



Thank you for joining us to discuss the latest developments in the application of mass spectrometry to both national security and forensic science. We have scheduled research presentations (orals and posters) in five primary focus areas:

- Drugs and drug profiling
- Source attribution/human remains/isotope ratios
- Ambient ionization and instrumentation
- Arson/fire debris analysis
- Explosives analysis

Additional conference features include K-9 detection demonstration, real world case study presentations, and ample time for networking.

We hope you take the opportunity to engage, learn, and have enjoy your time at Asilomar, “the refuge by the sea”.

Ryan Bain and Glen Jackson

Co-Organizers, ASMS Asilomar Conference on Security and Forensic Applications of Mass Spectrometry

ASMS Asilomar Conference on Forensics & Security Applications of Mass Spectrometry
Program subject to change. Posted September 22, 2025.

FRIDAY, OCTOBER 10, 2025

4:00 - 6:00 pm Name badge pick-up in Chapel

6:00 - 7:00 pm Asilomar Dinner, Crocker Dining Hall, *for Asilomar lodgers.*
If you are staying offsite and wish to have dinner with the group, purchase separate dinner tickets with your conference registration.

7:15 - 8:30 PM, Chapel
OPENING SESSION

7:15 - 7:30 pm Opening Remarks, Ryan Bain
About the ASMS Asilomar Conference & the Small Conference Committee, John Stutzman

7:30 - 8:20 pm Leveraging Data Science to Trace Two Billion Mass Spectrometry Data Points: Opportunities
for Forensics, **Pieter Dorrestein**, *University of California, San Diego*
Followed by 10 minutes Q&A

8:30 - 9:30 PM, Chapel
EVENING RECEPTION & POSTERS

All posters will be displayed for the entire conference. See poster list page 13.

SATURDAY, OCTOBER 11, 2025

7:30 - 9:00 am Asilomar Breakfast, Crocker Dining Hall, *for Asilomar lodgers only.*

9:00 AM – 10:20 AM, Chapel	
EXPLOSIVES DETECTION: MASS SPECTROMETERS AND CANINES, Part I	
Ryan Bain, presiding	
9:00 - 9:20 am	Field-Portable AFT-MS for Vapor Detection of Drugs and Explosives; Robert Ewing , <i>Pacific Northwest National Laboratory, Richland, WA.</i>
9:20 - 9:30 am	<i>Ten-minute Q&A and speaker transition</i>
9:30 - 9:50 am	The Use of LC-HRMS for Trace Explosives Analysis at the Forensic Explosives Laboratory; Nicola Shepherd , <i>Defence Science and Technology Laboratory (DSTL), Salisbury, UK.</i>
9:50 - 10:00 am	<i>Ten-minute Q&A and speaker transition</i>
10:00 - 10:15 am	Extraction Techniques and Rapid Detection of Explosives Using a Portable Mass Spectrometer; Jana Carpenter , <i>US Army, Aberdeen Proving Ground, MD.</i>
10:15 - 10:20 am	<i>Five-minute Q&A and speaker transition</i>

10:20 – 10:40 am Coffee Break

10:40 AM – 12:30 PM, Chapel	
EXPLOSIVES DETECTION: MASS SPECTROMETERS AND CANINES, Part II	
Gabe Bowen, presiding	
10:40 – 10:55 am	Post-Blast Identification of Ammonium Nitrate Utilizing Crown Ether Complexes and Paperspray Ionization Mass Spectrometry; Melanie V. Tanis , <i>Duquesne University, Pittsburgh, PA.</i>
10:55 – 11:00 am	<i>Five-minute Q&A and speaker transition</i>
11:00 - 11:20 am	Targeted Detection of Explosive Volatiles via SIM-MS: Implications for Canine Olfactory Calibration; Celeste Medrano , <i>Texas Tech University, Lubbock, TX.</i>
11:20 - 11:30 am	<i>Ten-minute Q&A and speaker transition</i>
11:30am - 12:30pm	Discussion and Demonstration of K9 Explosive Detection; Russell Withrow and Belle (K9), <i>Bureau of Alcohol, Tobacco, Firearms & Explosives (ATF), San Francisco, CA.</i>

12:00 - 1:00 pm Asilomar Lunch, Crocker Dining Hall, *for Asilomar lodgers and attendees who pay the offsite fee during online registration.*

SATURDAY, OCTOBER 11, 2025 - continued

1:30 - 4:50 PM, Chapel	
SOURCE ATTRIBUTION: HUMAN REMAINS AND TRACE EVIDENCE	
Robert Ewing, presiding	
1:30 - 1:50 pm	Distribution of Human Hair Stable Isotope Values for Origin and Travel Assignment; Gabe Bowen , <i>University of Utah, Salt Lake City, UT</i> .
1:50 - 2:00 pm	<i>Ten-minute Q&A and speaker transition</i>
2:00 - 2:20 pm	The Analysis of Complex VOC Profiles during Early Decomposition via HS-SPME-GC/MS and Chemometrics; Fantasia Whaley , <i>Florida International University, Miami, FL</i> .
2:20 - 2:30 pm	<i>Ten-minute Q&A and speaker transition</i>
2:30 - 2:45 pm	Application of Selected-Ion Flow-Tube Mass Spectrometry (SIFT- MS) for the Identification of Volatile Organic Compounds (VOCs) from Human Remains; Beau D. Bealmear , <i>Syft Technologies, Anaheim, CA</i> .
2:45 - 2:50 pm	<i>Five-minute Q&A and speaker transition</i>
2:50 - 3:20 pm	Coffee Break
3:20 - 3:35 pm	An Analytical Methodology for Detecting Clandestine Human Burials; Brian A. Eckenrode , <i>George Mason University, Manassas, VA</i> .
3:35 - 3:40 pm	<i>Five-minute Q&A and speaker transition</i>
3:40 - 3:55 pm	Environmental Representation of Complex Matrices for Source Attribution and Rapid Anomaly Detection; Kristin A. Favela , <i>Southwest Research Institute, San Antonio, TX</i> .
3:55 - 4:00 pm	<i>Five-minute Q&A and speaker transition</i>
4:00 - 4:20 pm	LA-ICP-MS, a powerful and universal tool for forensic attribution; Arian van Asten , <i>University of Amsterdam, Netherlands</i> .
4:20 - 4:30 pm	<i>Ten-minute Q&A and speaker transition</i>
4:30 - 4:45 pm	Fentanyl Profiling based on its elemental composition using ICP-MS for source attribution; Edward Bentil , <i>George Mason University, Manassas, VA</i> .
4:45 - 4:50 pm	<i>Five-minute Q&A</i>
4:50 - 6:00 pm	Free Time
6:00 - 7:00 pm	Asilomar Dinner, Crocker Dining Hall, <i>for Asilomar lodgers</i> . <i>If you are staying offsite and wish to have dinner with the group, purchase separate dinner tickets with your conference registration.</i>

SATURDAY, OCTOBER 11, 2025 - continued

**7:15 PM - 8:05 PM, Chapel
SATURDAY EVENING SESSION**

TBD, presiding

- 7:15 - 7:35 pm Europe's approach to collaboration in forensic science – the European Network of Forensic Science Institutes (ENFSI); **Matthew Beardah**, *Defence Science and Technology Laboratory (DSTL), Salisbury, UK.*
- 7:35 - 7:45 pm *Ten-minute Q&A and transition to Poster Highlight Talks*

POSTER HIGHLIGHT TALKS

Eight two-minute poster highlight talks featuring poster presenters.

- 7:45 - 7:47 pm **Alexandra Adeoye** (West Virginia University): Differentiating between the Tandem Mass Spectra of Isobaric Cannabinoids Using the Expert Algorithm for Substance Identification (EASI) [*Poster 1*]
- 7:47 - 7:49 pm **Alleigh Couch** (Sam Houston State University): Rapid Differentiation of Hemp and Marijuana Using Cu-Phosphine Ion Complexation and Commercialized Paper Spray Ionization-Mass Spectrometry [*Poster 2*]
- 7:49 - 7:51 pm **Morgan Demmler** (North Carolina State University): A Microfluidic Approach to Dye Analysis in Blue Pen Inks via Mass Spectrometry [*Poster 3*]
- 7:51 - 7:53 pm **Yvett Dragt** (Netherlands Forensic Institute): Source Comparison of Twenty-Two Anions in Flash Powders Using Ion Chromatography Coupled to a Single Quadrupole Mass Spectrometer [*Poster 4*]
- 7:53 - 7:55 pm **Alexander Gordon** (Teledyne FLIR): Design and Performance of a Person-portable Two-dimensional Tandem Mass Spectrometer for Machine-Learning Enhanced Identification of Drugs [*Poster 5*]
- 7:55 - 7:57 pm **Nathan Grimes** (BaySpec): Multimodal Ionization and Thermal Desorption on a Portable Ion-Trap MS for Security and Forensic Screening [*Poster 6*]
- 7:57 - 7:59 pm **Emma Hardwick** (Sam Houston State University): Identification of Novel Nitazene Analogs Using Electron Ionization-Mass Spectrometry and Electrospray Ionization-Tandem Mass Spectrometry [*Poster 7*]
- 7:59 - 8:01 pm **McKenna Recker** (West Virginia University): Unintentional Ion-Molecule Reactions in Tandem Mass Spectrometry: A DFT and Kinetics Study of Cannabinoid Fragment Ions with Water and Methanol [*Poster 8*]

8:01 - 8:06 PM, WELCOME TO THE RECEPTION, Chapel
Welcome to the reception presentation; **Rachel Lieberman**, *Waters Corporation*

8:06 - 9:30 PM, Chapel

EVENING RECEPTION sponsored by Waters Corporation & POSTERS

Snacks and drinks are provided at the reception thanks to this evening's reception sponsor, Waters Corporation.
All posters will be displayed for the entire conference. See poster list page 13.

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

PROGRAM RESUMES AT 8:30 AM, SUNDAY MORNING

SUNDAY, OCTOBER 12, 2025

7:30 - 8:30 am Asilomar Breakfast, Crocker Dining Hall, *for Asilomar lodgers only.*

PROGRAM BEGINS AT 8:30 AM TODAY

8:30 AM - 10:10 AM, Chapel ARSON AND EXPLOSIVES, Part I

Arian van Asten, presiding

8:30 - 8:45 am	Application of the Expert Algorithm for Substance Identification (EASI) to Identify Weathered Gasoline in GC-MS Data of Fire Debris; Hannah McMillen , <i>West Virginia University, Morgantown, WV.</i>
8:45 - 8:50 am	<i>Five-minute Q&A and speaker transition</i>
8:50 - 9:10 am	GC/MS and DART-MS for Investigating Chemical Profiles of Ignitable Liquids; Mengliang Zhang , <i>Ohio University, Athens, OH.</i>
9:10 - 9:20 am	<i>Ten-minute Q&A and speaker transition</i>
9:20 - 9:35 am	Upconversion Nanoparticle Tagging of Explosives and Post-Blast Residue Analysis by Single Particle ICP-MS; Tim Steinwachs , <i>University of Münster, Münster, Germany.</i>
9:35 - 9:40 am	<i>Five-minute Q&A and speaker transition</i>
9:40 - 10:00 am	Differentiation of Intentional vs Accidental TATP Formation at Home; Ryan M. Bain , <i>Bureau of Alcohol, Tobacco, Firearms and Explosives, MD.</i>
10:00 - 10:10 am	<i>Ten-minute Q&A and speaker transition</i>

10:10 - 10:30 am Coffee Break

10:30 AM - 12:10 PM, Chapel ARSON AND EXPLOSIVES, Part II

Ruth Smith, presiding

10:30 - 10:45 am	Portable Atmospheric Flow Tube Mass Spectrometer for Trace Vapor and Residue Detection of Narcotics and Explosives at Low Parts-Per-Trillion Levels; Krisztian Gabor Torma , <i>BaySpec, San Jose, CA.</i>
10:45 - 10:50 am	<i>Five-minute Q&A and speaker transition</i>
10:50 - 11:10 am	DART-Q-ToF-MS/MS in the Analysis of Nitrocellulose Traces in Bulk- and Post-Blast Samples of Smokeless Powder; Tilo Schachel , <i>Bundeskriminalamt (BKA), Germany</i>
11:10 - 11:20 am	<i>Ten-minute Q&A and speaker transition</i>
11:20 - 11:40 am	Dissociation Behavior of 2-Butanone Peroxide (MEKP) Oligomer Cations; John Stutzman , <i>Dow Chemical, Midland, MI.</i>
11:40 - 11:50 am	<i>Ten-minute Q&A and speaker transition</i>
11:50am-12:05pm	QuickProbe – Combining Open Probe and Ultra-Fast GC-MS for Real Time Analysis with Separation and Improved Forensic Applications; Aviv Amirav , <i>Tel-Aviv University, Israel.</i>

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12:05 - 12:10 pm *Five-minute Q&A*

SUNDAY, OCTOBER 12, 2025 - *continued*

12:00 - 1:00 pm Asilomar Lunch, Crocker Dining Hall, *for Asilomar lodgers and attendees who pay the offsite fee during online registration.*

1:00 - 6:00 pm **FREE AFTERNOON**

6:00 - 7:00 pm Asilomar Dinner, Crocker Dining Hall, *for Asilomar lodgers.*
If you are staying offsite and wish to have dinner with the group, purchase separate dinner tickets with your conference registration.

7:15 – 8:15 PM, Chapel
SPECIAL AFTER DINNER TALK

Ryan Bain, presiding

7:15 - 8:15 pm From the Lab to the Living Room: Forensic Casework on TV; **Glen Jackson**, *West Virginia University, Morgantown, WV.*

8:15 - 9:15 PM, Chapel
EVENING RECEPTION & POSTERS

All posters will be displayed for the entire conference. See poster list page 13.

MONDAY, OCTOBER 13, 2025

7:30 - 9:00 am Asilomar Breakfast, Crocker Dining Hall, *for Asilomar lodgers only.*

9:00 AM - 12:00 PM, Chapel SEIZED DRUGS, Part I Glen Jackson, presiding	
9:00 - 9:20 am	Identification of Marijuana by Ion Complexation; J. Tyler Davidson , <i>Sam Houston State University, Huntsville, TX.</i>
9:20 - 9:30 am	<i>Ten-minute Q&A and speaker transition</i>
9:30 - 9:50 am	Drug Screening by Paper Spray MS with Integrated Solid Phase Extraction; Nicholas Manicke , <i>Indiana University Indianapolis, IN.</i>
9:50 - 10:00 am	<i>Ten-minute Q&A and speaker transition</i>
10:00 - 10:15 am	Dynamic Spray Mass Spectrometry for Direct Complex Mixture Analysis Toward Forensic Applications; Purva S. Damale , <i>The Ohio State University, Columbus, OH.</i>
10:15 - 10:20 am	<i>Five-minute Q&A and speaker transition</i>
10:20 - 10:40 am	Coffee Break
10:40 - 11:00 am	Pyrolysis of Cannabinoids: Implications for Exposure to Xenobiotics and Mind-Altering Substances; Rabi Musah , <i>Louisiana State University, Baton Rouge, LA.</i>
11:00 - 11:10 am	<i>Ten-minute Q&A and speaker transition</i>
11:10 - 11:30 am	Rapid Drug Analysis and Research RaDAR of NPS Drugs; Ed Sisco , <i>National Institute of Standards and Technology (NIST), Gaithersburg, MD.</i>
11:30 - 11:40 am	<i>Ten-minute Q&A and speaker transition</i>
11:40 - 11:55 am	A Novel Desorption ElectroSpray Ionization (DESI) MS-Based Screening Method for the Rapid, Robust Detection of Drug Metabolites in Urine; Julia Balog , <i>Waters Immerse, Cambridge, MA.</i>
11:55am - 12pm	<i>Five-minute Q&A</i>

12:00 - 1:00 pm Asilomar Lunch, Crocker Dining Hall, *for Asilomar lodgers and attendees who pay the offsite fee during online registration.*

MONDAY, OCTOBER 13, 2025 - *continued*

1:00 - 2:50 PM, Chapel SEIZED DRUGS, Part II

Tyler Davidson, presiding

1:00 - 1:20 pm	Statistical Comparison of Mass Spectra; Ruth Smith , <i>Michigan State University, East Lansing, MI</i>
1:20 - 1:30 pm	<i>Ten-minute Q&A and speaker transition</i>
1:30 - 1:50 pm	Expert Algorithm for Substance Identification to ID Seized Drugs from Tandem Mass Spectra; Glen Jackson , <i>West Virginia University, Morgantown, WV</i>
1:50 - 2:00 pm	<i>Ten-minute Q&A and speaker transition</i>
2:00 - 2:20 pm	Training of Drug Chemists on Portable MS Systems; Jamie P. Butalewicz , <i>Naval Air Warfare Center Weapons Division, China Lake, CA</i>
2:20 - 2:30 pm	<i>Ten-minute Q&A and speaker transition</i>
2:30 - 2:45 pm	Development of a Method for the Quantitative Analysis of Drugs by Ambient Ionization Mass Spectrometry; Sarah Shuda , <i>National Institute of Standards and Technology (NIST), Gaithersburg, MD</i>
2:45 - 2:50 pm	<i>Five-minute Q&A</i>

2:50 - 3:10 pm Coffee Break

3:10 - 5:00 PM, Chapel SMORGASBORD OF FORENSICS APPLICATIONS

Ryan Bain and Glen Jackson, presiding

3:10 - 3:30 pm	Separation of commingled sexual assault evidence for chemical and biochemical analysis; Candice Bridge , <i>University of Central Florida, Orlando, FL</i>
3:30 - 3:50 pm	<i>Ten-minute Q&A and speaker transition</i>
3:50 - 4:05 pm	Detection of Military and Improvised Explosives Using the Syft Tracer i3 Real-Time Mass Spectrometer; Leslie P. Silva , <i>Syft Technologies, El Segundo, CA</i>
4:05 - 4:10 pm	<i>Five-minute Q&A and speaker transition</i>
4:10 - 4:25 pm	Mass Spectrometric Imaging of Dietary Supplement Tablets Using Laser Ablation-Atmospheric Pressure Chemical Ionization-Trapped Ion Mobility Spectrometry-Mass Spectrometry; Johannes Schmeinck , <i>University of Münster, Germany</i>
4:25 - 4:30 pm	<i>Five-minute Q&A and speaker transition</i>
4:30 - 4:50 pm	Demonstrating CWA Presence Through Biomarker Analysis in Dried Blood Spots and Plants; Jelle de Koning , <i>TNO - Rijswijk, Netherlands</i>
4:50 - 5:00 pm	<i>Ten-minute Q&A</i>

6:00 - 7:00 pm Asilomar Dinner, Crocker Dining Hall, *for Asilomar lodgers.*

MONDAY, OCTOBER 13, 2025 - *continued*

7:15 - 8:00 PM, Chapel
CLOSING SESSION

Glen Jackson, presiding

7:15 - 7:45 pm The Austin Serial Bomber: A Start to Finish Recollection of the Events; **Ryan M. Bain**, *Bureau of Alcohol, Tobacco, Firearms and Explosives, MD.*

7:45 - 8:00 pm Closing Remarks: Ryan Bain and Glen Jackson

8:00 - 9:15 PM, Fire Pit below Crocker Dining Hall
BONFIRE & S'MORES

If you are not familiar with a 'S'more' (graham crackers, chocolate bar, and toasted marshmallow) you will learn!
It's sticky and delicious!

TUESDAY, OCTOBER 14, 2025

7:30 - 9:00 am Asilomar Breakfast, Crocker Dining Hall, *for Asilomar lodgers only.*

Box Lunch available for pick-up in Crocker. Use your remaining lunch ticket!

POSTER LIST

- Poster 1 Differentiating Between the Tandem Mass Spectra of Isobaric Cannabinoids Using the Expert Algorithm for Substance Identification (EASI); **Alexandra Adeoye**, *West Virginia University, Morgantown, WV*
- Poster 2 Rapid Differentiation of Hemp and Marijuana Using Cu-Phosphine Ion Complexation and Commercialized Paper Spray Ionization-Mass Spectrometry; **Alleigh Couch**, *Sam Houston State University, Huntsville, TX*
- Poster 3 A Microfluidic Approach to Dye Analysis in Blue Pen Inks via Mass Spectrometry; **Morgan Demmler**, *Wilson College of Textiles, NC State University, Raleigh, NC*
- Poster 4 Source Comparison of Twenty-Two Anions in Flash Powders Using Ion Chromatography Coupled to a Single Quadrupole Mass Spectrometer; **Yvette Dragt**, *Netherlands Forensic Institute, The Hague, Netherlands*
- Poster 5 Design and Performance of a Person-portable Two-dimensional Tandem Mass Spectrometer for Machine-Learning Enhanced Identification of Drugs; **Alexander Gordon**, *Teledyne FLIR, West Lafayette, IN*
- Poster 6 Multimodal Ionization and Thermal Desorption on a Portable Ion-Trap MS for Security and Forensic Screening; **Nathan Grimes**, *BaySpec, San Jose, CA*
- Poster 7 Identification of Novel Nitazene Analogs Using Electron Ionization-Mass Spectrometry and Electrospray Ionization-Tandem Mass Spectrometry; **Emma Hardwick**, *Sam Houston State University, Huntsville, TX*
- Poster 8 Unintentional Ion-Molecule Reactions in Tandem Mass Spectrometry: A DFT and kinetics study of Cannabinoid Fragment Ions with Water and Methanol; **McKenna Recker**, *Department of Forensic and Investigative Science, West Virginia University, Morgantown, WV*
- Poster 9 Advanced Analysis of Controlled Substances Using DART-TIMS-QTOF Mass Spectrometry; **Gregory Nieckarz**, *Bruker Daltonics, Billerica, MA*
- Poster 10 Cold EI – The Way to Improve GC-MS and Improve and Increase Its Range of Forensic Applications; **Aviv Amirav**, *Tel-Aviv University, Tel-Aviv, Israel*