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Dec 2019

ASTEE Newsletter

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Message from the President

With the holiday season upon us, it is that time of year to reflect, give thanks, and spread cheer. This has really been our attitude all year, but here we are in the last month of 2019.

Just to name a few of our successes this year...we celebrated our 10-year anniversary, recognized some that have positively impacted ASTEE's path and influenced our success, added training opportunities for members, updated our code of ethics, and increased our number of sponsors. Work continues on our new website; we anxiously await its release. The goal is to go live by the end of this month, but it may push into the beginning of 2020.

In addition to the new website, there is much to look forward to. ASTEE shirts will be released just in time for your holiday wish list. Your new ASTEE president may appear on FTCoE's podcast *Just Science* (more details to come)! And to keep with tradition, we intend to host our usual receptions at AAFS (come applaud Vinny as we present the Edmond Locard Award for Excellence in Trace Evidence) and Inter/Micro. However, next year will bring two other opportunities that should inspire you to start that research project you have been considering. The first is the joint NEAFS/ASTEE meeting held in Groton, CT, October 14-17, 2020. The Education Committee is hard at work planning high quality workshops. The other is the

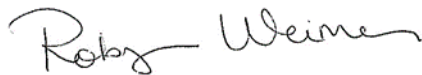


Message from the President continued...

possible 2020 Impressions, Pattern, and Trace Evidence Symposium – no details as of yet, but all indications have been that it is a go! So start those research projects, as you will have a number of opportunities in 2020 to share with your peers and contribute to Trace Evidence.

Thank you for allowing me to represent you and advocate for Trace Evidence! It has truly been an honor. This is a cause I am passionate about and will continue to do so, despite my upcoming change in roles. Participating on the ASTEE Board has been a part of my life for the last five years and I have worked with some of the best! It was truly a pleasure and I have enjoyed being a part of this team. Thank you to my fellow Board members, committee chairs, and committee members. You work hard, and it's a volunteer gig. I have learned so much from many of you, and I am proud that you represent our organization!

Wishing you all the best,



Robyn Weimer
robyn.weimer@dfs.virginia.gov
2019 ASTEE President

News You Can Use

This issue we highlight some resources which certain members may find valuable.

Firstly, follow the link below to gain access to the 2nd Annual Online Symposium: Current Trends in Forensics & Forensic Toxicology [by Agilent Technologies]. Once registered you will have access to presentation slides, transcripts, and recordings of the presentations from all speakers, including ASTEE members Jose Almirall and Ed Suzuki.

<https://forensicrti.org/2019-online-symposium-current-trends-in-forensic-toxicology/>

Secondly, ASTEE hair examiners may want to read the document available below. This report, issued by the ABS group, is titled "Root and Cultural Cause Analysis of Report and Testimony Errors by FBI MHCA Examiners". This may be important to read as it is a source of possible questions which may be asked during expert testimony.

The ABS report here: https://vault.fbi.gov/root-cause-analysis-of-microscopic-hair-comparison-analysis/root-cause-analysis-of-microscopic-hair-comparison-analysis-part-01-of-01/at_download/file

The associated FBI press release is also available at <https://www.fbi.gov/news/pressrel/press-releases/root-cause-analysis-for-microscopic-hair-comparison-analysis-completed>

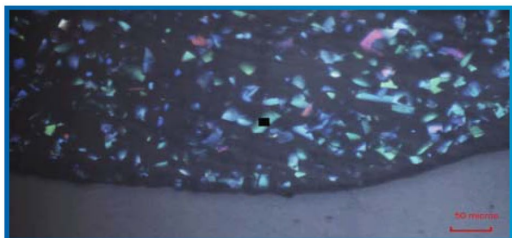
Forensic Science

with CRAIC Technologies™

The Perfect Vision for Trace Evidence



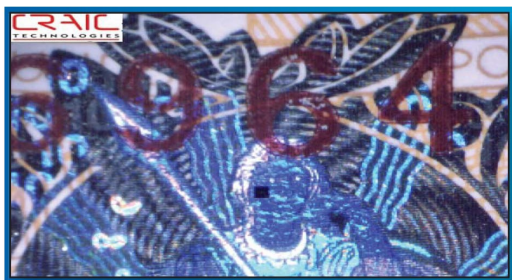
Fluorescence imaging of a nylon fiber with CRAIC's unique calibrated variable aperture.



Chromatflair paint sample using 10x magnification in reflectance, microscale shown is 50 microns.



Glass fragment with multiple probes for fast and accurate quantification measurements.



Foreign currency showing subtle variations of inks are detectable by CRAIC microspectrophotometers.

Fiber Evidence

CRAIC instruments measure and compare the UV, color, NIR and fluorescence spectra and images of the smallest known and questioned fiber samples rapidly and accurately.

Paint Evidence

CRAIC microspectrometers are commonly used to analyze the UV, color, NIR, fluorescence and Raman spectra and images of paint, paint chips and paint smears.

Glass Evidence

rIQ™: the smart way to measure the refractive index of glass. Also measure color and fluorescence in addition to the refractive index of multiple glass fragments simultaneously.

Explosives

CRAIC Apollo™ Raman microspectroscopy and UV microscopy can be used to locate and identify explosives easily and accurately.

Drugs

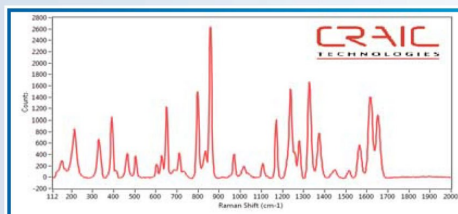
CRAIC Apollo™ Raman, UV and fluorescence microspectroscopy can be used for accurate identification of drugs of abuse.

DNA and Biological Evidence

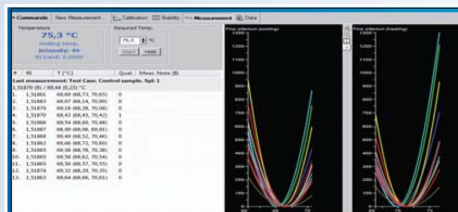
CRAIC UV microscopes can be used to identify usage of WMD materials from tissue samples. UV microscopy can also locate trace amounts of DNA and biological evidence.

Questioned Documents

CRAIC imaging and spectroscopy ranges from the deep UV to the near IR and gives you capabilities never offered previously.



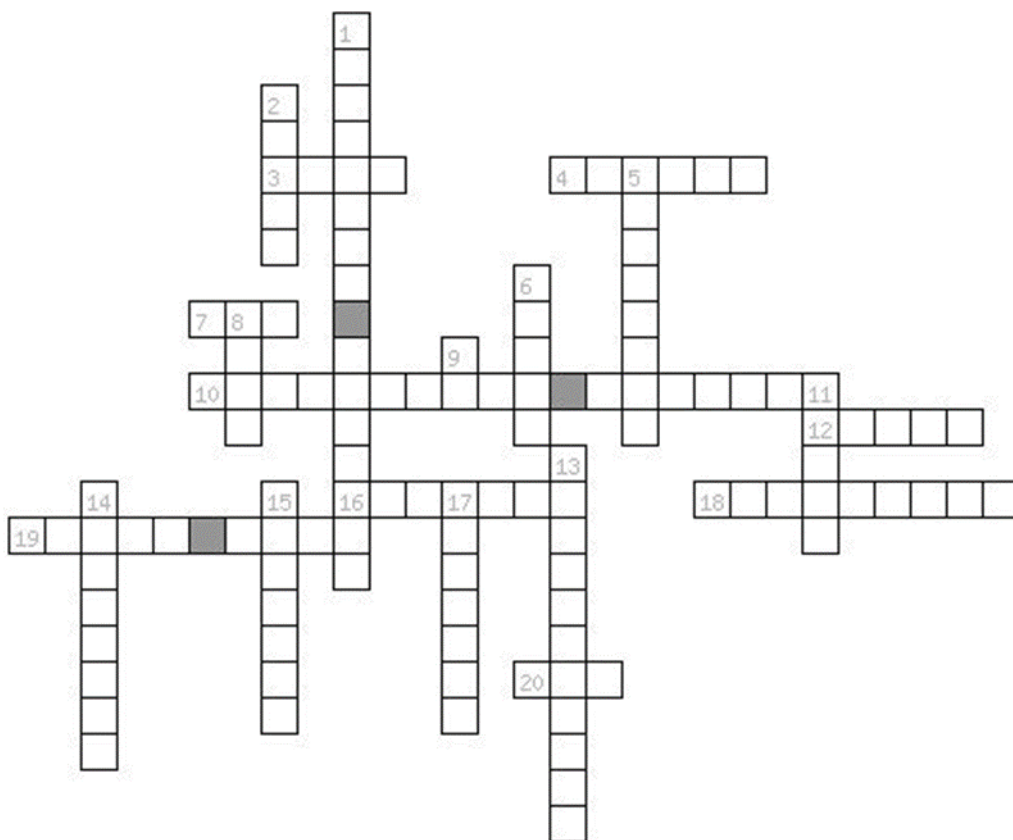
Raman Microspectra™ of Acetaminophen using the CRAIC Apollo-532™.



rIQ™ by CRAIC shows an illustrative interactive graphs of heating and cooling phase for each probe with zoom capability enables fast visual evaluation results.

CRAIC TECHNOLOGIES

ASTEE Crossword – Holiday Special (see page 11 for answers)



| Across | | Down | |
|--------|---|------|--|
| 3 | Sharing a name with an instrument for glass analysis, if you get coal in your stocking this year you'll feel quite _____ | 1 | Oh no! Your dreidel broke into three pieces, but can be glued together to look just like new. Looks like those three pieces formed perfect _____ |
| 4 | This scientist loves White Elephant parties, because it involves an exchange of items | 2 | Hannukah lasts this many days, a number which also represents the number of electrons in the outer shell of all but one noble gases |
| 7 | Looks like the Amazon deliveryman backed into your car while delivering gifts and left some paint behind. Thanks to this Canadian database, you can get an idea of what type of car hit yours | 5 | Type of chemical bond that shares the best with others |
| 10 | Your two sets of Christmas lights are sending off light at different angles. They must have different _____ | 6 | The periodic table's favorite reindeer (hint: the only one that can be spelled with elements) |
| 12 | Happy holidays from the leadership of _____ to you! | 8 | Everyone needs a little TLC during the holidays. But what does it analyze? |
| 16 | Santa's favorite element (Hint: Ho, Ho, Ho!) | 9 | This Thanksgiving, I hope to eat some Pumpkin _____ (hint: 3.14159) |
| 18 | Playing with these on New Year's Eve may produce some indicative GSR particles on your hands | 11 | Timmy wants a samurai sword for Christmas with the same curve as some types of body hair. What is this type of curve called? |
| 19 | This holiday treat can be spelled with elements | 13 | Hopefully Santa's boots didn't leave any of these behind on your roof |
| 20 | The elves want to make sure their green outfits are similar in color on a spectral level. What do they use? | 14 | Your aunt is notorious for giving terrible gifts. This year, you hope she just sends you this element (found in GSR) |
| | | 15 | It's about to be the year 2020! A certain element loves that year, since it's atomic number is repeated twice |
| | | 17 | You wake up and find a mysterious hair on the snow, but is it Dasher's or Dad's? This microscopic feature of hair should help you find out, as it's much larger in animals than humans |

ASTEE at a Glance – Committee Updates

Awards Committee

Congratulations to our award winners! Vinny Desiderio was awarded the 2019 Edmond Locard Award for Excellence in Trace Evidence and Robert Boyle was awarded the Hooke College of Applied Sciences Training Award.

Deadlines for the ASTEE Professional Development and Research Grant Awards were extended this year. We have received applicants for both awards and winners will be announced soon.

Applications for the Student Research Project Award are due on December 2nd. The Hooke College of Applied Sciences Training Award is happening earlier in 2020, with applications due on January 15th.

Bylaws/Administrative Rules Committee

The membership overwhelmingly passed the Code of Conduct. The committee received no comments or suggestions for substantive changes (just a couple of admin things).

The committee has drafted a code of conduct to go with the future on-line forum. It is with the BOD for final approval.

Communications Committee

The new and improved ASTEE website is on its way! The process has been a long one (thank you for your continued patience), but we are excited about the changes ahead. The new website will allow members to: set up a recurring annual dues payment, easily change contact information, search for the contact information of other ASTEE members, apply for a membership upgrade online, purchase ASTEE products, access the ASTEE Forum to discuss all things trace evidence, and more. Additional information about new features will be forthcoming as the site nears completion. As always, if you have any ASTEE questions, comments, or concerns, please contact Katie Hafer or Daniel Mabel at asteetrace@gmail.com.

Education Committee

Would you like to help organize trace evidence workshops, webinars, and other training? We are in need of TWO new committee members! If you are interested in volunteering, please e-mail Jenny Lounsbury (jenny.lounsbury@dps.texas.gov) at your earliest convenience.

The cancelled webinar from Glen Jackson from West Virginia University on mass spectrometry does not have a rescheduled date yet. We will update everyone if/when it does get on the books.

The soil workshop at Penn State is still tentatively rescheduled for May 2020. Be on the lookout for more information as we approach that date.

We are working on organizing at least one workshop at the joint ASTEE/NEAFS conference in October 2020.

If you have training or educational information you would like disseminated to the ASTEE membership or if you have any other questions/comments/concerns/suggestions, please contact us at astee.edu.committee@gmail.com.

ASTEE at a Glance – Committee Updates continued...

Elections committee

The 2019 ASTEE Election was a great success. Congratulations to Emily, Michelle, and Chris! It seemed that everyone was able to vote without trouble, as we had 76% of eligible voters cast a ballot. That is up 3% from last year! I encourage those of you that were not eligible to vote to check the ASTEE bylaws on the website and see if you are eligible to upgrade your membership. Then next year you can vote and/or run for a position on the board. Being part of the ASTEE board is a great way to get involved in the forensic community. I encourage everyone to think about running in 2020.

2019 ASTEE Election Results

| President Elect | Secretary | Director | ASTEE Code of Ethics |
|--------------------------|-----------------------------|----------------------------|------------------------------|
| Emily Weber (53%) | Michelle Drake (96%) | Chris Hamburg (53%) | Approve changes (91%) |
| Daniel Mabel (43%) | Abstain (4%) | Dr. Jenny Lounsbury (42%) | Do not approve changes (1%) |
| Abstain (4%) | | Abstain (5%) | Abstain (8%) |

Membership Committee

The membership committee has had some big changes in the past few months. Lisa Schwenk, who has done a tremendous job in her time as the membership committee chair, has fully passed the reigns to Stephanie Freiwald (thank you Lisa for your time, dedication, and all you have done!). We are also happy to announce that Mr. Stephen Favela (from the Texas Department of Public Safety Austin Crime Laboratory) has joined as another member of the membership committee. We look forward to helping this amazing organization as it continues to grow!

Sponsorship Committee

The Sponsorship Committee is gearing up to send out invitations for ASTEE 2020 sponsorship in December. We hope to add to our current list of sponsors: Craic, Jeol, McCrone Associates, Foster & Freeman, GE Healthcare, McCrone Research Institute, EDAX and RTI.

Important Dates

| | |
|----------------|---|
| December 1 | Deadline for Student Research Project Award |
| January 15 | Deadline for Hooke College of Applied Sciences Training Award |
| February 15 | Deadline for Scholarship Award |
| February 17-22 | AAFS 72 nd Annual Scientific Meeting |
| March 31 | ASTEE Dues due |
| June 8-12 | Inter/Micro Conference |



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- Renishaw Raman microscope

Questions?

Contact education@hookecollege.com | 630-887-7100



“I appreciate that the instructors are practicing scientists. I really enjoyed the times the instructors or other students told stories about their personal experiences because it helped put things in perspective for the real world.”

— M. Shannon, Miami-Dade Police Department

May We Introduce You To...

May We Introduce You To... .Martin "Marko" Kocanda PhD.

Occupation: Forensic Chemist, Rapid City Police Department (Rapid City, South Dakota)

What Trace Evidence sub-discipline(s) are the focus of your work? Primary work involves chemical analysis and toxicology with some microscopic analysis of pharmaceuticals and illegal narcotics.

What is the top activity on your bucket list? There are too many to list, but rafting the Colorado River through the Grand Canyon and riding Amtrak's high speed Acela trains are at the top of the list.

What do you like to do in your down time? Hunting / fishing / plinking with my kids, ham radio, and mentoring students take up most of my time off.

What is the most interesting place you have been? Sturgis Motorcycle Rally - Not sure how they pack 'em all in for this annual event! One does not always need to travel to far-off exotic places to meet interesting people or experience something unique.



May We Introduce You To... Troy Ernst

Occupation: Forensic Scientist

What Trace Evidence sub-discipline(s) are the focus of your work? Glass, paint, fibers, and fire debris take up most of my time.

Who has been a mentor to you and how have they helped you?

There have been many along the way. I interned with Amy Michaud, who helped me see that all evidence can be fascinating and provided me with much foundational information and microscopical techniques. Chris Bommarito was a "professor" and then colleague that challenged me to go beyond what is good enough for 90% of scientists. Scott Ryland was patient with me through many glass and XRF questions, showing me that it's important to take time to answer the questions of the next generation of analysts.

What do you like to do in your down time? What's down time? 😊 With three kids in 4th through 9th grades, my non-work time is mostly spent with my family – school and church events, cross country meets, ballet recitals, camping, card games and board games and yard games, watching movies, making each other laugh – and I wouldn't have it any other way!

What is the most interesting place you have been?

There is an island on the south side of Haiti named Ile-a-Vache that holds top billing in my "interesting place" category. There are very few vehicles, very little power, much rugged beauty, and people with great hearts and hope in the midst of challenging times. Let me know if you want to join me on my next trip there!



Inter/Micro Attendee 2019 Report by William Randle

I was fortunate enough this year to be awarded, through ASTEE, complimentary registration fees to Inter/Micro. This included not only the three-day symposium but also the two-day workshop that followed. The McCrone Research Institute sponsored that award. I additionally received an ASTEE travel award to offset my travel expenses. I want to thank McCrone Research Institute and ASTEE for these awards...they are truly appreciated.

I have attended the Inter/Micro Symposium nine times in my 28-year career. The only reason I have not attend more often was because of my attendance at the annual MAFS meetings and other various courses such as those sponsored by the FBI. I have always found Inter/Micro to be a valuable experience. It has been great to watch presenters so skilled in microscopy, such as Walter McCrone, Skip Palenik, Thom Hopen, and John Delly. These presentations helped me become a better microscopist and, ultimately, a better trace examiner. My first Inter/Micro meeting was in 1995. I had met John Delly a couple of years prior at a PLM workshop that he had taught. I shared with him a microcrystal test for an explosive component I had been researching and he encouraged me to put a presentation together for Inter/Micro. That 1995 Inter/Micro meeting was my first presentation of my career. Many of my later presentations have been forensic microscopy related as it has always been my favorite work-related instrumental technique.

The Inter/Micro meeting is a great experience for the trace evidence examiner, and ASTEE has for several years now provided travel awards for Inter/Micro; however, I do not see too many other ASTEE members at Inter/Micro. ASTEE members in attendance this year included the McCrone Research Institute staff consisting of Gary Laughlin, Meggan King and Sebastian Sparenga; the Microtrace staff consisting of Skip Palenik, Kelly Brinsko Beckert, Jason Beckert, Katie White, Brendan Nytes, Joe Inanna and Ethan Groves, and eleven other ASTEE members including Wayne Moorehead, Patrick Buzzini, Jack Hietpas and me. That comes to 21 ASTEE members in total. There are over 350 ASTEE members. I would really like to see a larger percentage of ASTEE members attend the Inter/Micro meeting, especially given the support ASTEE and the McCrone Research Institute provides to ASTEE members to attend.

This year's Inter/Micro symposium was filled with presentations that were of interest to scientists who utilize microscopical techniques in general and, of course, included many of interest to trace examiners in particular. In the hopes of encouraging additional ASTEE members to attend an Inter/Micro meeting, I am providing this review of just a few of the presentations that were given this year that were of interest to the trace evidence examiner.

FTIR Analytical Method for the Identification of Cellulose Fibers - Anders Juul Lawaetz, Novo Nordisk Pharmatech & *The Particle was Identified as a Cellulose Fiber* - Skip Palenik, Microtrace

I list these two presentations together as they both deal with the difficulty of identifying a cellulosic fiber to its specific plant source. Skip demonstrated how microscopical examinations can differentiate many cellulosic fibers such as woody fibers, rayon, cotton and bast fibers based on morphological features, observation of the Herzog effect and/or chemical staining. When only small portions of the fiber are present the particular source of the fiber can be more difficult to determine. Anders' paper showed differentiation is possible between several cellulosic fibers by close examination of their FTIR data using multivariate statistics. A combination of these two techniques may aid the trace examiner in being more specific in their examination of cellulose fibers especially when only a fragment of the fiber is present in the specimen.

Inter/Micro Attendee 2019 Report continued...

The Ever-Expanding World of Microscopy, Imaging and Microanalysis - John Reffner, John Jay College, CUNY

John shared information about the latest innovations in microscopy and spectroscopy. Photo-thermal infrared spectroscopy can provide spatial resolution that is sub-micrometer. That kind of resolution would certainly be helpful with your next multi-layered paint chip case. John also talked about spectrometers that perform infrared and Raman analysis simultaneously.

Nanoparticles as Trace Evidence - Kelly Brinsko Beckert, Microtrace

Kelly reported on the often-overlooked nanoparticles. These particles are submicron but can be used to help characterize soil, dust or other unknowns for identification, comparison or serve as investigative leads. Microtrace has altered their soil separation procedure in order to isolate these particles for examination. Kelly provided a case study involving a child abuse case where someone was thought to have forcefully struck a child's head against a wall. Hair collected from the victim was sampled using carbon tape and examined using SEM-EDS. Gypsum and paint particles were identified from the samples. These nanoparticles were consistent with the drywall sample collected from the home.

Sources of GSR Particles: One that Shouldn't and One that Wasn't - Martin Janssen, Netherlands Forensic Institute

Martin reported that the brown butcher type paper they were using to sample clothing for GSR was a source for particles containing lead, barium, calcium and silicon. This was obviously a surprise and the paper was replaced by a white butcher type paper that was tested and found not to be a source for particles that could be confused with GSR particles. Martin also reported on a case where his agency had to study coffee shops for the presence of GSR particles.

A Look at How Aspects of Fiber Appearance Affect Spectra - Meggan King, McCrone Research Institute

Meggan described color changes and physical degradation of synthetic fibers as they were exposed to artificial UV radiation in a laboratory setting, as well as sunlight outdoors, over a period of 18 months. One of the things she found was that as certain synthetic fibers decompose, voids formed in the fibers which caused higher absorbance baselines.

An Update of the Effect of Ultraviolet Radiation on the Degradation of Dyed Fibers as a Function of Time Using UV-Vis Microspectrophotometry - Patrick Buzzini, Sam Houston State University

Patrick shared his results of changes in the UV-Vis spectra of a several types of synthetic fibers in a wide variety of colors. His fibers were of the same group that Meggan had reported on. He found that spectra showed not only decreases in band intensities as colors faded over time but also observed in some fibers the formation of new bands or band shifts in the spectra.

A Bone to Pick: Examination and Analysis of Bone Tissue - Katie M. White, Microtrace

Have you ever needed to determine if microscopic bits of bone were in a sample submitted by investigators? Pretty much everything you need to know to identify microscopic particles of bone was supplied in Katie's presentation. Morphological features of bone particles were described, as well as a stain useful to aid in the identification of connective tissue or muscle.

Inter/Micro Attendee 2019 Report continued...

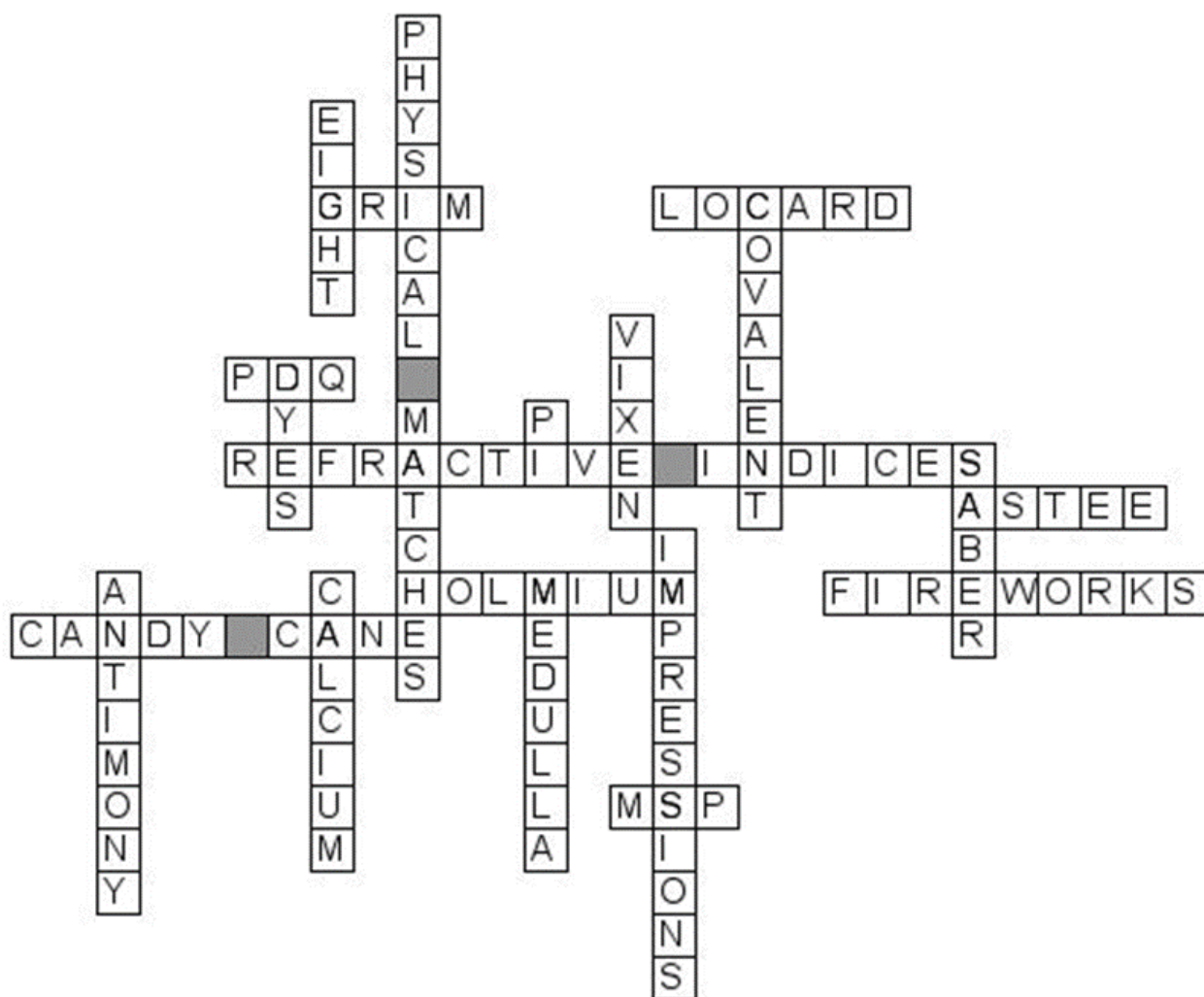
There were also presentations on the use of Raman for inks, using micromorphometry for smokeless powder brand identification, and comparing & identifying types of automotive products such as transmission fluids, brake fluids and lubricating greases.

That is just a sampling of the presentations given at Inter/Micro this year. I trust you can appreciate how these presentations delivered something that is unique and not always available at other forensic science meetings. There was a total of 39 presentations at this year's Inter/Micro and next year will surely be similar. I hope this short report provides additional encouragement for you to attend Inter/Micro next year. See you there!

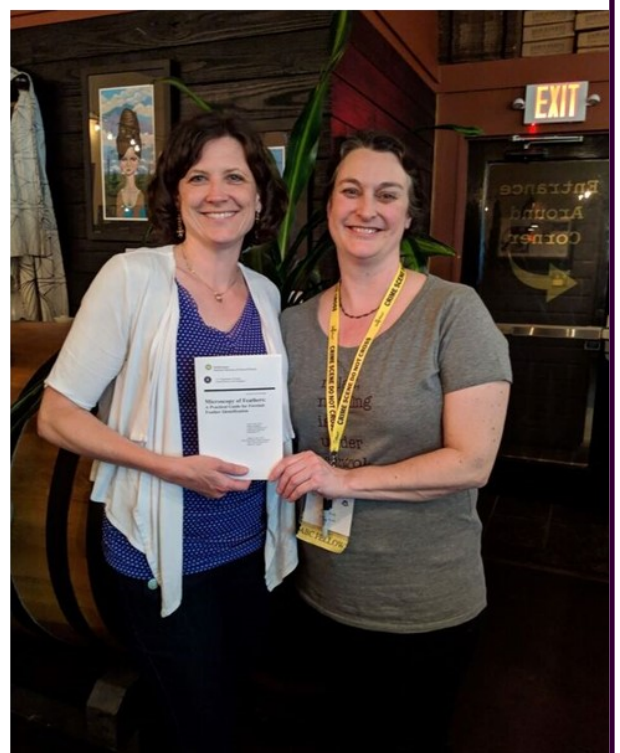
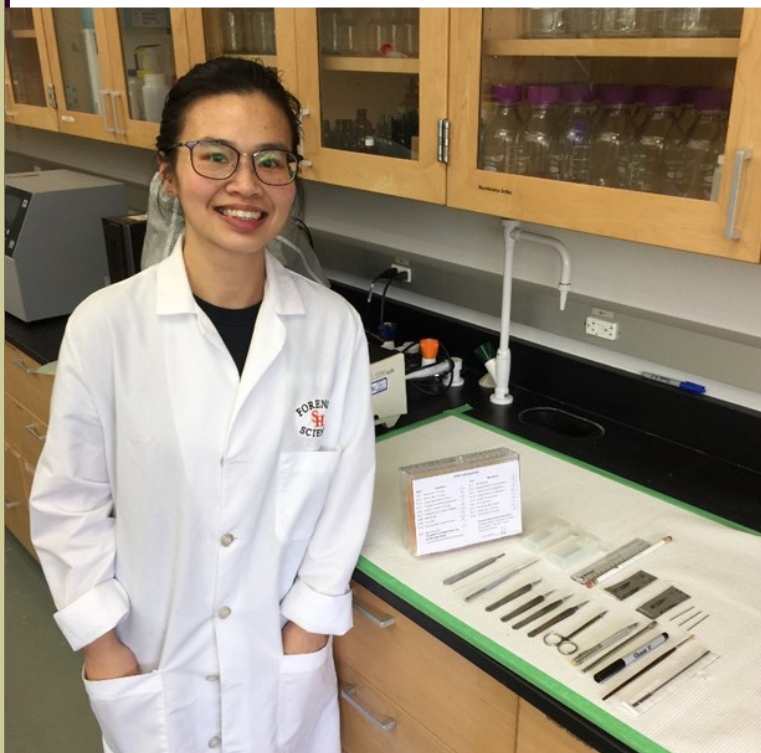
William Randle

Missouri State Highway Patrol Crime Laboratory

ASTEE Holiday Crossword Answers



**ASTEE
reception prize
winners at the
SAFS/ ASTEE
joint meeting**



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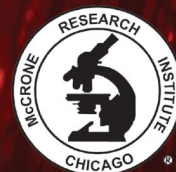
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