SUNDAY OCTOBER 27: 1pm – 5pm
Courtroom Challenges
   Roderick Kennedy is the Chief Judge of the State of New Mexico Court of Appeals

Measurement of Uncertainty – Balances
   Mr. Thomas Rohrer, Mettler Toledo

Comparison Microscope
   Mr. Doug Hammond, Leica/McBain
   Mr. Adrian Powell, Leica/McBain
ABSTRACT
   Microscopy Imaging has long been used in just about every field of forensic investigation as a tool for evaluating casework. Being able to capture an image of what is being seen through the microscope eyepiece has allowed for peer validation and documentation. Recent advances in Hardware and Software allow for faster, more precise images that can also now be used for non-contact measurement (x, y and z) and generation of 3-D models for analysis. This additional information gives the scientist additional data that can be used in their investigation.

Molecular Spectroscopy for Forensics (Empasis on Explosives)
   Dr. Hellgeth received degrees in Biochemistry (B.Sc.) and in Physical/Analytical Chemistry (Ph.D.) from Virginia Tech. His expertise is in molecular spectroscopic techniques for advanced chemical analysis and materials characterization, and is a practicing vibrational spectroscopist with better than thirty years experience. An exuberant speaker, he is often sought for lectures and workshops in industry, academia, and government institutions. His course on Infrared Microscopy, presented at the Pittsburgh Conference from 1998-2008, was widely (or wildly!) popular. Actively involved with professional science organizations, he served the Coblentz Society as its president from 2001-3. His current position is with Thermo Fisher Scientific where he serves as Senior Applications Scientist and manages its Western North American Applications Lab in San Jose, CA.
ABSTRACT
   In this workshop, the theory and application of molecular spectroscopy (FT-IR, Raman) in forensics will be presented. Emphasis will center on analytical approaches, sample preparation techniques and the analysis of spectra to obtain cogent information. Both macroscopic and microscopic methods of Fourier Transform Infrared and Raman and Dispersive Raman will be covered in detail. Numerous examples of forensic samples such as paint layer analysis, multi-component drug mixtures, and ink/document analysis will be showcased to exemplify specific aspects of operation, data manipulation and analysis for each method. Specific emphasis will be given to the analysis of explosives. Additional topics will include chemical imaging, GC-IR, Far-IR, development of search/identification routines and creation of spectral databases. Instrumentation (Bench top FT-IR and FT-Raman, IR Microscope, Dispersive Raman Microscope) will be available to demonstrate current practices for sample handling and spectral analysis. Attendees are encouraged to bring samples.
35th Annual Southwestern Association of Forensic Scientists Conference
October 27 – 30, 2013
Hosted by NM DPS Forensic Laboratories

MONDAY OCTOBER 28: TIMES LISTED

Contemporary Issues in Drunk Driving and Driving Under the Effects of Drugs – 830am to 5pm
Dr. Rong-Jen Hwang, Scientific Laboratory Division of the NM Department of Health

Forensic Relationship Statistics Made Easy – 830am to 5pm
Ms. Kelly Beatty, Marshall University Forensic Science Center

ABSTRACT
The application of Forensic DNA Short Tandem Repeat (STR) analysis in the resolution of mass disaster identification and paternity-based criminal searches has increased in recent years. As such, the need for Forensic DNA Analysts to comprehend the underlying dissimilarity between kinship and traditional DNA identification is imperative to accurate result reporting. This workshop will concentrate on the implementation and use of relationship testing procedures in a Forensic DNA Laboratory. STR-based data, generated with common commercially available amplification chemistries, will be utilized to perform comparisons and statistical evaluations in a hands-on, forum-style workshop. After a statistical review of probabilities, likelihoods, and Bayes’ theorem, statistical evaluations will be presented from a Forensic DNA Analyst’s perspective using manual calculations and commonly encountered case studies. The following scenarios and their statistical evaluation will be reviewed: parent/child, single parent, reverse/inverse paternity, full sibling, half sibling, and reconstructions. An outline of the use of relationship comparisons in mass disasters and resulting considerations will be addressed. In addition, Forensic Relationship statistical reporting and testimony recommendations will be addressed.

ULW training – 830am to 5pm
Ms. Marian Price, FBI

Explosives: Syntheses, Characterizations and Forensic Investigation – 830am to 12pm
Dr. Juchao Yan, Eastern NM University Department of Physical Sciences

Post-mortem Changes on the Colorado Plateau – 1pm to 5pm
Dr. Melissa Connor is the Director of the Forensic Investigation Research Station (FIRS) at Colorado Mesa University. FIRS is one of six institutions nation-wide using human remains to study the relationship between decomposition and the post-mortem interval, and the only such facility in the arid west. Connor was formerly the Director of the Master of Forensic Science Program at Nebraska Wesleyan University, and prior to that worked with Physicians for Human Rights on international forensic investigations related to war crimes, crimes against humanity and genocide. She has worked throughout the former Yugoslavia, in Rwanda, Cyprus, and Nigeria among other places.

ABSTRACT
Participants will initially be asked to estimate the post-mortem interval from photographs of remains. At the end of the workshop, the participants will be asked to re-estimate the post-mortem interval and see if their estimates have changed. Decomposition of human remains is generally described in a stage model, using 4 or 5 stages. These stages are used to help estimate a post-mortem interval. The four stage model is: early decay, early decomposition, late decomposition and skeletonization; the five-stage model is: fresh, bloat, active decay, advanced decay, and dry remains. In arid areas, these stages don’t always neatly follow each other. In arid areas, it is not uncommon to have a body that is mummified on the side exposed to the air,
and has active decomposition on the portion of the body adjacent to the soil. The new Forensic Investigation Research Station at Colorado Mesa University researches decomposition of human remains in the environment of the arid west. This workshop will focus on decomposition as it relates to the post-mortem interval and the importance of micro environments in affecting decomposition.

**Learning Objective:** Participants will understand regional and micro environmental similarities and differences in the human decomposition sequence, focused on decomposition in the Colorado Plateau.

**TUESDAY OCTOBER 29: TIMES LISTED**

The Recovery and Identification of Human Skeletal Remains – 830 to 5pm  
Dr. Krista Latham, University of Indianapolis  

**ABSTRACT**

During this workshop attendees will be introduced to some of the various forensic techniques utilized in the recovery and identification of human skeletal remains. It will begin with an introduction to forensic anthropology that emphasizes the unique skills a forensic anthropologist can bring to a criminal investigation involving human remains. Such skills include the controlled recovery of human remains from outdoor contexts and an osteological analysis of the skeleton to reconstruct the decedent’s living characteristics to aid in identification. Case studies from the University of Indianapolis Archeology and Forensics Laboratory will be presented to demonstrate these techniques. The attendees will also be introduced to applications of skeletal DNA analysis in the criminal justice system. Genetic data can aid in positive identifications; however, skeletal DNA extraction and analysis can be difficult and challenging. The skeletal DNA extraction procedure utilized at the University of Indianapolis Molecular Anthropology Laboratory will be presented. This will be followed by a discussion of molecular taphonomy, which is the study of those factors that influence DNA degradation and explores the impact of the various intrinsic and extrinsic forces influencing molecular integrity. Finally, a case study that integrates the importance of an understanding of both skeletal DNA and osteological analysis will be presented.

Understanding Probability, Statistics and their Application to Impression Evidence – 830am to 5pm  
Henry J. Swofford, CIV  
Henry P. Maynard III, CTR USARMY  

**ABSTRACT**

Historically, the pattern and impression evidence disciplines, particularly fingerprints and firearms, express opinions of source attribution as qualitative statements. While these conclusions are based on assessments of highly discriminating features within the evidence, they are largely based on heuristic reasoning and subjective in nature. Without reporting some measure of reliability or uncertainty associated with these types of conclusions, courts have no objective way to assess the weight of the evidence. As a result, examiners are facing increasing pressure to develop quantifiable means of expressing the discriminating strength of their conclusions. While supportive of the shifting paradigm, examiners are still left with questions on how to best accomplish this task. This workshop will provide participants with (1) a foundational understanding of probability and statistics as they relate to general interpretation and decision making, (2) the application of likelihood ratios to impression evidence (particularly fingerprints) – what they
are, how they are calculated, and what they mean to the examiner and the courts, and (3) an overview of emerging research involving the use of Automated Fingerprint Identification Systems (AFIS) and Integrated Ballistics Identification Systems (IBIS) as a means of generating likelihood ratios for fingerprint and firearms evidence.

“Spice Spice Baby… (and some Cathinones too!” – 830am to 12pm
Mr. Jason Nawyn started his career in drug chemistry working at the Georgia Bureau of Investigation (GBI) where he worked as a drug chemist and member of the Clandestine Laboratory Response Team. He left the GBI in 2005 and has been with the United States Army Criminal Investigation Laboratory (USACIL) where he continues his work as a drug chemist analyzing cases from all over the world. He is actively involved in the discussion of emerging drugs to include synthetic cannabinoids and cathinones. He has helped in the development of Forendex, Forendex Forum, and the Forensic Drug Review (FDR), which are designed to help in the dissemination and verification of analytical data associated with the emerging compounds of abuse. He has given numerous presentations to local, federal, and international chemists regarding synthetic cannabinoids and cathinones.

ABSTRACT
We will briefly cover the history of the “Spice” phenomenon from its beginnings up to and including the present situation of third and fourth generation (quinolinyl groups) cannabinoids. We will go over analytical extractions, instrumental techniques, and possible pitfalls of the analysis of cannabinoids and cathinones to include isomer determination, compound breakdowns, and rearrangements. We will briefly discuss the legal situation regarding cannabinoids and cathinones with the primary focus on the federal legislation and discuss the “problem” and possible solutions for obtaining standards and verification of standards once they are obtained.

Introduction to GC/MS – 830am to 12pm
Mr. Sky Countryman - Sky Countryman has been with Phenomenex for thirteen years and is currently the Manager of PhenoLogix and Applied Markets. His group’s responsibility is to solve analytical challenges using various chromatographic techniques such as HPLC, LC/MS/MS, GC, GC/MS, and SPE. The group receives samples from customers all over the world and its members are constantly challenged to provide new and innovative solutions for every market segment. Sky’s has lectured over the world on topics such as environmental, food safety, and pharmaceutical analysis. He is also the author of a book chapter, numerous technical publications, training programs, and journal articles.

Mr. Kory Kelly obtained his Masters in Science in Analytical Chemistry from New Mexico State University. The topic of his graduate work was the manufacture and characterization of coupling gas chromatography with ion mobility spectrometry. Upon joining Phenomenex in 2002, Kory’s focus was developing applications with the goals of increased productivity and ruggedness. Based on this work, he has provided valuable input on new product development. He recently joined the PhenoLogix method support team as the Technical Manager for GC and Environmental Projects, finding comprehensive solutions for hot topics and growing trends in his applied markets. As a technical subject matter expert, Kory collaborates with chromatographers domestically and internationally through personalized method support, technical training, and on-site seminars for environmental and GC related fields.

ABSTRACT
In addition to covering the fundamental and practical concepts of mass spectroscopy and capillary GC, this seminar will review mass spec instrumentation, mass spec interpretation, detector operation and troubleshooting. We suggest this course for any novice or experienced chromatographer who wants to gain insight into effectively applying GC/MS theory and concepts into the everyday GC/MS laboratory environment.

**GC/MS Method Development and Optimization for Forensic Samples – 1pm to 5pm**
Mr. Sky Countryman
Mr. Kory Kelly

**ABSTRACT**
This is a crash course in forensic GC/MS method development. We will review the GC parameters that can be optimized during method development including column selection, temperature program, flow, injection techniques, and MS optimization. In addition, we will touch on some sample preparation and derivatization topics as they related to many forensic samples. You should attend this course if you are involved in method development or looking to learn more about how to optimize a current separation.

**Digital Forensics – 1pm to 5pm**
Agent Smith, NMRCFL
Mr. Alex Seazzu, NMRCFL

The New Mexico Regional Computer Forensics Laboratory (NMRCFL) mission is to provide the highest quality digital forensics services and assistance to any law enforcement agency with jurisdiction in the state of New Mexico.

**ABSTRACT**
In this workshop, some of the topics covered will be; what is digital forensics, evidence collection on the scene and issues with computer forensics. Also, a demonstration will be shown that covers areas such as image scan and image drive.

**WEDNESDAY OCTOBER 30: 830am to 1230pm**

**Ethics**
Dr. Harrell Gill-King, UNT

**Forensic Photography – Photographing Evidence**
Mr. Jerry Goffe, Goffe Visual Services

**Understanding ISO/IEC 17025: Q & A**
Dr. Emma Dutton, ASCLD/LAB

**ABSTRACT**
During the past few years media attention and popular television programs have drawn attention to forensic science practice and as such, laboratory testing of evidence has come under intense scrutiny. With the announcement in February 2013 by the federal government to establish a National Commission on Forensic Science to enhance forensic science quality assurance, the implementation of mandatory laboratory accreditation appears imminent. Thus, understanding the importance of accreditation and the accreditation process is paramount to obtaining forensic science laboratory accreditation. Many labs have voluntarily
chosen to seek accreditation and many others are in the process of preparing for accreditation. However, there are misconceptions about accreditation and the accreditation process and there are many concerns about implementing an ISO/IEC 17025 based management system. This workshop will provide a brief overview of the history of ISO/IEC 17025 and how the ISO/IEC 17025 document was developed. ISO/IEC 17025 program concepts and philosophy, the purpose and process of accreditation, and the benefits and importance of accreditation will be presented, as well as a straightforward approach for applying ISO/IEC 17025 to forensic science testing laboratories.

Demystifying Error Rates in Forensic Science
Ms. Carey Hall, Minnesota Bureau of Criminal Apprehension

ABSTRACT
This workshop explores the theory and foundation of error rates. We explore the concepts of false positives, false negatives, error rates, discovery rates, sensitivity, and specificity. Students will learn how to calculate and apply error rates using actual data from published error rates studies in both firearms and latent prints. This workshop is applicable to any forensic discipline where categorical decisions or assignments (qualitative or quantitative apply) are made.