



WORKSHOP ABSTRACTS

September 21-24, 2021 - Poconos, PA

QUESTIONED DOCUMENTS SECTION WORKSHOPS

(W1) Forensic Examination of Handwritten Electronic Signatures

Presented by Kathleen Annunziata Nicolaidis, Associated Forensic Laboratory, LLC

Full Day Workshop - Tuesday, September 21 - (Member \$150/Non-Member \$200)

Attendees will learn what to do when a handwritten electronic signature case lands on their desk. Attendees will also learn how to forensically examine handwritten electronic signatures. This workshop will include plotting and comparing handwritten electronic signatures to other handwritten electronic signatures as well as copies of wet-ink signatures. Advanced plotting techniques will be taught. This is a hands-on workshop with multiple practical problems. The purpose of this workshop is to familiarize document examiners with this type of signature examination.

(W2) Technology and Design of Security Documents for Counterfeiting and Alteration Resistance

Presented by: Joel A. Zlotnick, United States Department of State

Full Day Workshop - Wednesday, September 22 - (Member \$150/Non-Member \$200)

Counterfeiting and alteration are continual threats to banknotes, passports, identity cards, birth records and other security documents. Although contemporary security feature technologies are certainly part of the solution to document counterfeiting and alteration, security design strategies that maximize the effectiveness of security feature technologies are also very important. This workshop explores the landscape of contemporary document security technologies and the design strategies that optimize their effectiveness. Depending on the meeting format, hands-on could proceed in one of two ways. First, virtual hands-on exercises could be facilitated by attendees examining their own personal passports, driver's licenses, birth records, etc. Alternately, a classroom format could allow for hands-on exercises using exemplar documents provided by the Bureau of Consular Affairs.

After attending this workshop, attendees will understand two facets of document security. First, this workshop provides an overview of common document security features like security fibers, watermarks, microprinting, color shifting inks, ultraviolet printing, holograms, laser engraving and many others. The second and equally important subject is how document components can be integrated with one another, and with document artwork, in ways that allow the security value of each anti-counterfeiting technology to be maximized.

PDF Forensics

Presented by Leonard Rosenthal, Adobe

Half Day Workshop - Morning- Friday, September 24 (Included in regular meeting registration)

This workshop will focus on the forensic analysis of PDF digital documents. The workshop will begin with a general overview of the different components of PDF documents, followed by a detailed look into common PDF objects and how each can be forensically analyzed and evaluated. This workshop will include practical exercises and examples using sample PDF files. The purpose of this workshop is to provide attendees with a better understanding of PDF document structure and in turn a working knowledge to confidently address authentication concerns involving PDF documents when they arise in casework.

BIOLOGY SECTION WORKSHOPS

(W3) Introduction to Probabilistic Genotyping and Validation Studies

Presented by Dr. Michael Adamowicz¹, Dr. Mitchell M. Holland², Sarah Copeland³, and Teresa Snyder-Leiby³

¹University of Nebraska ²The Pennsylvania State University ³Softgenetics, LLC (MAAFS Vendor)

Half Day Workshop - Afternoon - Tuesday, September 21 (Member \$100/Non-Member \$150)

This workshop will give an introduction to: probabilistic genotyping (PG) including an overview of statistical methods; the advantages of continuous PG over historical approaches including use of degraded samples; an explanation of the various parameters such as heterozygous imbalance, drop out, stutter including non-traditional stutter, and baseline data requirements for PG analysis; and a summary of the methods and results from validation studies of MaSTR™ PG software. In addition to the lecture component, there will be written exercises to calculate likelihood ratios (LRs) from weighted genotypes for mixtures and an opportunity to have hands-on experience operating PG software.

(W4) Work Smarter: Utilizing New Light Source Innovations to Help Reduce Your Backlog

Presented by Saad Khan, Foster + Freeman (MAAFS Vendor)

Half Day Workshop - Morning - Wednesday, September 22 - (Member \$100/Non-Member \$150)

Finding, collecting, and processing serology evidence at the crime scene and in the laboratory can be time consuming, especially on difficult patterned backgrounds. Advances in new technology pave the way for smarter, more efficient processing techniques. Attendees of this workshop will be given an overview of light theory and refresher on traditional methods for evidence locating and collection. Attendees will then be introduced to new methodologies and techniques that involve beyond visible photography, bandpass filtering, and oblique lighting options to increase their collection and processing efficiency and cut down on agency backlogs. Attendees are encouraged to bring their own full spectrum DSLR camera and thumb drive if available.

(W5) How to Effectively Use Genetic Genealogy To Advance Violent Criminal Investigations

Presented by CeCe Moore and Parabon NanoLabs*

Half Day Workshop - Afternoon - Wednesday, September 22 - (Member \$100/Non-Member \$150)

Investigative Genetic Genealogy is a revolutionary forensics capability that has the potential to generate high confidence leads in active and cold cases. It can save your agency time and manpower by reducing the effort required to investigate and close cases. Through the use of real life criminal case studies, participants will learn:

- The methods and outcomes of genetic genealogy;
- The power of targeted kinship testing in complex cases, plus when and how to apply it; and,
- Tips & techniques employed by other agencies who have successfully closed active and cold cases.

*Please note that while this workshop will be held in-person at the MAAFS meeting, the presenter will be presenting remotely.

(W6) Did you know there's DNA on these things? How to get DNA profiles from fired cartridge cases.

Presented by Todd Bile and Steven Weitz, ATF National Laboratory Center

Half Day Workshop - Morning - Tuesday, September 21 (Member \$100/Non-Member \$150)

Fired cartridge cases (FCCs) can be a critical piece of evidence and possibly the only evidence left at a crime scene. In this workshop, we will discuss the history of DNA analysis on FCCs, some of the obstacles, different methods of successfully analyzing FCCs, and have a hands-on demonstration.

(W11) Interpretation of Sequence-Based STR Profiles in Mixed Samples

Presented by Luigi Armogida and Dr. Brian Young, NicheVision [MAAFS Vendor]

Half Day Workshop - Afternoon - Tuesday, September 21 (Member \$100/Non-Member \$150)

This workshop will cover the analysis sequence based STR profiles in mixed casework samples. The workshop will teach the essentials of sequence-based alleles and how they differ from length-based alleles. Attendees will learn about isoalleles, how to identify them, and how they affect profile statistics. Allele-specific stutter will be covered including details of how to separately identify LUS (longest uninterrupted stretch) and non-LUS stutter artifacts. We will describe non-stutter artifacts commonly found in sequence data and how they differ from non-stutter artifacts found in CE data. The entire beginning to end mixture analysis process will be demonstrated using the MixtureAce plugin to ArmedXpert. Attendees will have the opportunity to operate the software on mixed MPS data generated on the Verogen MiSeq platform.

What's That Stain?: Serology and Body Fluid Identification

Presented by Sharon Polakowski, Wisconsin State Police

Half Day Workshop - Morning- Friday, September 24 (Included in regular meeting registration)

This half day workshop will provide a brief history of serology in the field of forensics, an in-depth discussion of the tests and techniques currently available and their use in casework, and an overview of research in serology for the future.

CRIMINALISTICS SECTION WORKSHOPS

(W7) Explosive Residue Collection, Analysis, and Determinations

Presented by Robert Gillette, FBI Laboratory

Half Day Workshop - Morning - Tuesday, September 21 (Member \$100/Non-Member \$150)

Post-blast scenes can be a very chaotic environment. Multiple responses from varying agencies, confusion, and the scale of the scene can add complexities. The collection and preservation of post-blast related evidence is crucial for success in the analysis and determination of explosive content of a device. This workshop will highlight best practices for the collection/preservation of such evidence. In addition, it will discuss the analysis of post-blast residues and reporting the results of such residues in forensic reports to include determinations made from the analysis.

(W8) Forensic Chemistry & Toxicology Fundamentals Unknowns Analysis Workshop

Presenters: Dr. Kirk E. Lokits, Agilent (MAAFS Vendor)

Half Day Workshop - Afternoon - Tuesday, September 21 (Member \$100/Non-Member \$150)

The MassHunter Fundamentals Unknowns Analysis Workshop is designed to be a 1/2 day of hands-on software exercises utilizing forensic data. The workshop is designed to help migrate established workflows within ChemStation Data Analysis to MassHunter Unknowns Analysis. The course will be spent in Unknowns Analysis, a small portion in Qualitative Analysis, using peak integration, deconvolution, and focused on single quad data. It's not required but preferred for the student to have access to MassHunter on an existing or soon to be acquired GCMS system in their laboratory. Course is limited to 16 attendees due to the number of computers available for each attendee. Additional attendees will be considered if they can provide their own laptops with Win10 and MassHunter 10.0 Qualitative/Quantitative Analysis or an additional 1/2 day workshop will be considered if class enrollment warrants the additional workshop.

(W9) Is Gasoline Present? - Using a statistically based method to graphically display the support for gasoline in an unknown sample

Presented by Brenda Christy and Kelsey Winters, Virginia Department of Forensic Science

Full Day Workshop - Wednesday, September 22 (Member \$150/Non-Member \$200)

The analytical process for identifying ignitable liquids is based on fundamental chemical properties; however, the current interpretation of these properties as chromatographic data relies on subjective pattern recognition techniques. The subjectivity of these pattern recognition techniques increases with the presence of complex matrix contribution. To make the fire debris interpretation process more standardized and objective, a novel method is proposed for analyzing fire debris Gas Chromatography-Mass Spectrometry (GC-MS) data using quantitative measures of chromatographic features of interest. These features are represented by peak height ratios observed in the Total Ion Chromatograph and Extracted Ion Profiles.

This workshop focuses on applying the results of a study which included the chromatographic

features of interest in 150 gasoline samples and 64 chromatographic peak height ratios. Statistical analysis was conducted to determine the variation observed for each of these ratios in the gasoline samples and to determine the frequency of these features in negative matrix samples. This information was evaluated to determine relative significance, as represented by the assigned points for each of these features. When summed and used as plot values, these cumulative scores graphically display the totality of data supporting a potential gasoline identification. The graphical display, referred to as a sufficiency graph, also identifies the “gray” area where analysts are more likely to form differing opinions.

The methodologies introduced are a step toward a documentation process that ensures greater transparency in fire debris examinations and comparisons. The methods generate a quantitative sufficiency graph for consistent data interpretation and documentation. Attendees at this workshop will gain an understanding of the study conducted to establish these statistical features and will be introduced to the processes of applying these to case samples. Each attendee should bring a laptop computer with Microsoft Excel, Agilent Chemstation or other GC-MS data processing software, hardcopies and electronic datafiles from known gasoline samples acquired using existing laboratory methodologies, and electronic datafiles from samples containing gasoline and matrix mixtures.

(W10) Forensic Analysis of New and Emerging Fibers - Sponsored by ASTEE

Presented by Kelly Kelly Brinsko Beckert, Microtrace, LLC

Full Day Workshop - Wednesday, September 22 (Member \$150/Non-Member \$200)

This workshop will describe new and emerging fiber types and fabric constructions, including their impact on forensic fiber identifications. Manufacturing methods, new fiber applications, and coating technologies will be discussed. The class will also detail the forensic identification of such fibers and fabrics based on their optical properties, as well as offer suitable instrumental methods that may assist the examiner during analysis or fiber comparisons. Students will use stereomicroscopes and PLMs to examine and characterize various fibers, and some fiber samples will also be available for students to keep.