National Institute of Justice

Forensic Science Research and Development Symposium

American Academy of Forensic Sciences 75th Annual Scientific Conference

The National Institute of Justice (NIJ) Forensic Science Research and Development (R&D) Symposium is an open meeting where attendees can learn about NIJ-funded research across a variety of forensic science areas. You can register to attend the Symposium in person or virtually; however, American Academy of Forensic Sciences (AAFS) conference registration is not necessary to attend. Feel free to stop by to listen to specific presentations and view posters or stay all day and learn about the diverse NIJ forensic science R&D portfolio.

More details and registration information can be found here: http://ow.ly/Z9yc50LWOAb.

Tentative Agenda – Tuesday, February 14, 2023

The podium presentations will take place from 8:30am ET to 5:00pm ET. A Q&A session for each presenter will directly follow their presentation.

Start Time (ET)	End Time (ET)	Session Title
8:30am	8:40am	Welcome and Opening Remarks *Lucas Zarwell, Office of Investigative and Forensic Sciences, NIJ*
Session I – Impression and Pattern Evidence/Trace Evidence *Moderated by NIJ Program Manager, Gregory Dutton*		
8:40am	9:05am	Applying the NIST Footwear Impression Comparison System to Comparisons Involving Realistic Crime Scene Impressions *Steve Lund, National Institute of Standards and Technology (NIST)*
9:05am	9:30am	Novel Ambient Oxidation Trends in Fingerprint Aging Discovered by High-Resolution Mass Spectrometry *Andrew E. Paulson, Iowa State University*
9:30am	9:55am	Surface-Enhanced Raman Spectroscopy Enables Highly Accurate Identification of Different Brands, Types, and Colors of Hair Dyes *Dmitry Kurouski, Texas A&M University*
9:55am	10:20am	Application of Particle Correlated Raman Spectroscopy (PCRS) for the Forensic Examination of Soils *Brooke W. Kammrath, University of New Haven*
10:20am	10:35am	Break
Session II – Forensic Anthropology and Forensic Pathology *Moderated by NIJ Program Manager, Danielle McLeod-Henning*		
10:35am	11:00am	GIS Application for Building a Nationally Representative Forensic Taphonomy Database *Katherine Weisensee, Clemson University*
11:00am	11:25am	Germ-Line Transformation of Forensically Important Flies *Amber MacInnis, Florida International University*
11:25am	11:50am	Bone Trauma and Thermal Alteration of Human Remains *Giovanna M. Vidoli, University of Tennessee, Knoxville*

Start Time (ET)	End Time (ET)	Session Title
11:50am	12:15pm	Development of the Forensic Anthropology Skeletal Trauma (FAST) Database *Angela L. Harden, The Ohio State University*
12:15pm	1:25pm	Lunch Break – On Your Own
Session III – Seized Drugs and Toxicology *Moderated by NIJ Program Manager, Frances Scott*		
1:25pm	1:50pm	Detectability of Δ10-THC's Chiral Analogs in Urine by Six Commercially Available Homogeneous Immunoassays *Carl E. Wolf, Virginia Commonwealth University*
1:50pm	2:15pm	Assessment of the Contribution to Drug-Impaired Driving from Emerging and Undertested Drugs *Amanda L.A. Mohr, Center for Forensic Science Research and Education*
2:15pm	2:40pm	A Molecular Networking Approach to Processing Untargeted High Resolution Mass Spectrometry Data in Forensic Toxicology *Heather Barkholtz, University of Wisconsin–Madison*
2:40pm	3:05pm	High-Resolution Mass Spectrometry Screening in Forensic Toxicology: Cost Benefit Analysis *Sarah Kerrigan, Sam Houston State University* *Jessica Ayala, Houston Forensic Science Center*
3:05pm	3:20pm	Break
Session IV – Forensic Biology/DNA *Moderated by NIJ Program Manager, Tracey Johnson*		
3:20pm	3:45pm	Validation of a Confirmatory Proteomic Mass Spectrometry Body Fluid Assay for Use in Publicly Funded Forensic Laboratories *Erin Butler, New York City Office of the Chief Medical Examiner*
3:45pm	4:10pm	Biological Sample Analysis Using Prediction Modeling for Early Mixture Detection *Tracey Dawson Green, Virginia Commonwealth University*
4:10pm	4:35pm	DNA Analysis Findings from Male Sexual Assault Victims: Multidisciplinary Practice Implications *Julie L. Valentine, Brigham Young University*
4:35pm	5:00pm	Selectively Analyzing and Interpreting DNA from Multiple Donors with a Full Single-cell Strategy *Nidhi Sheth, Rutgers University–Camden*

Adjourn

Poster Session

The poster presentations will be from 5:00pm ET to 6:30pm ET, and the poster room doors will remain open till 8:00pm ET for self-guided tours. For those who wish to access the posters virtually, more information can be found here: http://ow.ly/Z9yc50LWOAb.

A Universal Method for the Detection of Organic and Inorganic Gunshot Residue Based on Fast Fluorescence Mapping and Raman Spectroscopic Identification
Igor K. Lednev, University at Albany – State University of New York

Development of an Empirical Fingerprint Aging Model Using Fingerprints Analyzed with Laser Desorption/Ionization Mass Spectrometry
Daphne R. Patten, Iowa State University

Revisiting the Set Value for the Minimum Drip Stain Size
Garam Lee, Boston University

Extraction and Quantification of Fentanyl and Metabolites from Complex Biological Matrices to Support Medicolegal Death Investigations
Joseph Cox, Florida International University

Utilizing eDNA from Four Biological Taxa Associated with Geologic Evidence for Sample-to-Sample Comparisons and Study Site Separation
Teresa M. Tiedge, North Carolina State University

Analysis of Less Volatile Components in Ignitable Liquids by Direct Analysis in Real Time Mass Spectrometry and Versatile Sampling Strategy
Mengliang Zhang, Middle Tennessee State University

Development of an Interactive Database of Contemporary Material Properties for Computer Fire Modeling
Mark B. McKinnon, Underwriters Laboratories Fire Safety Research Institute

Rapid Association of Commingled Remains by their Chemical Profile
Kristen M. Livingston, University of Central Florida

Personal Identification Using Part-to-Part Comparison of 3D Lumbar Geometry Using Antemortem and Postmortem Computed Tomography
Summer J. Decker, University of South Florida Health & Tampa General Hospital

You Are What You Eat! Identification of the Matrices on Which Necrophagous Insects Feed Using Direct Analysis in Real Time–High Resolution Mass Spectrometry (DART–HRMS) and Chemometrics
Rabi A. Musah, University at Albany – State University of New York

Developing Subadult Sex Estimation Standards Using Adult Morphological Sex Traits and an Ontogenetic Approach
Stephanie J. Cole, University of Nevada, Reno

An Osteometric Approach to Separating Commingled Pelvic and Foot Joints
Helen Litavec, Binghamton University

Combining Surface-enhanced Raman Spectroscopy (SERS) and Mass Spectrometry Techniques to Increase Sensitivity and Specificity in Toxicological Drug Analysis in Blood Plasma
Vitoria Simas, Indiana University–Purdue University Indianapolis

Getting into the Weeds—A Combined Ambient Mass Spectrometric and Chemometric Approach for Differentiating Hemp and Marijuana Varieties of Cannabis sativa
Rabi A. Musah, University at Albany – State University of New York

Tracking and Disseminating Data on Novel Psychoactive Substances (NPS) through NPS Discovery's Drug Early Warning System
Alex J. Krotulski, Center for Forensic Science Research and Education

Biomarkers of Cannabis Exposure in Exhaled Breath Condensate and Oral Fluid
Anthony P. DeCaprio, Florida International University

Validation of a LC-DAD Method with Optional ESI/TOFMS Detection for the Accurate Measurement of Δ9-THC and Δ9-THCA Among Twenty Cannabinoids in Cannabis
Liguo Song, Western Illinois University

Sample Homogenization, Extraction, and Clean Up Procedures at NIST for the Determination of Total Δ9-THC in Hemp-derived Finished Products
Walter Brent Wilson, National Institute of Standards and Technology (NIST)

Improved Nucleic Acid Recovery from Trace Samples Using Affinity Purification
Brian Davis, GE Research

Development of a Probe Capture Next-Generation Sequencing Assay for Analysis of the Mitochondrial Genome and Nuclear STR and SNP Markers
Gunmeet Kaur Bali, 10x Genomics

Single-cell Likelihood Ratios are Highly Informative and Robust Across Multifarious Mixture Complexities
Catherine M. Grgicak, Rutgers University–Camden

Adaptation, Optimization, and Validation of a Semi-automated DNase I-based Differential Extraction Procedure on the Beckman Coulter Biomek® NX^{P} Automated Workstation
Ashley M. Cooley | Virginia Department of Forensic Science

Paper-based Chemiresistive Biosensor Array for Rapid, On-site Identification of Multiple Body Fluids at a Crime Scene
Samriddha Dutta, University of California, Riverside

Sex-based Targeted Recovery of Cells in a Heterogeneous Mixture: Separating Male and Female Like-cells
Amber C. W. Vandepoele, Syracuse University

A Fully Integrated Microfluidic Tool for Forensic Epigenetic Sample Preparation
Rachelle Turiello, University of Virginia

Quality Control Procedures Required for the Generation of Forensic Quality Mitogenome Reference Data
Charla Marshall, Armed Forces Medical Examiner System – Armed Forces DNA Identification Laboratory (AFMES-AFDIL)/SNA International