology for Structural Interrogation of DNA	NIH/BRP	10/04-9/06	\$1,958,155
Nanofluidic Structures for Electrokinetic-Based Hydraulic Pumps	DOE/EMSP	12/04-12/05	\$220,000
Automated Microfluidic Devices for Monitoring Biological Systems in Space	NASA	02/04-9/05	\$123,566

#### d. Significant Proposals Submitted and Not Funded

<u>Title</u>	<u>Agency</u>	<u>Project Period</u>	<u>Total Award</u>
Nanofluidic Technologies for Rapidly Sequencing Single DNA Molecules	NHGRI	9/11-8/15	\$4,227,094





1992-1995	DOE Laboratory Advisory Group for Effluent Research (LAGER)
1992	Program Advisory Committee, Division of Analytical Chemistry, ACS
1991-1994	Award Selection Committee, Division of Analytical Chemistry, ACS
1989-1991	Chairman, Program Advisory Committee, Division of Analytical Chemistry, ACS
1986-1988	Program Advisory Committee, Division of Analytical Chemistry, ACS
1986-1991	Editorial Advisory Board, <i>Progress in Analytical Spectroscopy</i>

#### b. Departmental service

##### DEPARTMENTAL COMMITTEES

2016-2019	UNC Department of Chemistry Research Committee
2004-2019	UNC Department of Chemistry Facilities Committee
2005 – 2010	UNC Department of Chemistry Graduate Studies Committee
2004 - 2011	UNC Department of Chemistry Development Committee
2010	UNC Department of Biomedical Engineering Faculty Search Committee, chair
2013	UNC Department of Chemistry Applied Sciences Faculty Search Committee
2014	UNC Department of Applied Physical Sciences Faculty Search Committee

#### c. University service

##### UNIVERSITY COMMITTEES

2009-2011	Member, Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement by Young Faculty
2007-2008	Member, UNC Patent Policy Committee
2007	Chair, UNC College of Arts & Sciences Permanent Distinguished Professorships Committee
2005	Member, UNC College of Arts & Sciences Permanent Distinguished Professorships Committee

### 10. Research Statement

We are interested in utilizing micro- and nanofabrication strategies to create devices that facilitate our abilities to gather chemical and biochemical information. Our motivations for fabricating devices include point of care clinical diagnostics, high-throughput biochemical experimentation, development of new types of chemical sensors, and understanding of transport mechanisms in nanoscale-confined spaces. The devices that we develop have application to drug discovery, health care, environmental monitoring, and basic research.

### 11. Teaching Statement

My goal is to help shape the minds of the next generation of scientific researchers. Graduate courses are taught with the purpose of expanding the students' knowledge and motivating them to think carefully and critically about scientific problems.