Security and Forensic Applications of Mass Spectrometry

Organized by

Glen Jackson
West Virginia University
&
Jose Almirall
Florida International University

27th ASMS Sanibel Conference on Mass Spectrometry
January 22 - 25, 2015
Clearwater Beach, FL
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Glen Jackson
West Virginia University

Jose Almirall
Florida International University
Speakers – please arrive ½ hour before your session to load your presentation.

THURSDAY, JANUARY 22

4:00 - 7:00 pm  Setup all posters, Salon F

6:00 – 7:00 pm  Registration, Outside Salon D&E

7:00 – 8:00 pm  Opening Plenary

A Journey to the New World: The Changing Nature of Crime and Criminality
Sir Peter Fahy, Chief Constable of the Greater Manchester Police, UK
Session Chairs, Glen Jackson & Jose Almirall
Salon D&E

8:00 – 10:00 pm  Reception
setup all posters
Salon F

Thank you to our sponsors!!!
### FRIDAY, JANUARY 23

#### 7:00 - 8:30 am
**Continental Breakfast**  
*Salon F*

#### 8:30 – 10:00 am
**Nuclear and Elemental Attribution and Provenancing I**  
Session Chair: Jose Almirall  
*Salon D&E*

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<th>Time</th>
<th>Event</th>
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| 8:30 – 8:55 am | Morning Plenary: Attribution for Weapons of Mass Destruction: Evolution of Traditional Forensic Analysis  
*Vahid Majidi, Deputy Asst. Secretary of Defense for Nuclear Matters* |
| 8:55 – 9:00 am | Questions                                                             |
| 9:00 – 9:25 am | Responsiveness in Nuclear Security Analyses through Hyphenated Multi-Collector ICPMS Methods  
*Doug Duckworth, Pacific Northwest National Laboratory* |
| 9:25 – 9:30 am | Questions                                                             |
| 9:30 – 9:55 am | Multi-Signature Geochemical Forensics in a Spatial Bayesian Framework  
*Gabe Bowen, University of Utah* |
| 9:55 – 10:00 am | Questions                                                             |
| 10:00 – 10:30 am | Coffee Break, Salon F                                                |

#### 10:30 – 11:30 am
**Nuclear and Elemental Attribution and Provenancing II**  
Session Chair: Kenyon Evans-Nguyen

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<th>Time</th>
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| 10:30 – 10:55 am | Multi-Isotope Databases to Support Food Authentication, Biosecurity and Forensic Applications  
*Russell Frew, University of Otago, NZ & IAEA* |
| 10:55 – 11:00 am | Questions                                                             |
| 11:00 – 11:25 am | Linking Insects to Humans and Hair to Human Phenotypes Using Stable Isotopes  
*Glen Jackson, West Virginia University* |
| 11:25 – 11:30 am | Questions                                                             |
| 11:30am – 1:00 pm | Group Lunch, Sandpiper Blue Heron Deck                               |
FRIDAY, JANUARY 23

1:00 – 3:00 pm
Controlled Substances
Session Chair: Adam Hall
Salon D&E

1:00 – 1:25 pm Using Isotopic Fractionation to Link Precursor to Product in the Synthesis of Mephedrone: A New Tool for Combating New Psychoactive Substances

Oliver Sutcliffe, Manchester Metropolitan University, UK

1:25 – 1:30 pm Questions

1:30 – 1:55 pm Elemental and Organic Forensic Mass Spectrometry Using Fieldable Technologies

Kenyon Evans-Nguyen, University of Tampa

1:55 – 2:00 pm Questions

2:00 – 2:25 pm Detection of Falsified Medicines with Ambient MS and IMS

Facundo Fernandez, Georgia Institute of Technology

2:25 – 2:30 pm Questions

2:30 – 2:55 pm Trace Analysis of Illicit Chemistries Using Direct Analyte Probe Nanoextraction (DAPNe)

Guido Verbeck, University of North Texas

2:55 – 3:00 pm Questions

3:00 – 7:00 pm Free Time

7:00 pm – 8:00 pm
Promoted Talks I
Session Chair: Guido Verbeck
Salon D&E

7:00 – 7:15 pm Forensic Identification Using Individual Molecular Signature

Amina Bouslimani, University of California, San Diego

7:15 – 7:20 pm Questions

7:20 – 7:35 pm Profiling of Illicit Drugs in Municipal Wastewater Using a Targeted High Resolution Orbitrap Tandem MS Approach

Nicolas Gilbert, University of Québec à Trois-Rivières

7:35 - 7:40 pm Questions

7:40 - 7:55 pm Coupling Microchip Capillary Electrophoresis and High Pressure Mass Spectrometry for Portable Applications

William M. Gilliland, Jr, University of North Carolina at Chapel Hill

7:55 - 8:00 pm Questions

8:00 – 10:00 pm
Poster Session I
odd–numbered posters present
Salon F
SATURDAY, JANUARY 24

7:00 - 8:30 am
Continental Breakfast
Salon F

8:30 – 10:00 am
Controlled Substances and Explosives
Session Chair: Glen Jackson
Salon D&E

8:30 – 8:55 am  Fast Detection of Explosives and Illicit Drugs Using a Miniature Ion Trap Mass Spectrometer with Ambient Ionization,
Zheng Ouyang, Purdue University

8:55 – 9:00 am  Questions

9:00 – 9:25 am  The Potential and Challenges of Paperspray MS for Forensic Chemistry
Arian van Asten, University of Amsterdam, NL

9:25 – 9:30 am  Questions

9:30 – 9:55 am  Mass Spectral Filters for Classification of Synthetic Designer Drugs
Ruth Smith, Michigan State University

9:55 – 10:00 am  Questions

10:00 – 10:30 am  Coffee Break, Salon F

10:30 – 11:30 am
Fire Debris and Explosives I
Session Chair: Ruth Smith
Salon D&E

10:30 – 10:55 am  Detection of Improvised Explosives as Ion Pairs Using Crown Ether Complexes
Bruce McCord, Florida International University

10:55 – 11:00 am  Questions

11:00 – 11:25 am  Forensic Value of Light Isotope Ratio Analysis of Explosives
Libby Stern, Federal Bureau of Investigation

11:25 – 11:30 am  Questions

11:30 am – 1:00 pm  Lunch, on your own
SATURDAY, JANUARY 24

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<tr>
<td>1:00 – 2:00 pm</td>
<td>Fire Debris and Explosives II Session Chair: Bruce McCord</td>
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<tr>
<td>1:00 – 1:25 pm</td>
<td>Quantitative Mapping of Explosive Residues on Post-Blast Debris from Pipe Bombs Using a Total Vaporization Technique Coupled with Mass Spectrometry <strong>John Goodpaster</strong>, <em>Indiana University Purdue University Indianapolis</em></td>
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<tr>
<td>1:25 – 1:30 pm</td>
<td>Questions</td>
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<tr>
<td>1:30 – 1:55 pm</td>
<td>Combining Mass-Spectrometry and Chemometrics for Improved Fire Debris Analysis <strong>Michael Sigman</strong>, <em>University of Central Florida</em></td>
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<tr>
<td>1:55 – 2:00 pm</td>
<td>Questions</td>
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<tr>
<td>2:00 - 2:30 pm</td>
<td><strong>Break</strong></td>
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<tr>
<th>Time</th>
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<tr>
<td>2:30 - 3:30 pm</td>
<td>Inks and Documents Session Chair: Chip Cody</td>
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<tr>
<td>2:30 – 2:55 pm</td>
<td>Chemical Characterization of Printing Inks for Forensic Document Examination <strong>Jose Almirall</strong>, <em>Florida International University</em></td>
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<tr>
<td>2:55 – 3:00 pm</td>
<td>Questions</td>
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<tr>
<td>3:00 – 3:25 pm</td>
<td>Mass Spectrometry Applications to the Forensic Analysis of Documents <strong>Jorge Zacca</strong>, <em>Brazilian Federal Police, BR</em></td>
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<tr>
<td>3:25 – 3:30 pm</td>
<td>Questions</td>
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<td>3:30 – 7:00 pm</td>
<td><strong>Afternoon Free</strong></td>
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<td>Promoted Talks II Session Chair: Gabe Bowen</td>
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<tr>
<td>7:00 – 7:15 pm</td>
<td>Laserless Matrix-Assisted Ionization (MAI)-Mass Spectrometry: A Novel Method for Potential Use in Airports and Field Hospitals <strong>Christian Reynolds</strong>, <em>Wayne State University</em></td>
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<tr>
<td>7:15 – 7:20 pm</td>
<td>Questions</td>
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<tr>
<td>7:20 – 7:35 pm</td>
<td>Detection of Chemical Tracers in Human Breath by Mass Spectrometry for Development of a New Forensic Technique <strong>Jenny Van</strong>, <em>San Diego State University</em></td>
</tr>
<tr>
<td>7:35 - 7:40 pm</td>
<td>Questions</td>
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<tr>
<td>7:40 - 7:55 pm</td>
<td>Analytical Investigation of Fingerprint Residues and Aging Studies by GC-MS, LC-HRMS and MALDI-Imaging <strong>Stefanie Pleik</strong>, <em>Justus Liebig University</em></td>
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<tr>
<td>7:55 - 8:00 pm</td>
<td>Questions</td>
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<tr>
<td>8:00 – 10:00 pm</td>
<td>Poster Session II even–numbered posters present Session Chair:</td>
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<td><em>Salon F</em></td>
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## SUNDAY, JANUARY 25

### 7:00 - 8:30 am

**Continental Breakfast**  
*Salon F*

### 8:30 – 10:00 am

**Inks/Dyes, Microbial and Biological I**  
Session Chair: Arian Van Asten  
*Salon D&E*

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| 8:30 – 8:55 am | Meeting Forensic Analytical Challenges with Liquid Chromatography and Mass Spectrometry  
Stephen Morgan, *University South Carolina* |
| 8:55 – 9:00 am | Questions                                                                                 |
| 9:00 – 9:25 am | Characterization of Potential Ricin Containing Samples with Mass Spectrometric Tools      
Karen Wahl, *Pacific Northwest National Laboratory* |
| 9:25 – 9:30 am | Questions                                                                                 |
| 9:30 – 9:55 am | Typing of Single Nucleotide Polymorphisms with MALDI-TOF in Forensic Genetics             
Niels Morling, *University Copenhagen, DK*          |
| 9:55 – 10:00 am | Questions                                                                                 |
| 10:00 – 10:30 am | Coffee Break, *Salon F*                                                                   |

### 10:00 – 12:00 pm

**Inks/Dyes, Microbial and Biological II**  
Session Chair: Glen Jackson and Jose Almirall  
*Salon D&E*

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| 10:30 – 10:55 am | Adding Another Dimension to Cadaver-Detection Dogs in Australia  
Shari Forbes, *University Technology, AU*       |
| 10:55 – 11:00 am | Questions                                                                                 |
| 11:00 – 11:25 am | Imaging Molecules in Forensics  
Bryn Flinders, *FOM Institute, AMOLF, NL*       |
| 11:25 am – 11:30 am | Questions                                                                                 |
| 11:30 - 11:55 am | New Approaches in Fire Debris Analysis: Rapid Dynamic Headspace Concentration followed by DART-MS and Chemometric Analysis  
Adam Hall, *Northeastern University*          |
| 11:55 - 12:00 pm | Questions                                                                                 |
| 12:00 pm   | Closing Remarks                                                                           |
Poster List

All posters are located in the Salon F
All posters should be set up by 7:00 pm on Thursday
Remove all posters by 10:30 am on Sunday
odd-numbered posters will be presented on Friday from 8:00 - 10:00 pm
even-numbered posters will be presented on Saturday from 8:00 - 10:00 pm

1 Characterization of Lignin and Products of its Thermal and Biological Degradation using a Size Exclusion or Gel Permeation Chromatography in Combination with High Resolution Mass Spectrometry and Evaporative Light Scattering Detection; Anastasia Artemyeva¹, Alena Kubátová¹, Evgenii Kozliak¹, University of North Dakota

2 Spice Wars – Are you Battle Ready? Analysis of Synthetic Cannabinoids via Gas Chromatography – High Resolution Time of Flight Mass Spectrometry; David E. Alonso¹, John Rorabek² and Joe Binkley; LECO Corporation, St. Joseph, MI. 2) Berrien County Forensic Laboratory, Berrien Springs, MI

3 Using Metabolomics-Based Multiplex LCMS Assay to Facilitate Investigation of Predictive Biomarkers for Colorectal Cancer; I. Asante, S. Liu, H. Pei, E. Yoo, E. Zhou, F. Schumacher, D. Conti, S. Louie; University of Southern California

4 Enhanced Imaging of Developed Fingerprints using Mass Spectrometry Imaging; M J Bailey¹, M De Puit², S Bleay³, M Levin⁴; ¹Department of Chemistry, University of Surrey, Guildford, GU2 7XH; ²Netherlands Forensic Institute, The Hague, Netherlands; ³Centre for Applied Science and Technology, Home Office, St Albans, UK; ⁴Department for Identification and Forensic Science, Israel Police, Jerusalem, Israel

5 Novel Screening Technique for Opioids in Toxicological Specimens via SPME DART™ TOF MS; Rachel Beck, F-ABFT and Dr. David Graves; University of Alabama at Birmingham and Alabama Department of Forensic Sciences

6 Direct Analysis in Real-Time / Orbitrap Mass Spectrometry as a Tool for the Direct, Global Characterization and Differentiation of Explosive Samples for Forensic Application; Maxime C. Bridoux¹, Adrian Schwarzenberg², Jean-Claude Tabet², Richard B. Cole³; ¹CEA, DAM, DIF, F-91297 Arpajon, France; ²UPMC, IPCM/CSOB, UMR 8232, 4 Place Jussieu, 75252 cedex 05, Paris, France

7 Forensic Identification using Individual Molecular Signature; Amina Bouslimani¹, Alexey Melnik¹, Mingxun Wang², Theodore Alexandrov³,⁴,⁵, Pieter C. Dorrestein⁶⁷; ¹Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California, San Diego, La Jolla, CA; ²Department of Computer Science and Engineering, University of California, San Diego, La Jolla, CA; ³Center for Industrial Mathematics, University of Bremen, 28359, Bremen, Germany; ⁴Steinbeis Innovation Center SCiLS Research, 28211, Bremen, Germany; ⁵SCiLS GmbH, 28359 Bremen, Germany; ⁶Departments of Chemistry, Biochemistry and Pharmacology, University of California, San Diego, La Jolla, CA

8 Monolithic Materials for Rapid Sample Preparation; Esme Candish¹,³, Hans-Jürgen Wirth³, Andrew Gooley¹,³, Robert A Shellie¹, Emily F Hilder³; ¹Australian Centre for Research on Separation Science (ACROSS), School of Chemistry, Hobart, Tasmania, Australia; ³Trajan Scientific & Medical, Ringwood, Victoria, Australia

9 Stabilities of Mephedrone in Biological and Non-biological Matrices; Heather Ciallella, Stephanie Oddi, Karen S Scott; Arcadia University

10 Dart and Forensics: 10 Years Later; Robert B. Cody; JEOL USA, Inc.

11 Two Workflows for Bulk Substance Analysis using DART and Automated Library Searches; Maria C. Prieto Conaway and Marta Kozak; Thermo Fisher Scientific, San Jose, CA
12 Rapid Detection of Cocaine, Benzoylecgonine and Methylecgonine in Fingerprints using Desorption Electrospray Ionisation Mass Spectrometry (DESI) and Secondary Ion Mass Spectrometry (SIMS); Catia Costa*a, Tara Salterb, Daniel Driscollc, Marcel de Puitd, Roger Webb*c, Kim Wolff* Melanie Bailey*a; *University of Surrey, Department of Chemistry, Surrey, GU2 7XH, UK, b National Physical Laboratory, Teddington, Middlesex, TW11 0LW, UK, c University of Surrey Ion Beam Centre, Surrey, GU2 7XH, UK, d Netherlands Forensic Institute, The Hague, Netherlands, e Institute of Pharmaceutical Science, Kings College, London SE1 9NH

13 Elemental Mixture Analysis with Differential Mobility Separation; Spiros Manolakos, Francy Sinatra, Leila Albers, Kevin Hufford, James Alberti, Erkinjon Nazarov, and Theresa Evans-Nguyen; Draper Laboratory; Tampa, FL

14 Non-Targeted MS Strategy for Designer Steroid Detection; Travis M. Falconer, Sarah E. Voelker, Lisa M. Lorenz, Mary B. Jones, and Jonathan J. Litzau; U.S. Food & Drug Administration, Forensic Chemistry Center

15 Autonomic Underwater Mass Spec And Sampler System- Core Technology for High Content Environmental Forensics Mapping; David Fries, Geran Barton; University of South Florida, Tampa, FL

16 GC-MS Chemical Fingerprint Comparison of Evaporated and Unevaporated Fuel Samples using the Internal Standard, Di-N-Decyl Sulfide; Sarah Glenn, Ashley Veach, Cecily Reily, Murrell Godfrey, Department of Chemistry and Biochemistry, University of Mississippi, University, MS

17 Profiling of Illicit Drugs in Municipal Wastewater using a Targeted High Resolution Orbitrap Tandem MS Approach; Nicolas Gilbert1; Sung Vo Duy2; Thomas Chapuis2; Paul Fayad2; Sébastien Sauvé2; André Lajeunesse3; 1Université du Québec à Trois-Rivières, QC, Canada, 2Université de Montréal, QC, Canada, 3Université de Montréal, QC, Canada

18 Qualitative Analysis of New Psychoactive Substances by Ion Mobility Spectrometry, Direct Analysis in Real Time Quadrupole Time-of-Flight, and Gas Chromatography Quadrupole Time-of-Flight; Seongshin Gwak and Jose R. Almirall; Department of Chemistry and Biochemistry and International Forensic Research Institute; Florida International University, Miami, Florida

19 Coupling Microchip Capillary Electrophoresis and High Pressure Mass Spectrometry for Portable Applications; William M. Gilliland, Jr.*, Erin Redman, J. Scott Mellors, J. Michael Ramsey; University of North Carolina at Chapel Hill

20 Elemental Profiling of Electrical Tapes by Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS); Claudia Martinez2, Tatiana Trejos1 and Jose R. Almirall1; 1International Forensic Research Institute and Department of Chemistry and Biochemistry, Florida International University, University Park, Miami, Florida 33199

21 Atmospheric Pressure Photoionization with and without Laser Ablation on a Portable Ion Trap; Igor V. Veryovkin, Yeni P. Yung, Yang Cui and Luke Hanley*; Department of Chemistry, University of Illinois at Chicago

22 Application of Solvent Assisted Ionization Inlet Mass Spectrometry (SAII-MS) to Support Screening and Quantification of Counterfeit Drugs; Lyla Hassan, Dr. Charles N McEwen; University of the Sciences, Philadelphia PA

23 Forensic Determination of Cannabish and its Analogues Employing UHPLC, TLC and ASAP Coupled to a Compact Single Quadrupole Mass Spectrometer; Daniel Eikel, Simon Prosser, and Jack Henion; Advion, Inc., 10 Brown Rd., Ithaca, NY
Poster List

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Remove all posters by 10:30 am on Sunday.

odd-numbered posters will be presented on Friday from 8:00 - 10:00 pm

even-numbered posters will be presented on Saturday from 8:00 - 10:00 pm

24 Development of a Rapid Fire Screening Method for the Detection of Synthetic Cannabinoids; Jennifer C. Hitchcock and Gregory L. McIntire; Ameritox, Ltd., 486 Gallimore Dairy Road, Greensboro, NC

25 Differentiation of Cannabidiol and Tetrahydrocannabinol Using Tandem MS and H/D Exchange; William D. Hoffmann1,2, William D. Hoffmann;1,2 Department of Forensic and Investigative Science, West Virginia University, Morgantown, WV 26506; C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV 26506

26 Differentiation of Heparin from other Glycosaminoglycans (GAGs) by Paper Spray Portable Mass Spectrometry; Hongli Li and Samanthi Wickramasekara; US Food and Drug Administration/CDRH/OSEL/DBCMS, Silver Spring, MD

27 Identification of Two Sources of Sr in Hair by Isotopic Analyses on Hair Segments; Liyai Hu, Diego P. Fernandez, Thure E. Cerling; Department of Geology and Geophysics, University of Utah

28 The Application of Direct Analysis in Real Time and Time-of-Flight Mass Spectrometry to Distinguish Wild from Cultivated Agarwood (Aquilaria spp.); Natasha M. Kreitals

29 Optimizing Ambient Ionization by DART – Solid Phase Microextraction, Thermal Separation and Statistics; Joseph LaPointe, Brian D. Musselman and Robert Goguen; IonSense Inc. Saugus, MA

30 Ion Mobility Mass Spectrometry with Different Drift Gases in New Designer Drug Analysis; Karel Lenc1, Lucie Borovcová1, Sandra Benická1, Kevin Schug2, Vladimir Havlíček3; Regional Centre of Advanced Technologies and Materials, Dept. Anal. Chem., Faculty of Science, Palacky University, 17.listopadu 12, 771 46 Olomouc, Czech Republic; Department of Chemistry & Biochemistry, The University of Texas at Arlington, Arlington, USA; Institute of Microbiology, v.v.i., Videnska 1083, CZ 14220 Prague 4, Czech Republic

31 Development of a Classification System for Plant-Based Forensic Evidence using Direct Analysis in Real Time Mass Spectrometry (DART-MS); Ashton D. Lesiak1, Robert B. Cody2, A. John Dane2, Rabi A. Musah3, Department of Chemistry, University at Albany, SUNY, 1400 Washington Ave Albany, NY 12222, JEOL USA, Inc. 11 Dearborn Rd, Peabody, MA 01960

32 Discrimination of Smokeless Powders using Sorbent-Coated Wire Mesh with DART-MS and Offline Statistical Analysis; Frederick Li1, Joseph Tice3, Brian D. Musselman3, and Adam B. Hall2; Boston University School of Medicine: Biomedical Forensic Sciences Program. Boston, MA; Northeastern University: The Barnett Institute of Chemical and Biological Analysis and the Department of Chemistry and Chemical Biology, Boston, MA; IonSense, Inc., Saugus, MA

33 Screening and Quantitation of Forensically Relevant Drugs from Blood and Urine by Paper Spray MS; Nicholas E. Manicke1 and Mike Belford2; Department of Chemistry and Chemical Biology, Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis IN, Thermo Scientific. San Jose, CA 95134

34 Adduct Formation of Explosives and Separation from Complex Mixtures using Trapped Ion Mobility Spectrometry- Mass Spectrometry; Alan Mckenzie1, John Daniel DeBord1, Mark Ridgeway2, Melvin Park2, Gary Eiceman3 and Francisco Fernandez-Lima1; Department of Chemistry and Biochemistry, Florida International University, Miami, FL; Bruker Daltonics, Inc., Billerica, Massachusetts 01821, Department of Chemistry, New Mexico State University, Las Cruces, NM

35 Analysis of Cathinone Derivatives and their Optical Isomers using Low Flow CE-MS; Mehdi Moini1, Christopher Rollman1; Department of Forensic Sciences, The George Washington University, Washington, DC
36 Development of an Ambient Ionization Mass Spectrometric Method to Characterize Organic Components and Discriminate between Types of Gunshot Residue (GSR); Rabi A. Musah*, Ashton D. Lesiak1, Robert B. Cody2, A. John Dane; 1Department of Chemistry, University at Albany, SUNY, 1400 Washington Ave Albany, NY 12222; 2JEOL USA, Inc. 11 Dearborn Rd, Peabody, MA 01960

37 A Field Deployable Ion Trap Mass Spectrometer for Multi Target Monitoring; Berk Oktem, Alexander Misharin, Konstantin Novoselov and Vladimir Doroshenko; MassTech Inc, 6992 Columbia Gateway Drive, Columbia, MD 21046

38 Surface Acoustic Wave Nebulization (SAWN) for Home Made Explosives Synthesis Product Characterization; Oyler, BL1; Chipuk, J3; Lareau, R1; Yoon, SH1; Wilson M1; Goodlett, DR1; Kilgour DPA1; University of Maryland Baltimore, 20 N Pine Street, Baltimore, MD, Signature Science, 2550 Huntingdon Ave, Alexandria, VA, Dep. of Homeland Security, S&T Directorate, Atlantic City, NJ

39 Environmental Forensics Determination of Emerging Contaminants in Wastewater Samples; Sarah Prebihalo* and Frank Dorman, The Pennsylvania State University, University Park, PA 16802; Jack Cochran, Restek, 110 Benner Circle, Bellefonte, PA 16823.

40 Analytical Investigation of Fingerprint Residues and Aging Studies by GC-MS, LC-HRMS and MALDI-Imaging; S. Pleik1,2, B. Spengler2, S. Luhn1, D. Urbach1, D. Kirsch1; Bundeskriminalamt Wiesbaden, 65173 Wiesbaden, 2Institute of Inorganic and Analytical Chemistry, Justus Liebig University Giessen, 35392 Giessen, Germany

41 Comparative Analysis of Explosives Using GC-MS, CE-MS, nanoLC-MS, and MEKC-UV; Christopher Rollman1, Mehdi Moini1, Christine Copper2, Ashton Genzman2, Jacqueline Rine2, Karen Brensinger1, Ira Lurie1, 1Department of Forensic Sciences, The George Washington University, Washington, DC; 2Department of Chemistry, United States Naval Academy, Annapolis, MD

42 Laserless Matrix-Assisted Ionization (MAI)-Mass Spectrometry: A Novel Method for Potential Use in Airports and Field Hospitals; Christian A. Reynolds1,2, Kevin Jooß,1 Shubhashis Chakrabarty,1 Daniel W. Woodall,1 Casey D. Foley,1 Zachary J. Devereaux,1 Ellen D. Inutan,1 Srinivas B. Narayan,3 Thomas H. Sanderson,3,4 Sarah Trimpin1,2; 1Department of Chemistry, Wayne State University, Detroit, MI, 2Cardiovascular Research Institute, 3Detroit Medical Center: Detroit Hospital (DMC), Detroit, MI, 4Department of Emergency Medicine

43 Quantitative Analysis of Poly(dimethylsiloxane) by LC/APCI-MS (MRM) for the Analysis of Lubricant Evidence in Sexual Assault Cases; Katherine A. Schilling,4 Derek Dorrien, Anna Deakin5; 1Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA; 2Defense Forensic Science Center, Forest Park, GA

44 Direct Detection of Cocaine in Addicted Rat Brain Tissue by MALDI; Leila Shahri, Alexis C. Thomson, and Troy D. Wood

45 Characterization of Methamphetamine and its By-products by DART-MS; Donna M. Iula1, Rabi A. Musah1, Marek A. Domini1, Robert B. Cody1, A. John Dane3, Brian D. Musselman3, and Jason R.E. Shepard2; 1Cayman Chemical Co, Ann Arbor, MI, 2Department of Chemistry, University at Albany, State University of New York (SUNY), 1400 Washington Ave, Albany, NY, 3Mass Spectrometry Center, Merkert Chemistry Center, Boston College, 2609 Beacon Street, Chestnut Hill, MA, 4IonSense, Inc., Saugus, MA, 5JEOL, USA, Inc., Peabody, MA

46 Unexpected Results: Unique Findings in Finished Dosage Form Tablets; Nohora V. Shockey, Renee N. Easter and Brian L. Boyd; U.S. Food and Drug Administration, Forensic Chemistry Center, Cincinnati, OH
47 Direct Analysis in Real Time Mass Spectrometry (DART-MS) of Cathinone “Bath Salt” Drugs and Mixtures; Rabi A. Musah¹, Robert B. Cody³, Marek A. Domin², A. John Dane³, and Jason R.E. Shepard¹; ¹Department of Chemistry, University at Albany, State University of New York (SUNY), 1400 Washington Ave., Albany, NY, ²Mass Spectrometry Center, Merkert Chemistry Center, Boston College, 2609 Beacon Street, Chestnut Hill, MA , ³JEOL USA, Inc., 11 Dearborn Rd, Peabody, MA

48 Development and Validation of Method for LC/MS/MS Analysis of Stimulant Drugs and Application of the Method to Analyze these Drugs in Waste Water Samples before, during, and after Football Games in a College Town; Waseem Gul¹,², Brandon Stamper¹,³, Candice Tolbert¹, Murrell Godfrey³, Mahmoud A. ElSohly*, ¹,²,³; ¹ElSohly Laboratories, Inc., 5 Industrial Park Drive, Oxford, MS ; ²National Center for Natural Products Research, ³Department of Chemistry and Biochemistry, and ⁴Department of Pharmaceutics, The University of Mississippi, University, MS

49 A Study on the Effect of Contamination from Handling in the Forensic Characterization of Printing Inks Using Tandem LIBS/LA-ICP-MS; Kiran Subedi and Jose Almirall; Department of Chemistry and Biochemistry and International Forensic Research Institute (IFRI), Florida International University, Miami FL

50 Detection of Chemical Tracers in Human Breath by Mass Spectrometry for Development of a New Forensic Technique; Jenny K. Van and Dale A. Chatfield, San Diego State University, San Diego, CA

51 Mass Spectrometric Solutions for Pre- and Post-Event Trace Detection in Security and Forensics; Philip J. Tackett, J. Mitchell Wells, and Dennis J. Barket, Jr., FLIR Detection, West Lafayette, IN

52 Characterization of Nitrate Dimer Formation Mechanism by Means of Thermal Desorption Atmospheric Pressure Ionization Mass Spectrometry; Andrey Vilkov, Jack Syage; Morpho Detection LLC, Santa Ana, CA

53 Extraction and Identification of Dyes from Fibers by Automated Microfluidics and Mass Spectrometry: Forensic Application; Nelson R Vinueza,a Stephen Furst,b Ken Garrard,b Tom Dow,b Sean Gunning,b Nadia Sultana,a Yufei Chen,a Alexis Owens,a Min Li,a David Hinks,a "Department of Textile Engineering, Chemistry and Science, College of Textiles, North Carolina State University, bPrecision Engineering Center, North Carolina State University

54 Blood-Brain Barrier Permeability Assay and Cell Membrane Chromatography – Mass Spectrometry for Investigating and Databasing Drug Analogs; Kristina Williams, Amanda Kretsch, Guido Verbeck; Dept. of Chemistry, Univ. of North Texas, Denton, TX

55 Characterization and Discrimination of Printing Inks Using DART-MS and MALDI-MS for uses in Forensic Document Analysis; Rhett Williamson, José Almirall; Department of Chemistry & Biochemistry, International Forensic Research Institute, Florida International University, Miami, FL

56 Using Mass Spectrometry to Identify Species from Bone, Blood, and Tissue Samples; Teubl, J.¹, Yang, H², Siegel, D², Fenyö, D.¹, ¹NYU Langone Medical Center, New York, NY, ²Office of the Chief Medical Examiner, New York, NY