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OF FORENSIC SCIENTISTS
ANNUAL MEETING

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Keynote Speaker

Dana Kollmann, PhD

Towson University

Let them Soil Their Knickers:

Melding Forensic Science Education with Real Case Experience.

The Forensic Educational Programs Accreditation Commission has provided a means to validate and ensure the quality of forensic science programs throughout the country. Given the large number of undergraduate students that enroll in these courses of study, not all have the opportunity to gain experience visiting a crime scene or interning in a crime lab. Experiences such as these tend to be a prerequisite to most entry-level forensic positions. This talk will address challenges faced by educators in the forensic sciences and the reciprocal benefit of creating partnerships with organizations including law enforcement, K-9 search and rescue, and missing persons groups.

Dana Kollmann holds a BS degree in anthropology from Towson University, a MFS from George Washington University, and a MA and a Ph.D. in anthropology from American University. She currently works as an Assistant Clinical Professor in the Department of Sociology, Anthropology and Criminal Justice at Towson University. Dana has 11 years of crime lab experience, 10 of which was obtained through her work as a Forensic Services Technician with the Baltimore County Police Department. Dana's experience in forensic archaeology and anthropology has been obtained primarily through her training at the Smithsonian Institution. In the past 10 years, she has performed exhumations of at least 35 different archaeological and clandestine grave sites throughout the country as well as in Guatemala and Croatia. She proudly serves as a DMORT member, where she assisted in the field recovery and identification of Americans who perished in the 2010 earthquake in Haiti.



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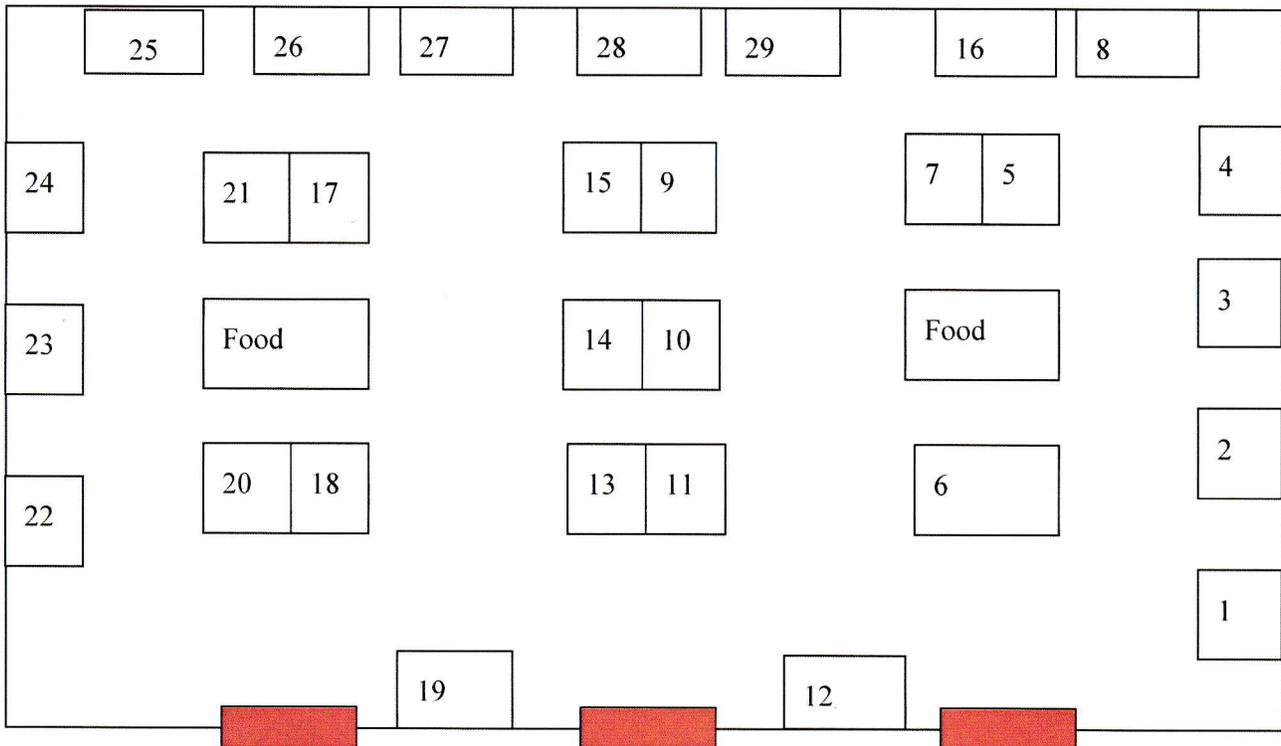
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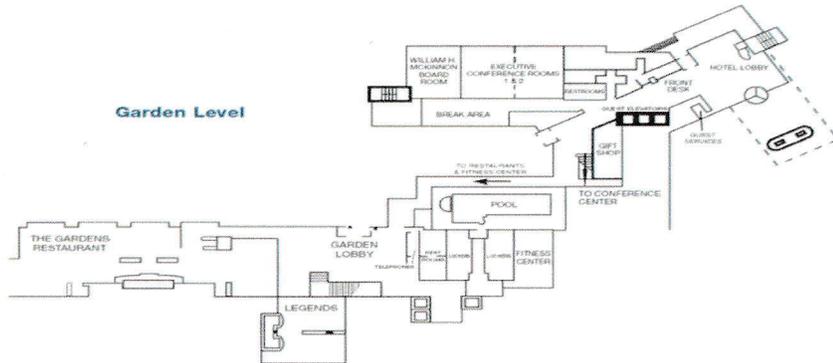
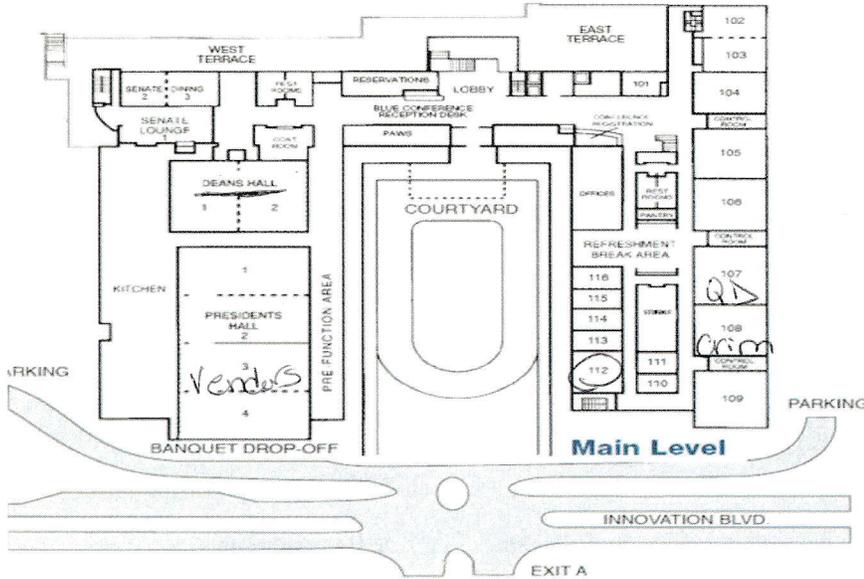
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Floor Key:

Registration.....	Conference Registration
MAAFS Office.....	101
Plenary/General/Keynote.....	Dean's Hall
Biology Section.....	Dean's Hall
Criminalistics Section.....	108
QD Section.....	107
Business Meeting.....	Dean's Hall
Breaks (M-T).....	1st and 2nd Floor Breakouts
Breaks (W, F).....	Dean's Lobby/1st Floor Breakouts
Breaks (R).....	President's Hall
FLEX Social.....	Senate Lounge
Breakfast/Lunch.....	Gardens Restaurant
Carnival Gala.....	West Terrace
Hospitality Suite.....	Mount Nittany Suite
Vendors.....	President's Hall
Vendor Spotlight.....	Dean's Hall
Welcoming Cocktail Reception.....	President's Hall
Vendor Reception.....	Senate Lounge

Workshop Locations:

Paint Data Query.....	206
Fire Debris Analysis.....	205
Principles of Uncertainty.....	106
Next Generation Sequencing.....	204
Synthetic Compounds.....	108
Postmortem Hair.....	Lobby
DNA Statistics/New Chemistries.....	208
Demystifying ABFDE.....	211
ABC Exam.....	112

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Schedule

Sunday, May 18th

5:00 - 8:00 Registration Conference Registration

Monday, May 19th

7:00 - 5:00 Registration Conference Registration

7:00 - 8:00 Breakfast (*ticket required*) Gardens Restaurant

9:00 - 11:00 Continuous Break 1st and 2nd Floor Breakouts

8:00 - 5:00 Pint Data Query (PDQ) 206

Fire Debris Analysis for the New/Occasional Analyst (Basic) 205

8:00 - 11:30 Basic Principles of Uncertainty of Measurement 106

Next Generation Sequencing (continues until 12 pm) 204

11:30 - 1:00 Lunch (*Ticket Required*) Gardens Restaurant

1:00 - 5:00 Emerging Trends and Analysis of Synthetic Compounds 108

Postmortem Hair Workshop (**meet in lobby at 12:30**) Offsite -333 Whitmore

Next Generation Sequencing Offsite -Thomas Basement

(*meet in lobby at 1pm, continues until 5:30 pm*)

2:00 - 4:00 Continuous Break 1st and 2nd Floor Breakouts

5:00 Dinner (on your own)

9:00 - 12:00 Hospitality Suite Mount Nittany Suite

Tuesday, May 20th

7:00 - 5:00 Registration Conference Registration

7:00 - 8:00 Breakfast (*Ticket Required*) Gardens Restaurant

9:00 - 11:00 Continuous Break 1st and 2nd Floor Breakouts

8:00 - 5:00 Fire Debris Analysis for the Experienced Analyst (Advanced) 205

Demystifying the ABFDE Certification Process 211

Emerging Trends and Analysis of Synthetic Compounds 108

Paint Data Query (PDQ) 206

8:00 - 12:00 DNA Statistics 208

11:30 - 1:00 Lunch (*Ticket Required*) Gardens Restaurant

5th
(542?)



Schedule

Tuesday, May 20th (continued)

1:00 – 5:00	New Chemistries in DNA (Hot Topics)	208
2:00 – 4:00	Continuous Break	1st and 2nd Floor Breakouts
5:00	Dinner (on your own)	
6:00	ABC Exam	112
	Executive Board Meeting	Meet in Lobby
9:00 – 12:00	Hospitality Suite	Mount Nittany Suite

Wednesday, May 21st

7:00 – 5:00	Registration	Conference Registration
7:30 - 9:00	Breakfast	Gardens Restaurant
9:00 - 11:00	Continuous Break	Dean's Lobby
8:30 – 11:30	Plenary Session “Scientific Neutrality in Expert Witness Testimony”	Dean's Hall
11:30 – 1:00	Lunch	Gardens Restaurant
1:00 – 1:40	General Session “The Organization of Scientific Area Committees”	Dean's Hall
2:00 – 4:00	Continuous Break <i>Sponsored by MitoTyping</i>	Dean's Lobby & 1st Floor
1:45 – 4:30	Biology Section	Dean's Hall
	Criminalistics Section	108
	Questioned Documents Section	107
5:00 – 7:00	Welcoming Cocktail Reception <i>Welcome to the Forensics Fair</i>	President's Hall
7:00	Dinner (on your own)	
7:00 – 8:00	Vendor Reception <i>Reception for Vendors, MAAFS Executive Board & Meeting Committee Only</i>	Senate Lounge
9:00 – 12:00	Hospitality Suite	Mount Nittany Suite



Schedule

Thursday, May 22nd

7:00 – 5:00	Registration	Conference Registration
7:30 – 9:00	Breakfast	Gardens Restaurant
9:00 - 11:00	Continuous Break <i>(Please visit the vendors)</i> <i>Sponsored by Qiagen</i>	President's Hall
7:30 – 5:00	Vendor Area <i>(Please visit the vendors)</i>	President's Hall
8:30 – 11:00	Vendor Spotlight <i>Door Prizes will be given out after each presentation</i>	Dean's Hall
11:15 - 12:15	Keynote Speaker – Ms. Dana D. Kollmann <i>“Let Them Soil Their Knickers”</i>	Dean's Hall
12:15 - 1:30	Lunch	Gardens Restaurant
1:30 – 4:00	Biology Section Criminalistics Section Questioned Documents Section	Dean's Hall 108 107
2:00 – 4:00	Continuous Break <i>(Please visit the vendors)</i> <i>Sponsored by ChemImage</i>	President's Hall
4:00 - 4:45	Student Flex Social <i>(pre-registration required)</i> <i>Sponsored by Penn State University</i>	Senate Lounge
5:00 – 7:00	Business Meeting	Dean's Hall
7:30– 12:00	Carnival Gala <i>(Food 7:30–9:30)</i> <i>Sponsored by Perkin Elmer</i>	West Terrace
12:00 - 1:00	Hospitality Suite	Mount Nittany Suite

Friday, May 23rd

7:30 - 9:00	Breakfast	Gardens Restaurant
9:00 - 11:00	Continuous Break <i>(Please visit the vendors)</i>	Dean's Lobby and 1st Floor
8:30 – 12:00	Biology Section Criminalistics Section	Dean's Hall 108

See You in 2015 in Chesapeake Bay, MD



Agenda

Plenary

Dean's Hall

- Wednesday
- 8:30 Introduction of Speakers
 - 8:45 Role and Responsibilities of the Prosecuting Attorney
Scott Scoville, J.D., Senior Deputy District Attorney; Orange County, CA
 - 9:05 Role and Responsibilities of the Defense Attorney
Lewis H. Buzzell III, J.D., Private criminal defense attorney; Jacksonville, FL
 - 9:25 Role and Responsibilities of the Forensic Science Expert Witness
Charlotte J. Word, Ph.D., Forensic DNA Consultant; Gaithersburg, MD
 - 9:45 Panel Discussion – Relevant Questions for Discussion by the Panel
 - 10:00 Break – please provide written questions to the panel that you would like discussed
 - 10:15 Panel Discussion – More Relevant Questions for Discussion by the Panel

Criminalistics Sessions

108

- Wednesday
- 1:45 Analysis of Phenethylamine Street Drugs for Psychoactive Compounds and Impurities
 - 2:05 Forensic Technology Center of Excellence: Making it Real...Moving Technology from R&D to Your Laboratory
 - 2:40 The Adv. of Using Hydrogen as a Carrier Gas for Controlled Substances Analysis
 - 3:00 Using Direct Sample Analysis Time of Flight Spectroscopy for Confirmational Identification of Street Drug Samples
 - 3:30 Gunshot Residue Collection – Decisions that Make or Break a Case
 - 3:55 Freq. of Occurrence of OEM Automotive Refinishes: A study of 1000 PDQ samples
 - 4:15 Spray Paint: A case study with unexpected obstacles but significant results
- Thursday
- 1:30 Evaluation of Within-Roll Variability in Duct Tape Physical Characteristics
 - 2:00 Evaluation of Between-Roll Variability in Duct Tape Physical Characteristics
 - 2:25 Phish Phood
 - 2:45 Rapid Identification of Synthetic Cannabinoids and Substituted Cathinones
 - 3:10 Round Table Discussion on IGNITABLE LIQUIDS
- Friday
- 8:30 A Long Way Down: The Persistence of GSR in the Air After a Firearm Discharge
 - 9:00 The Characterization of 12 “Legal High” Solids Sold Online as “Bath Salts” or “Herbal Incense Products” Using Direct Analysis in RT Accu-TOFTM Mass Spectrometry
 - 9:30 Feasibility study into use of elemental impurities of sulfamide for use in characterizing different vendors by inductively coupled plasma/mass spectrometry
 - 9:50 Method Validation for the Extraction of Common Drugs in Urine
 - 10:00 Handling the “One Pot” Madness! From the field to the lab and beyond!
 - 10:40 Microscopical Characterization of the Ultrastructure of Postmortem Hair Root Bands and Implications for the Mechanism of Formation



Agenda

Biology Sessions

Dean's Hall

- Wednesday 1:45 Obtaining DNA from archived fingerprints: a sticky situation
2:05 Variation of microRNA Abundance in Forensically Relevant Body Fluids
2:35 Update to "Making Sense of DNA Backlogs, 2010 - Myths and Realities"
2:55 Examination of Proposed Manufacturing Standards Using Low Template DNA
3:35 [QIAGEN's] "Investigator Lyse & Spin Basket" as an Alternative to Diff. Extractions
3:55 qPCR Mixture Determination Using Melting Curve Analysis of STR Loci
4:15 DNA Phenotyping
- Thursday 1:30 A Scientific Defense: Translating DNA to Attorneys and Criminal Defense to Scientists
1:50 DNA Laboratory on Trial
2:30 Results from Property Crime Evidence
2:45 Updating the SRM 2391c: PCR-Based DNA Profiling Standard: Why and When?
3:30 Variation of MicroRNA Expression in Blood, Menstrual Blood and Vaginal Fluid over Biological Time
3:50 Toward a Forensic DNA Microdevice on a Rotation-Driven Platform and Integration of a "Pinwheel" Quantitation Module
- Friday 8:30 Revisiting AP Spray Test in the DNA Age
8:50 Differing Blood Viscosities and their Subsequent Impact on Velocities and Blood Spatter Analysis
9:00 Assessing DNA Recovery from Gum
9:10 Evaluation of the Effects of Substituting Different Proteases in DNA Extraction Methods for Recovery of Human DNA in Simulated Forensic Samples as Assessed by QPCR
9:20 Analysis of RNA degradation in tooth pulp to determine PMI
9:55 The ID of Marker Proteins in Menstrual Blood Using LC-MALDI Mass Spectrometry
10:15 A Comparison of Amplification Systems on a 3500 Genetic Analyzer
10:25 Confirmatory Test for Body Fluids
11:00 Past, Present, and Future of SRM 2372
11:30 The Exhumation & Id of the Historic Remains of Mother Mary Elizabeth Lange

Questioned Documents Sessions

107

- Wednesday 2:05 Photoshop Macros to Simplify Creation of Working Charts
2:25 In Situ Analysis of Ink Lines Made by Blue and Black Ballpoint Pens by Reflectance and Luminescence Spectroscopy Using the CVSC6000HS
3:05 What the \$%&@ -- A Survey of Handwriting Symbols
3:30 Bringing Real CSI to the Classroom
3:40 Statistical Analysis and Likelihood Ratios: A Study during the Development of Individual Handwriting Characteristics
- Thursday 1:30 The Future State of Handwriting Examinations: A Roadmap to Integrate the Latest Measurement Science and Statistics
1:50 Using VSC to Examine Documents Previously Subjected to Latent Print Examination
2:25 Exam of Fragments found in Corner Rounding Machine with Fraudulent ID Documents
2:45 Thermal Ribbon Analysis Platform (TRAP)
3:05 The Burning Question: Was it Evidence?

Notes



MAAFS would like to thank Penn State University and Cheri McConnell for their assistance and hospitality for the 2014 meeting!!

CRIMINALISTICS Section Paper Presentations

WEDNESDAY, May 21, 2014 from 1:45pm to 4:35pm (7 Papers)

*Indicates the individual presenting the paper.

C1: 1:45-2:05pm – Analysis of Phenethylamine Street Drugs for Psychoactive Compounds and Impurities

Maura McGonigal*, Penn State University, Noelle Elliott, Ph. D., Perkin Elmer; Philip Smith, Ph. D., Penn State; Frank Dorman, Ph. D., Penn State University

Serious health complications and fatal overdoses have brought phenethylamine designer drugs, which are marketed as synthetic LSD, to the public's attention. The purpose of this work is to determine not only the identity of the psychoactive compound/s, and their concentrations in the various street samples, but also to determine impurities which may exist from less than ideal synthetic procedures and may be causing the serious health complications. The analysis was performed using ultra-high performance liquid chromatography (UHPLC) coupled with time of flight mass spectrometry (TOF-MS). Additionally, a separate sample introduction technique, direct sample analysis (DSA), was utilized thus providing various methods of analysis and identification of the targeted drugs.

C2: 2:05-2:35pm – Forensic Technology Center of Excellence: Making it Real...Moving Technology from R&D to Your Laboratory

Nicole McCleary, RTI International

The National Institute of Justice Forensic Science Technology Center of Excellence (FTCOE) partnership, administrated by RTI International, contributes to improvements in the field by 1) serving as a partner for the criminal justice community and for NIJ, 2) raising the level of functioning of forensic science in the criminal justice community, 3) quickly identifying the changing needs and capabilities of the criminal justice community with respect to the forensic sciences, 4) bridging the disconnect between criminal justice practitioners and the available technology, and 5) preventing "unproven" technologies from being used in the field and presented in court.

The FTCOE works to fulfill the objectives set forth by NIJ through facilitation of TWG meetings, conducting gap analyses to identify technology needs, improving dissemination and support of NIJ funded research and provides effective in-person technology-transition workshop content that will be accessible to individuals online. The FTCOE also leverages the experience and infrastructure of RTI's Web-based training program as a foundation for training and outreach proven to reach tens of thousands of stakeholders, both domestically and internationally.

This presentation will highlight activities in the areas of Technology Transfer and Research and Development over the last two years that support the forensic science community.

2:35pm – 2:40pm – COFFEE BREAK

C3: 2:40pm-3:00pm – The Advantages of Using Hydrogen as a Carrier Gas for Controlled Substances Analysis

Sarah Keeling*, Fran Diamond, Bruce Quimby - NMS Laboratories

A new GC/MS system for the analysis of forensic chemistry samples utilizes the following enhancements to increase the efficiency of analysis. Hydrogen is used as carrier gas to reduce operating costs. Retention time locking (RTL) is used to maintain precise retention time matching between multiple systems and the database. Backflush provides a mechanism to remove nonvolatile compounds by flow switching and redirecting them out the split vent. Finally, deconvolution reporting software (DRS) is used to identify drugs, even when present in complex mixtures or at trace levels. Results from the new system are compared to a typical helium system currently used for criminalistics analysis.

C4: 3:00pm-3:30pm – Using Direct Sample Analysis Time of Flight Spectroscopy for Confirmational Identification of Street Drug Samples

Roscoe Bennett, Pennsylvania State Police Bureau of Forensic Services

A validation study is developed to confirm street drug samples using the accurate mass data of the parent ion and two soft ionization fragments. The discriminatory power will be evaluated across drug classifications and within drug classifications, including closely related compounds. The advantage of direct sample analysis time of flight spectroscopy is speed. With the potential of no sample prep and fast analysis time this technology could help with the ever increasing workload of drug analysis.

C5: 3:30pm-3:50pm – Gunshot Residue Collection – Decisions that Make or Break a Case

Julia Patterson, RJ Lee Group

When a major crime laboratory stops performing an analysis method, law enforcement and the broader community cannot help but feel suspicious about the method's scientific validity and usefulness in investigations. This presentation will highlight how gunshot residue analysts have successfully dealt with this issue in the wake of the FBI and several large state crime laboratories discontinuing or restricting the analysis of gunshot residue evidence. It will also highlight what can still be gained from the collection of gunshot residue evidence despite common misconceptions of the analysis.

3:50pm – 3:55pm – COFFEE BREAK

C6: 3:55pm-4:15pm - Frequency of Occurrence of OEM Automotive Refinishes: A study of 1000 PDQ samples

Diana Wright, FBI Laboratory

A study of over 1000 original equipment manufacturer (OEM) paint samples was conducted in order to determine the frequency with which OEM refinish layers were observed. Samples were taken from the FBI Laboratory's collection of Paint Data Query (PDQ) submissions from a variety of US partner laboratories. The study also catalogued how many OEM refinish layers might be used in an in-line repair, and which body panels contained an OEM refinish. The underlying goal of the project was to attempt to determine the significance of an OEM refinish association between comparative samples in casework.

C7: 4:15pm-4:35pm – Spray Paint: A case study with unexpected obstacles but significant results

Brenda Christy, Virginia Department of Forensic Science

A case study will be presented which initially presented some analytical obstacles. Once overcome, the results linked two separate crime scenes from a homicide. A subsequent analysis of one of the suspect's clothing unexpectedly linked him to both scenes and "painted" him as an active participant.

THURSDAY, May 22, 2014 from 1:30pm to 4:00pm (4 Papers & 1 Discussion)

*Indicates the individual presenting the paper.

C8: 1:30-2:00pm – Evaluation of Within-Roll Variability in Duct Tape Physical Characteristics

Kiersten LaPorte, Virginia Department of Forensic Science

Fifty-five rolls of duct tape were obtained and sampled at ten equally-spaced distances down the length of the roll. The following physical characteristics were measured or recorded: backing color, backing texture, adhesive color, tape width, total tape thickness, scrim pattern, scrim count, warp yarn offsets, backing only thickness, and number of backing layers. The variation of each characteristic was evaluated and the following tolerances are recommended based on their ability to include at least 99% of within-roll samples: width ± 0.13 mm, total thickness $\pm 11\%$, scrim count ± 1 , and warp yarn offset ± 0.57 mm. Using R Statistical Software, a statistically significant relationship was found between backing texture and backing only thickness variations, resulting in the following backing only thickness tolerances: smooth backing texture $\pm 26\%$, dimpled backing texture $\pm 11\%$.

C9: 2:00-2:20pm – Evaluation of Between-Roll Variability in Duct Tape Physical Characteristics

Robyn Weimer, Virginia Department of Forensic Science

Fifty-five rolls of duct tape were obtained and the following physical characteristics were measured or recorded: backing color, backing texture, adhesive color, tape width, total tape thickness, scrim pattern, scrim count, warp yarn offsets, backing only thickness, and backing layer structure. Using the tolerances recommended during the within-roll variation evaluation, the discrimination power (DP) was calculated for each characteristic. Warp yarn offset was found to be an insignificant physical characteristic with regards to discriminating between duct tape rolls. Additionally, a DP of 99.66% was calculated for the collective analysis of duct tape roll physical characteristics.

2:20pm-2:25pm – COFFEE BREAK

C10: 2:25pm-2:45pm – Phish Phood

Arthur Christy, Virginia Department of Forensic Science

This presentation will discuss the evidence submitted to the Virginia Department of Forensic Science-Eastern Laboratory following a three-night stand by the jam band Phish. The items included a number of edible exhibits and hallucinogenic compounds that are not commonly encountered by our laboratory. Moreover, the analytical scheme used for the high volume of materials will be discussed.

C11: 2:45pm-3:05pm – Rapid Identification of Synthetic Cannabinoids and Substituted Cathinones

Michael Kayat*, Patricia Diaz, Jean Vincenti – Field Forensics, Inc.

A streamlined process is presented for identification of synthetic cannabinoids and substituted cathinones, which is in compliance with current SWGDRUG guidelines. A toolbox comprising Raman spectroscopy, thin layer chromatography and colorimetric drug tests is described, together with validation procedures and sample results. Analysis times are significantly decreased and integrating this toolbox into a laboratory operation would improve efficiency. New types of synthetic drugs now appearing and predicted will also be discussed.

3:05pm-3:10pm – COFFEE BREAK

3:10pm-4:00pm – Round Table Discussion on IGNITABLE LIQUIDS

FRIDAY, May 23, 2014 from 8:30am to 11:00am (6 Papers)

*Indicates the individual presenting the paper.

C12: 8:30am-9:00am – A Long Way Down: The Persistence of Gunshot Residue in the Air After a Firearm Discharge

Stephanie Horner, RJ Lee Group

This presentation examines research into the persistence of gunshot residue in the air after a firearm is discharged. In this research samples were taken at various heights and time intervals after the discharge of a firearm to determine at what rate gunshot residue particles remain in the air around the shooter. A variety of different methods and techniques were examined and evaluated to determine the best experimental setup. The progression of variables and results will be presented and discussed.

C13: 9:00am-9:20am – The Characterization of 12 “Legal High” Solids Sold Online as “Bath Salts” or “Herbal Incense Products” Using Direct Analysis in Real Time Accu-TOF™ Mass Spectrometry

Stephen Raso^{1*}, B.S., Justin Poklis², B.S., Alphonse Poklis^{1,2,3}, Ph.D., Michelle Peace¹, Ph.D.
Department of ¹Forensic Science, ²Pharmacology & Toxicology and ³Pathology, Virginia Commonwealth University, Richmond, VA

Analysis of designer drugs requires quick and adaptable analytical techniques to address laboratory challenges as they advance to next generation compounds “on the street”. The JEOL Accu-TOF™ DART, a high resolution mass spectrometer with atmospheric ionization, was used to determine its viability as a fast and accurate instrument to analyze the emerging designer drugs known as “bath salts” and “herbal incense products (HIPs)”. Twelve solid samples, either powder or plant material, were purchased online as “bath salts” or “HIPs”. Each sample was assessed for homogeneity, and identified using the exact mass within ± 5 mmu of the theoretical molecular ion (M+1) and its associated fragmentation pattern. The Accu-TOF™ DART is a viable instrument for fast and accurate presumptive analyses to characterize emerging designer drugs.

Key words: Accu-TOF™ DART, “bath salts”, “herbal incense products (HIPs)”, drug chemistry

9:20am-9:30am – COFFEE BREAK

C14: 9:30am-9:50am – Feasibility study into use of elemental impurities of sulfamide for use in characterizing different vendors by inductively coupled plasma/mass spectrometry

Ellen Honrogiannis, Towson University

Inductively coupled plasma-mass spectrometry (ICP-MS) was used to quantitate elemental impurities in sulfamide from seven common vendors with the goal of using these impurities to differentiate the sulfamide samples and link the sulfamide back to its vendor. This attribution of the sulfamide back to its vendor is forensically relevant since sulfamide is a precursor to the deadly neurotoxin, tetramethylenedisulfotetramine (TETS). Solution ICP mass spectra identified statistically different concentrations of Cu, Fe, Ni, and Zn among some of the vendors and even in the same lots of the same vendor. These elemental concentrations were entered into discriminant functions which resulted in successful discrimination among the vendors. These preliminary results indicate the feasibility of using inorganic impurities to cluster vendors with the potential for association or disassociation of an unknown back to a vendor.

C15: 9:50am-10:00am – Method Validation for the Extraction of Common Drugs in Urine

Angelic Wray, Forensic Mentors Institute and The Center for Forensic Science Research *
Education

Method validation is necessary for establishing if a method is capable of successfully performing at intended levels, identifies limitations, and determines if a method can produce consistent results. The use of a method requires certain parameters for qualitative screening including limit of detection, interference studies, and carryover. Using an in house basic liquid-liquid extraction, common drugs were analyzed on the GC-MS. Most of the drugs show signs of carryover at 10,000 ng/mL. Therefore, methanol must be run after each sample to prevent a false positive if high concentrations are suspected. The method developed in house was successful for detecting common drugs and is suitable for screening drugs in urine.

C16: 10:00am-10:30am – Handling the “One Pot” Madness! From the field to the lab and beyond!

Derek Price, Virginia Department of Forensic Science

The Southwestern region of Virginia has seen a large increase in the "One pot" method of methamphetamine production over the past few years. This has become a burden on local jurisdictions who are responsible for clean up costs as well as the proper take down, handling and transport of the crime scene evidence, not to mention the increased demand on the laboratory. This presentation will cover how the Western Lab of the VA DFS receives, handles and analyzes suspected "One pot" evidence. Furthermore, the collaborative efforts amongst local jurisdictions to dissipate the cost of cleanup will be covered.

10:30am-10:40am – COFFEE BREAK

C17: 10:40am-11:10am – Microscopical Characterization of the Ultrastructure of Postmortem Hair Root Bands and Implications for the Mechanism of Formation

Jack Hietpas^{1*}, JoAnn Buscaglia², Hilda Castillo¹, Stephen Shaw², Adam Richard¹, Ernest Drummond¹, Joseph Donfack², ¹FBI Laboratory, Visiting Scientist Program; ²FBI Laboratory CFSRU

Postmortem hair root banding (PMRB) is a distinct microscopic feature that is postulated to occur in hairs remaining in the follicle during the postmortem interval (Petraco et al. 1988); two recent high-profile criminal cases involving PMRBs (People v. Kogut and People v. Anthony) have spurred research to better understand this phenomenon.

In our study, detailed observations were made using high-resolution images of ultramicrotome sections of known PMRBs; preliminary results indicate that the appearance of the PMRB may be due to the removal of the chemically labile, non-keratin intermacrofibrillar matrix (IMM) from the pre-keratin region of anagen hairs. In an attempt to investigate potential mechanisms for PMRB formation, antemortem anagen head hairs were subjected to several conditions (e.g., pH series, protease digestions, buffer solutions) that may attack the IMM; initial results indicate

QUESTIONED DOCUMENTS Section Paper Presentations

WEDNESDAY, May 21, 2014 from 1:45pm to 4:30pm (5 Papers)

*Indicates the individual presenting the paper.

QD1: 2:05pm-2:25pm – Photoshop Macros to Simplify Creation of Working Charts

Sandra Miller, Pennsylvania State Police

Questioned Document Examiners often receive numerous documents containing handwriting and signature standards of individuals. The creation of working charts can aid examiners in documenting their observations during comparison examinations. The ability to efficiently organize handwriting standards from several documents into a few working charts is beneficial on several levels. Creating working charts using macros in Photoshop will be explored to aid in the minimization of the repetitive, often time-consuming tasks.

QD2: 2:25pm-2:45pm – In Situ Analysis of Ink Lines Made by Blue and Black Ballpoint Pens by Reflectance and Luminescence Spectroscopy Usint the CVSC6000HS

Saqar Alzaabi, Royal Oman Police

In situ discrimination of blue and black ballpoint pen ink lines on paper was performed using the visible-infrared reflectance and infrared luminescence spectroscopy functions of the VSC6000HS. Ink lines from 30 blue and 30 black ballpoint pens were examined. It was found that about 92% and 94% of the ink lines of the blue and black ballpoint pens respectively could be distinguished using these methods.

The outcomes of this project demonstrated that this methodology of differentiating ballpoint inks did not only provide reproducible results, but also offered a satisfactory, simple, rapid, non-destructive and objective way of differentiating ink entries of blue and black ballpoint pens. >

The results of the study also demonstrated that the VSC6000HS has improved compared to VSC5000 that a previous study had concluded was of no value in ink differentiation analysis of ballpoint inks of the same color by the use of reflectance spectroscopy.

The results have also demonstrated that the paper color has an effect on reflectance and luminescence spectra obtained by VSC6000HS. As a result, comparing ink entries on different colored-paper substrates by these methodologies is not acceptable.

2:45pm – 3:05pm – COFFEE BREAK

QD3: 3:05pm-3:25pm – What the \$%&@ -- A Survey of Handwriting Symbols

Meg O'Brien, USPIS Forensic Laboratory Services

"What the \$%&@ -- A Survey of Handwritten Symbols" examines the characteristics of the handwritten US dollar symbol, percent sign, ampersand, and at symbol of 20 writers. Symbol-form is compared between writers to determine the similarities and differences of written forms, and intra-writer variation between cursive, print, and "every day" writings was also surveyed. This preliminary study seeks to inform the forensic document community about the potential identifiable characteristics of handwritten symbols.

QD4: 3:30pm-3:50pm – Bringing Real CSI to the Classroom

Sandra Hartsock, Retired MSP, Harford Community College – Adjunct Faculty

Many times a request is made to the laboratory for a "Forensic Expert" to come give a talk or participate in a Career Day at a local school. It's usually easy talking about what a Forensic Scientist does on a day to day basis, dispelling the myths of TV versus the Real CSI. But what do you do if there is a request for a hands-on activity to show what is done in the lab? This presentation will shed some light on developing such activities with minimal supplies, many of which are considered "waste" in the lab or even found in your office or home. Many of these activities can also be used in a classroom if teaching an introduction/ overview Forensic Science class.

QD5: 3:40pm-4:00pm – Statistical Analysis and Likelihood Ratios: A Study during the Development of Individual Handwriting Characteristics

Lisa Hanson, Bureau of Criminal Apprehension

The Minnesota Bureau of Criminal Apprehension (MNBCA) is presently involved with a study funded by an NIJ Grant (FY2010). These first three years have only just begun to answer requests from the academic, as well as the legal groups, one of which includes the NAS report published in February, 2009, for scientific research and studies in the pattern recognition sciences. These requests have called for research and validation of the three main hypotheses upon which Forensic Handwriting Examinations are based.

For the past 150 years, there "were" three hypotheses accepted for the basis of Forensic Handwriting Examinations. The first hypothesis: Individual handwriting characteristics develop within younger student's writing when they quit copying or mimicking their teacher's instruction and/or writing instruction copybook. Included within the first hypothesis is also the belief that as a student's writing abilities progresses upward, the number of individual handwriting characteristics also increases. This research however is specific to the first hypothesis and does not deal with the second or third hypotheses.

Over time, as this research continues, the continued gathering of data will enable the researcher to also analyze and develop likelihood ratios that will explain what individual handwriting characteristics and/or combinations of individual handwriting characteristics are unique or not unique. These likelihood ratios will then be entered into a database and made available to all Questioned Document Examiners as the data base continues to be added to overtime.

THURSDAY, May 22, 2014 from 1:30pm to 4:00pm (5 Papers)

*Indicates the individual presenting the paper.

QD6: 1:30-2:00pm – The Future State of Handwriting Examinations: A Roadmap to Integrate the Latest Measurement Science and Statistics

John Paul Jones II, National Institute of Standards and Technology

This presentation will impact the forensic community by summarizing the results of a two day conference on measurement science and standards in forensic handwriting analysis held at NIST on June 4-5, 2013, where key thought leaders discussed the future of the discipline, the barriers of achieving that future and a roadmap for the way forward.

The participants noted that future state of the discipline will incorporate the use of more quantitative analysis tools during the handwriting examination process to assess and compare handwriting characteristics. Forensic Handwriting Examiners will employ the use of statistical models to explain the significance of their conclusions based on the uniqueness of observed and measured handwriting characteristics. However, there is considerable debate over whether these statistics should be presented to a jury and concern about how attorneys will use this information. In the future, more research involving the use of quantitative methods for examinations and statistics will be published in peer reviewed journals which will improve the understanding of these advancements and validate examination methods. There will be a more systematic way to convert research into best practices that examiners can incorporate into their standard operating procedures. Previously established standards will be updated or validated as new technology is used to test longstanding practices.

Additional items envisioned in the future state of the discipline as well as recommendations to advance the discipline will be presented.

QD7: 2:00pm-2:10pm – Using VSC to Examine Documents Previously Subjected to Latent Print Examination

Robert Negherbon, Pennsylvania State Police

Forensic Document Examiners often request that document evidence slated for analysis by other disciplines in addition to questioned documents be submitted to the FDE first. This is especially true if the document is to be examined for latent fingerprints. This presentation will discuss some documents that have first been examined by latent prints and the role instruments such as the VSC can play in helping to analyze writing adversely affected by that process.

2:10pm – 2:20pm – COFFEE BREAK

QD8: 2:25pm-2:45pm – Examination of Fragments found in Corner Rounding Machine with Fraudulent Identity Documents

Gregg Mokrzycki, FBI

This presentation will discuss the examination of fragments found in a corner-rounding machine that was used to shape fraudulent identification documents. Although the fragments were small, the printing patterns found on the pieces and the corresponding identification cards were sufficient to examine and render an opinion. Strategies and techniques to improve examining these type of fragments will be discussed.

QD9: 2:45pm-3:05pm – Thermal Ribbon Analysis Platform (TRAP)

Trista Ginsberg, United States Secret Service

Introducing: the Thermal Ribbon Analysis Platform (TRAP). This new instrument provides the Forensic Document Examiner with an improved and more efficient method of recovering data from used thermal printing ribbons. The development process and capabilities of the TRAP will be discussed.

QD10: 3:05pm-3:30pm – The Burning Question: Was it Evidence?

*Linda Eisenhart - FBI, Pete Belcastro, Jr. – FBI

Visualization of content on charred documents can often provide important information related to criminal or intelligence casework. Charred documents present a challenge in that the content may be destroyed or may be obliterated as a result of the fire and can be difficult to read without specialized photography or infrared imaging. This presentation will focus on the use of hyperspectral imaging (HSI) for visual enhancement of content on charred documentary evidence and will discuss a specific case example.

Vendor Spotlight Sessions

Thursday, May 22nd | Dean's Hall | 8:30am – 11:00am

Leica Microsystems, Inc.....	8:30
3 JBL Travel iPod Speakers	
Perkin Elmer.....	8:40
Kindle Fire HTX 8.9 32GB	
Foster & Freeman.....	8:50
3 \$50 Starbucks Gift Cards	
STaCS DNA.....	9:00
\$150 Visa Gift Card	
10 minute break	
Promega Corporation.....	9:20
iPod Shuffle	
Hamilton Robotics.....	9:30
3 \$50 Amazon Gift Cards	
Applied Spectra, Inc.....	9:40
\$150 Amazon Gift Card	
Eppendorf.....	9:50
\$150 American Express Gift Card	
Mettler Toledo.....	10:00
\$150 Visa Gift Card and T-Shirt	
10 minute break	
ChemImage.....	10:20
12"x12" Personalized Fingerprint Portrait by dna11	
QIAGEN, Inc.....	10:30
Kindle Fire 7" Tablet, HD, Wi-Fi, 16GB	
Life Technologies.....	10:40
\$150 Amazon Gift Card	
SoftGenetics.....	10:50
\$150 Visa Gift Card	

Find out about the MAAFS vendors you aren't familiar with and more about your old favorites!

Take a few minutes to learn about your favorite vendors and more of what they have to offer. The vendors listed on the reverse of this page will each have a 10 minute time slot to introduce their company, products, and research to the attendees of MAAFS 2014.

The vendor spotlights will run back to back, so arrive on time to listen to those you are interested in.

At the close of each vendor's spotlight a door prize will be raffled off!

****the door prize is listed in GREEN under each vendor****

