

# **Trace Evidence Symposium: *Advancing Science, Significance and Impact***

## **Draft Agenda**

*(As of May 3, 2011. Presenter information to be updated based on registration forms.)*

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| <b>Monday, August 8, 2011</b> |
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**8:30 am-5:00 pm                      Concurrent Workshops**

### **Homemade Explosive Workshop**

The Homemade Explosive Workshop will describe the chemistry behind the formulation of improvised explosive materials. Additionally, the common sources of the components of these homemade explosive both domestically and internationally and will be illustrated with case studies and intelligence data developed from numerous incidents.

**Moderator:**

**David Green**, Lake County Crime Laboratory

**Presenter:**

**Ed Bender**, Bureau of Alcohol, Tobacco, Firearms and Explosives

### **Dyes, Fibers and Recent Advances in Textile Chemistry**

This one-day workshop comprises three parts: Color Perception and Chemistry; Conventional and New Fiber Technologies; and New Approaches to the Analysis of Dyed Fibers. The goal of the workshop is to highlight key issues of color in the courtroom; review the chemistry of dyes, pigments, and synthetic and natural fibers; introduce new technologies in textiles of relevance to forensic science; and discuss state-of-the-art methods of dyed fiber analysis, especially liquid chromatography time-of-flight mass spectrometry and time-of-flight secondary ion mass spectrometry.

**Moderator and Presenter:**

**David Hinks**, College of Textiles, North Carolina State University

**Presenter:**

**Keith Beck**, College of Textiles, North Carolina State University

## **Soil Analysis**

The purpose of this workshop is to teach the basic, practical technique for identifying the essential soil-forming minerals using the polarizing microscope. Certain combinations of specific morphological and optical properties can be used to characterize most mineral species or families (groups). By the end of the day, students will have learned to identify the most frequently encountered soil forming minerals. The importance of single grain isolation for analysis by SEM/EDS and Raman microprobe for identifying difficult grains will also be discussed.

### **Moderator:**

**Jenny Smith**, Missouri State Highway Patrol Crime Laboratory

### **Presenter:**

**Skip Palenik**, Microtrace LLC

## **Fiber Contact Traces – Distribution and Persistence**

This workshop aims to show how the mechanism of fiber transfer in case of contact traces works, what the examiner has to consider, what kind of persistence ability we have to expect and what potential fiber traces can offer in forensics.

The workshop covers the collection of trace evidence (fibers) at the crime scene and the aspects and considerations where to collect evidence on the scene. The problem of contamination and sensible solutions will be discussed and shown during this workshop.

The WS will cover different techniques and schemes of trace recovery and various materials used for this purpose.

Another big issue of this workshop is the difference between fiber behavior on moved and unmoved objects or victims and also moving victims and offenders. The behavior and distribution on different surfaces will be assessed, persistence studies will be presented (persistence of fibers on skin, clothes) and evaluated during practical exercises including the aspects of transfer (primary, secondary ...), loss and possible redistribution of fibers.

### **Moderator:**

**Sandra Koch**, FBI Laboratory

### **Presenters:**

**Kornelia Nehse**, Forensic Science Institute

**Wolf Krause**, Forensic Science Institute

## **Statistics**

This one-day workshop will review the application of statistical methods to practical decisionmaking requirements in the forensic laboratory. Of particular interest is the application of statistical methods to the analysis of both univariate and multivariate data based on class evidence, where the challenge is to assess similarity or dissimilarity in comparisons of questioned and known samples. The specific statistical concepts covered include measures of

accuracy and uncertainty, confidence intervals for means, hypothesis tests (both parametric and nonparametric) for comparing means and for comparing variances, one-way analysis of variance, and outlier detection. The use of receiver-operator characteristic (ROC) plots for evaluating decisions will also be presented as will the application of multivariate statistics to trace evidence data from a variety of spectroscopic (e.g., UV/visible, IR, and Raman spectra), chromatographic, mass spectrometric, and other sources. Principal component analysis, linear discriminant analysis, and cluster analysis for comparison and discrimination of trace evidence data will be presented, along with necessary validation procedures and multivariate hypothesis tests.

**Moderator:**

**Jose Almirall**, Florida International University

**Presenter:**

**Stephen Morgan**, University of South Carolina

**John Goodpaster**, IUPUI

**Ed Bartick**

**Chemical and Physical Material Analysis**

This workshop will outline the techniques that are commonly used for the identification of chemical unknowns. Specific attention will be paid to microscopical examinations, wet chemical techniques, and various forms of instrumental analysis. A logical approach to the examination of chemical unknowns will also be discussed. As part of the workshop, several attendees will be invited to participate. These individuals will receive a set of blind samples to be analyzed in their laboratories using their protocols. The results obtained and the methods used during analysis will be discussed.

**Moderator and Presenter:**

**Vincent Desiderio**, New Jersey State Police

**Presenters:**

**Andrew M. Bowen**, Stoney Forensic, Inc.

**William L. Chapin**

**Paint Data Query (Day One)**

Over 30 years ago, the Royal Canadian Mounted Police (RCMP) created an automotive paint database to help forensic scientists determine vehicle manufacturer, make, assembly plant, and year from a small paint chip left at a crime scene. This database, now known as Paint Data Query (PDQ) has grown to include samples of vehicle paint from not only North America, but also from Australia/New Zealand, Japan, and Europe. The PDQ workshop is designed to be a hands-on training session in which the attendees will receive instruction in the organization of the database, will practice classifying paint systems, will enter queries into PDQ, and will gain the basic interpretive skills necessary for evaluating the results obtained from a search. With an understanding of the database software and confidence in the query parameters entered, the

paint examiner will be able to provide an accurate assessment of possible sources for a questioned paint sample, utilize the database for making significant assessments for paints in K/Q comparative situations, and utilize the database for maintaining their understanding of the structure and chemistry of modern automotive paints. Prior training and practical experience in paint analysis and FTIR paint examinations and classifications are recommended.

**Moderator and Presenter:**

**Diana Wright**, Federal Bureau of Investigation

**Presenter:**

**Tamara Hodgins**, Royal Canadian Mounted Police

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**Tuesday, August 9, 2011**

**8:30am-12:00 pm      Concurrent Workshops**

**Advanced Fire Debris Analysis Interpretation**

The Advanced Fire Debris Workshop will include discussion in the following topic: Environmental degradation, Competitive adsorption complications, Petroleum Refining and Fuel variations, E1618 New report writing section, Molotov cocktail study, and a group participation with regard to difficult fire debris cases

**Moderator:**

**David Green**, Lake County Crime Laboratory

**Presenter:**

**Ronald Kelly**, Federal Bureau of Investigation

**Fracture Match Course**

After attending the workshop, attendees will have learned basic theory of fracture match and gained a better understanding of the applications of this examination in forensic casework. Attendees will have the opportunity to apply their skills by working on practical exercises utilizing case scenarios designed to challenge them and refine their ability to apply this technique. This presentation will impact the forensic community by providing attendees knowledge of fracture match examinations and its uses in the forensic science/law enforcement community.

**Moderator:**

**Chris E. Taylor**, US Army Criminal Investigation Laboratory

**Presenter:**

**Troy Nowak**, US Army Criminal Investigation Laboratory

**Trace Evidence Awareness for Non and New Trace Analysts**

Information to come

**Paint Data Query (Day Two)**

Over 30 years ago, the Royal Canadian Mounted Police (RCMP) created an automotive paint database to help forensic scientists determine vehicle manufacturer, make, assembly plant, and year from a small paint chip left at a crime scene. This database, now known as Paint Data Query (PDQ) has grown to include samples of vehicle paint from not only North America, but also from Australia/New Zealand, Japan, and Europe. The PDQ workshop is designed to be a hands-on training session in which the attendees will receive instruction in the organization of the database, will practice classifying paint systems, will enter queries into PDQ, and will gain the

basic interpretive skills necessary for evaluating the results obtained from a search. With an understanding of the database software and confidence in the query parameters entered, the paint examiner will be able to provide an accurate assessment of possible sources for a questioned paint sample, utilize the database for making significant assessments for paints in K/Q comparative situations, and utilize the database for maintaining their understanding of the structure and chemistry of modern automotive paints. Prior training and practical experience in paint analysis and FTIR paint examinations and classifications are recommended.

**Moderator and Presenter:**

**Diana Wright**, Federal Bureau of Investigation

**Presenter:**

**Tamara Hodgins**, Royal Canadian Mounted Police

**Animal Hair Identification for Forensic Scientists**

The goal of this 4-hour workshop is to familiarize participants with procedures for sampling, preparing, and examining animal hair using transmitted light microscopy. Activities will include a review of mammalian taxonomy and the types of forensic cases involving animal hair; examination and sampling of pelts; preparation and curation of hair standards and exemplars; use of transmitted light microscopy to examine medullary and cuticular characteristics, particularly in domesticated mammals.

**Moderator:**

**Amy Michaud**, Bureau of Alcohol, Tobacco, Firearms, and Explosives

**Presenter:**

**Bonnie Yates**, U.S. Fish and Wildlife

**Identification of Natural Fibers**

This workshop will familiarize participants with the microscopical identification of various types of natural fibers including vegetable fibers, wool-type fibers, silks and mineral fibers which may be encountered in criminal investigations. Lectures will focus on the examination of microscopical structures used for the recognition of various natural fiber types. There will also be a review of natural fiber sources, processing, and end uses.

**Moderator:**

**Sandy Parent**, Texas Department of Public Safety

**Presenter:**

**Leonora Bender**, Bureau of Alcohol, Tobacco, Firearms, and Explosives

**12:00 pm-1:00pm**

**Lunch on your Own**

**1:00pm-1:15 pm**                    **Welcome and Opening Remarks**

**FBI Representative**

**NIJ Representative**

**1:15pm-3:00 pm**                    **Debating the Merits of Trace Evidence Analysis and Interpretation**

The aim of this opening panel is to discuss the current challenges, concerns and successes in trace evidence practice in order to set the tone for the rest of the meeting and, in particular, to provide background for the next panel. The presentations will stimulate an honest debate and describe the issues already raised by NAS and others with an aim towards laying the foundation for making continued progress in our discipline.

**Moderator:**

**Joe Bono**, Past President AAFS

**Presenters:**

**Rock Harmon**, Consultant

**Maureen Bottrell**, Federal Bureau of Investigation

**Michael Risinger**

**David Exline**, Gateway Analytical

**3:00pm-3:30 pm**                    **Break**

**3:30pm-5:00 pm**                    **Trace Evidence Moving Forward**

The panel will discuss how trace evidence is moving forward in various aspects of this unique field. Participants will receive perspectives from the international, federal and state communities. This panel will also discuss specific topics proposed to them or potential comments raised in the debate/panel before the session. The session will end with any questions from the attendees.

**Moderator:**

**Dick Bisbing**, McCrone Associates

**Presenters:**

**Gerry LaPorte**, National Institute of Justice, U.S. Department of Justice

**Claude Roux**, University of Technology, Sydney

**Vincent Desiderio**, New Jersey State Police

**Joann Buscaglia**, Federal Bureau of Investigation

**5:30pm-7:30 pm**

**Networking Event in the Vendor Hall with Posters**

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**Wednesday, August 10, 2011**

**8:00-10:00 am**

**Presentation of Case Studies**

*Chicago/San Francisco*

The presenters in this session will discuss different approaches and analytical techniques utilizing for solving unique and challenging cases involving trace evidence, which include fibers, soil, paint and stomach content.

**Moderator:**

**Dave Green**, Lake County Crime Laboratory

8:00am-8:25 am

***The Jig- Saw Murder***

**Ray Palmer**, The Forensic Science Service

8:25am-8:50 am

***Case Studies in the Identification of Food Microtraces Derived from Vomit and Gastric Contents***

**William Schneck**, Washington State Patrol Crime Laboratory

8:50am-9:15 am

***The Application of an Extra Paint Layer to Burglary Tools to Identify Persons Involved in Bank Robbery***

**Maarten Hordijck**, Netherlands Forensic Institute

9:15am-9:40 am

***A Blind Comparison of Multiple Analytical Methods for Soil Comparison in a Home Invasion Robbery Double Shooting Case in Urban Phoenix, AZ***

**Gwyneth Williams Gordon**, Arizona State University

9:40-10:00 am

Q&A

**10:00am-10:30am**

**Break**

**10:30am -12:15pm**

**Concurrent Sessions**

**SOIL**

*Chouteau Room*

The presenters in this session will discuss various approaches to forensic soil analysis and the current state of this type of testing within the United States. The time at the end of the session will be devoted to questions and answers or a panel and audience discussion on soil analysis.

**Moderator:**

**Chris Taylor**, US Army Criminal Investigation Laboratory

10:30am-10:50am

***The Status of Forensic Geosciences in the United States***

**Marianne Stam**, California Department of Justice

10:50am-11:10am

***The Potential of Mineral Varieties for Forensic Soil Analysis***

**Andrew Bowen**, Stoney Forensic, Inc.

11:10am-11:30am

***The Utility of Microbial Profiling for Identification of Trace Soil Samples***

**Ethan Smith**, Michigan State University

11:30am-11:50am ***Forensic Soil Microscopy: Techniques and Casework Applications***  
**Skip Palenik**, Microtrace LLC

11:50am-12:15pm Q&A

## **PAINT**

*Empire AB*

This session will include presentations regarding the analyses and identification of pigments encountered in paint, the discriminating power of physical and chemical comparisons of single-layer white architectural paints and an overview of the Paint Data Query (PDQ) database.

### **Moderator:**

**Sandy Parent**

10:30am-10:50am ***Identification of Bismuth Oxychloride, a Pearlescent Pigment, in Automotive Paint Using Infrared Spectroscopy and Elemental Analysis***  
**Edward Suzuki**, Washington State Patrol Crime Laboratory

10:50am-11:10am ***Chemical Classification of Pigments by Raman Spectroscopy for Forensic Applications***  
**Christopher Palenik**, Microtrace LLC

11:10am-11:30am ***Characterization and Discrimination of Single White Layer Architectural Paints***  
**Diana Wright**, FBI Laboratory

11:30am-11:50am ***Paint Data Query Automotive Database***  
**Tamara Hodgins**, Royal Canadian Mounted Police

11:50am-12:15pm Q&A

## **Things that go BOOM**

*Chicago/San Francisco*

This panel will deal with a variety of trace evidence materials dealing with analytical techniques for explosive, airbag residues, gunshot residues and tire treads examinations.

### **Moderator:**

**Jenny Smith**, Missouri State Highway Patrol Crime Laboratory

10:30am-10:50am ***Pyrotechnic Reaction Products of a Different Kind***  
**David Flohr**, US Army Criminal Investigation Crime Laboratory

10:50am-11:10am ***Bang! Goes the Airbag; Using Dust from Deployed Airbags as Trace Material in Automotive Crimes.***  
**Louissa Marsh**, LGC Forensics

11:10am-11:30am ***NONTOX Ammunition in Criminal Casework***  
**Robert Berk**, Illinois State Police

11:30am-11:50am ***The Potential of Pyrolysis-GC/MS for the Analysis of Tire Traces and Tire Treads***  
Line Gueissaz, Univeristy of Lausanne

11:50am-12:15 pm Q&A

**12:15pm-3:00 pm Poster Sessions and Box Lunch in Exhibit Hall**

***Forensic Analysis of Glass Using Laser Induced Breakdown Spectroscopy (LIBS)***

Erica Cahoon, Florida International University

***Slippery When Wet: Analysis of a Wet Silencer in a Homicide Case***  
Micheal Villareal, U.S. Army Criminal Investigation Laboratory

***Foundry Sand and Murder***

William Schneck, Washington State Patrol Crime Laboratory

***PDMS Condom Lubricant: Persistence on the Penis and Presence in Personal Care Products***

Sally Coulson, ESR

***Effects of Decomposition/Post-mortem Environment on Fabric Damage***  
Sandra Koch, FBI Laboratory

***An Evaluation of Microanalysis Techniques for Materials Characterization in the Terahertz Spectral Region 9 to 1.5 THz (300 to 50 cm<sup>-1</sup>)***

Donna Wilson, Washington State Patrol Crime Laboratory

***The Identification of Metal Transfer from Bullets onto Laminated Glass***  
John Chester, Indiana State Police Laboratory

***The Evidential Value of Finding Glass on Head Hair and Headwear***  
Claude Roux, University of Technology, Sydney

***The Impact of Chromatic Aberration on the Infrared Microspectral Analysis of Trace Evidence***

Brooke Kammrath, John Jay College of Criminal Justice

***Hyperspectral Imaging as a Method of Detecting and Visualizing Ignitable Liquid Residues***

Cara Plese, ChemImage Corporation

***Inter-Laboratory Comparison of LA-ICP-MS,  $\mu$ XRF and LIBS methods for Bulk Soil Analysis***

Sarah Jantzi, Florida International University

***Prevalence of GSR on the Hands of Police Officers***  
Emily Turner, Oregon State Police

***The Effect of Pigment Type on Pigment Variation due to Differential Mixing in Spray Paints***  
Kris Gates, Oregon State Police

***Improvements in Analytical Precision in the Forensic Analysis of Glass through the Use of Metal Filters in  $\mu$ -XRF Analysis***  
Chris Palenik, Microtrace, LLC

***The Efficacy of Hair Washing Prior to Submission for Nuclear DNA Analysis***  
Celeste Grover, Oregon State Police

***Validation of X-ray Fluorescence (XRF) to Determine Osseous or Dental Origin of Unknown Material***  
Richard Thomas, FBI Laboratory

***Precision of Elemental Analysis Measurements of Glass by  $\mu$ -XRF and the Impact on Forensic Comparisons***  
Melissa Valadez, Texas Department of Public Safety Crime Laboratory

***Is That Hair From the Laundry?***  
Tami Atwell, Indianapolis-Marion County Forensic Services Agency

***The Characterization and Discrimination of Pink and Red Nail Polish Lacquers: A Preliminary Study***  
Edward Sisco, University of Maryland

***Electrospray Ionization-Mass Spectrometry (ESI-MS) Identification of Urea Nitrate and Ammonium Nitrate Residue***  
Inge Corbin, Florida International University

***A Comparison of Solution Based and Laser Ablation ICP-MS Analysis of Forensic Glass Samples and A Proposed Standard Test Method for Determination of Trace Elements in Glass Samples Using Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS)***  
Randall Nelson, Tennessee Bureau of Investigation

***Standards and Best Practice in Microscope Photometry for Validation, Quality Control, and Admissibility***  
Dale Purcell, City University of New York

***Glass Annealing Re-Visited***  
Tiffany Eckert-Lumsdon, U.S. Army Criminal Investigation Laboratory

***Method Development for the Rapid Separation and Detection of Organic Gunshot Residue by UPLC/MS/MS***

**Jennifer Greaux**, Florida International University

***Forensic Characterization and Chemical Identification of Dyes Extracted from Millimeter-length Fibers***

**Stephen Morgan**, University of South Carolina

***Forensic Analysis of Textile Fiber Dyes by Diffuse Reflection and Reflection-Absorption Infrared Spectroscopy***

**Mary Carraba**, Southern Oregon University

***Forensic Palynological Investigation of Marijuana use: From Paraphernalia to Corpses***

**Karl Reinhard**, University of Nebraska

***Characterization of Materials by Elemental Analysis;  $\mu$ XRF, LA-ICP-MS and LIBS Method Performance, Use of Match Criteria and Significance of Association***

**Jose Almirall**, Florida International University

**3:00pm-5:30pm**

**Concurrent Sessions**

**GLASS**

**Chouteau Room**

The presenters in this session will discuss different approaches to the interpretation, evaluation, and techniques utilized for elemental analysis of glass for forensic casework.

**Moderator:**

**Maureen Bottrell**, FBI Laboratory

3:00pm-3:20pm

***Investigation of Changes of the Refractive Index of Small Glass Fragments Caused by Laser Ablation***

**Stefan Becker**, Forensic Science Institute

3:20pm-3:40pm

***Elemental Analysis of Glass by LA-ICP-OES for Forensic Discrimination Purposes***

**Emily Schenk**, Florida International University

3:40pm-4:00pm

***A Proposed Standard Test Method for Forensic Analysis of Glass Using Capillary Micro-x Ray Fluorescence Spectrometry***

**Kristine Olsson**, Johnson County Sheriff's Office Crime Laboratory

4:00pm-4:15pm Q&A

**4:15pm-4:30pm**

**Break**

- 4:30pm-4:50pm ***When is a Peak, a Peak? Calculating Detection and Quantification Limits for Micro X-ray Fluorescence Spectrometry of Glass Samples***  
Troy Ernst, Michigan State University
- 4:50pm-5:10pm ***Predictive Modeling for Determining the Discriminative Power of Trace Glass Evidence as a Function of the Number of Sampled Glass Fragments***  
Eric Kalendra, George Mason University
- 5:10pm-5:30pm ***Update on Elemental Analysis Working Group***  
Jose Almirall, Florida International University

5:30pm-5:45pm Q&A

### **FIBER**

*Empire AB*

This session will focus on new advances in the analysis of dyed fibers. Presentations will be on topics of discrimination of fiber trace evidence via dichroic ratio measurements, uv-visible microspectrophotometry, time-of-flight mass spectrometry in conjunction with capillary electrophoresis or liquid chromatography, statistics and fibers comparisons, and assessment of automotive fibers.

#### **Moderator:**

**Keith Beck**, College of Textiles, North Carolina State University

- 3:00pm-3:20pm ***Visible Light Dichroic Ratio Measurements for Classification and Discrimination of Fiber Trace Evidence***  
Dale Purcell, The Graduate Center, City University of New York
- 3:20pm-3:40pm ***Discrimination of Dyed Cotton Fibers Based on UV-visible Microspectrophotometry and Multivariate Statistical Analysis***  
John Goodpastor, IUPUI
- 3:40pm-4:00pm ***Analysis of Fibre Dyes by Capillary Electrophoresis - Quadrupole Time-of-Flight Mass Spectrometry***  
Claude Rouxe, Center for Forensic Science, University of Technology, Sydney, Australia
- 4:00pm-4:15pm Q&A
- 4:15pm-4:30pm Break**
- 4:30pm-4:50pm ***Comparative Finished Fiber Analysis Using Liquid Chromatography, Nano-Sampling Cryomicrotomy and Time-of-Flight Mass Spectrometry Techniques***  
David Hinks, College of Textiles, North Carolina State University

- 4:50pm-5:10 pm     ***Evaluation of Statistical Measures for Fiber Comparisons by Interlaboratory Studies***  
**Stephen Morgan**, University of South Carolina
- 5:10pm-5:30 pm     **Assessing the Random Match Probability of Automotive Carpet Fibers**  
Harold Deadman, Metropolitan Police Department Crime Laboratory
- 5:30pm-5:45 pm     Q&A

**Non-Conventional Trace Evidence**

*Chicago/San Francisco*

The presenters in this session will discuss analytical techniques used on a variety of different trace evidence materials including condom and sexual lubricants, black electrical tape, glitter, non-human DNA, and polyurethane foam particles. Two cases involving unusual trace evidence will also be presented.

**Moderator:**

**Amy Michaud**, Bureau of Alcohol, Tobacco, Firearms, and Explosives

- 3:00pm-3:20pm     ***Method Validation for the Analysis of Condom and Sexual Lubricants Using Direct Analysis Mass Spectrometry***  
**Jeffrey Dake**, U.S. Army Criminal Investigation Laboratory
- 3:20pm-3:40pm     ***The Analysis of Black Electrical Tape as Forensic Evidence***  
**Madlan Margue**, Centre of Forensic Sciences
- 3:40pm-4:00pm     ***Glitter: The Ideal Trace Evidence?***  
**Claude Rouxe**, Center for Forensic Science, University of Technology, Sydney, Australia
- 4:00pm-4:15pm     Q&A
- 4:15pm-4:30pm     Break**
- 4:30pm-4:50pm     ***Taxonomic Identifications of Traces Using Non-Human DNA***  
**David Stoney**, Stoney Forensic, Inc.

- 4:50pm-5:10pm ***Contribution to the Characterization, Identification and Comparison of Polyurethane Foam Particles***  
**Skip Palenik**, Microtrace LLC
- 5:10pm-5:30pm ***The Strength of Trace Evidence: Two Case Studies where Unusual Trace Evidence has Impacted Legal Proceedings***  
**Kari Pitts**, ChemCentre
- 5:30pm-5:45pm Q&A

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**Thursday, August 11, 2011**

**8:00am-8:30am      Case Study Presentation      Chicago/San Francisco**

***Processing of Deceased Bodies by Trace Evidence Examiners in the Morgue Setting***

"One of the unique responsibilities of the trace evidence examiners at the Tarrant County Medical Examiner's Office is the processing of decedent's bodies for evidentiary materials. Last year alone, approximately fifty bodies were examined by the trace evidence team. This presentation will outline the procedures utilized to efficiently and effectively recover trace materials in a morgue setting prior to autopsy. Numerous case examples will be related to demonstrate the value of this procedure.

**Moderator:**

**Sandra Koch**, Federal Bureau of Investigation, Quantico, Virginia

**Presenters:**

**Patricia Eddings**, Tarrant County Office of the Chief Medical Examiner

**Kelly Belcher**, Tarrant County Office of the Chief Medical Examiner

**8:30am-10:10am      Instrumental Analysis      Chicago/San Francisco**

This session will include presentations on the use of instrumentation for the micro analysis of trace evidence including the use of SERS (Raman) methods for dye analysis, the use of a combined Raman/LIBS microscope system, the use of a femtosecond laser ablation system coupled to ICP-MS and a comparison between various instrumental methods for the characterization of glass evidence.

**Moderator:**

**Stephen Morgan**, University of South Carolina

8:30am-8:50am      ***Surface Enhanced Raman Spectroscopy (SERS) Methods and Databases for the Characterization of Dyes***

**Deanna O'Donnell**, City College of New York

8:50am-9:10am      ***Analysis of Trace Evidence Using a Combined Raman/LIBS Microscope System***

**David Exline**, Gateway Analytical LLC

9:10am-9:30am      ***Improvements in Laser Ablation Inductively Coupled Plasma-Mass Spectrometry for Trace Forensic Analysis of Common Household Products Using a Short (100 Femtosecond) Pulse Ultraviolet Laser***  
**Megan Mekoli**, Iowa State University

9:30am-9:50am ***Evaluation of the Performance of Different Match Criteria for the Comparison of Elemental Composition of Glass by  $\mu$ -XRF, ICP-MS, LA-ICP-MS and LIBS***  
**Tatiana Trejos**, Florida International University

9:50am-10:10am Q&A

**10:10am-10:30am Break**

**10:30am-12:35pm Interpretation of Data Chicago/San Francisco**  
Trace evidence reporting has been under scrutiny since the NAS report. The question is, how to assess the significance of our findings? This panel will explore different approaches to interpreting trace evidence data.

**Moderator:**

**William Randle**, Missouri State Highway Patrol Crime

10:30am-10:50am ***Time to Rethink Dusts***  
**David Stoney**, Stoney Forensic, Inc.

10:50am-11:10am ***Trace Materials on Footwear - Science or Ichnomancy? The Perils for Interpretation of Soil Trace Evidence***  
**Ruth Morgan**, University College London

11:10am-11:30am ***ROC Curves for Methods of Evaluating Evidence: A Common Performance Measure Based on Similarity Scores***  
**Robert Patterson**, George Mason University

11:30am-11:50pm ***Improving Investigative Lead Information and Evidential Significance Assessment for Automotive Paint by Development of Pattern Recognition Based Library Search Techniques***  
**Barry Lavine**, Oklahoma State University

11:50am-12:10pm ***On Parametric Models for Pairwise Comparisons with Applications to the Estimation of Random Match Probabilities***  
**Donald Gantz**, George Mason University

12:10pm-12:35pm Q&A

**12:35pm-2:00pm**

**Keynote Lunch Presentation**

**Chicago/San Francisco**

**Microscopic Trace Evidence: The Overlooked Clue**

In recent years trace evidence has become, almost exclusively, a tool to be used at trial. It's traditional use, however, was to help detectives in developing leads to further their investigations. This presentation will first describe a few historical cases that originally highlighted the value of microscopic trace evidence in solving crimes and will be followed by several examples from the author's casebook that illustrate the success of this approach in recent investigations. The principles underlying this approach and the techniques and thought processes that lead to its successful application will be described and illustrated.

**Presenter:**

**Skip Palenik**, Microtrace LLC

**2:00pm-3:30 pm**

**Report Writing**

**Chicago/San Francisco**

This session will discuss the various report writing formats currently in use in the Trace Evidence community. The use of levels of association versus reporting the results and saving a detailed discussion of the methods and interpretation for court or including a description of methods and interpretation into report documents will be covered as well as how these formats have been received in criminal justice community.

**Moderator:**

**Sandy Parent**, Texas Department of Public Safety

2:00pm-2:20pm

***Communicating Conclusions - Customer Feedback from the Criminal Justice System***

**Helen Griffin**, Ventura County Sheriff's Forensic Sciences Lab

2:20pm-2:40pm

***Results and Discussion of the Opinions of the Trace Evidence Community Regarding the Significance of Comparative Examinations and Report Writing Using Verbal Frameworks***

**Sarah Walbridge-Jones**, Minnesota Bureau of Criminal Apprehension

2:40pm-3:00pm

**European Presentation on Report Writing**

**Kornelia Nehse**, Forensic Science Institute

3:00pm-3:20pm

**Mike Smith**, Federal Bureau of Investigation

3:20pm-3:30pm

Q&A

**3:30pm-3:40pm**

**Poster Award Presentation,**

**Vincent Desiderio**, New Jersey State Police

**3:40pm-4:00pm**

**Closing Remarks**

**Charles Heurich**, National Institute of Justice, U.S. Department of Justice, Washington, DC