

# Curriculum Vitae

of

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**Current as of 4/28/2020**

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## Educational History

2002-2004	University of Michigan, Department of Geological Sciences Ph.D. Geology Dissertation Chair: Prof. Rodney C. Ewing Dissertation Committee: Prof. Eric J. Essene, Prof. Ronald Fleming, Prof. Lumin Wang, Prof. Lynn Walter DOE-OCRWM fellowship recipient Horace H. Rackham 2004 Distinguished Dissertation Award
1999-2001	University of Michigan, Department of Geological Sciences M.S. Geology Prof. Rodney C. Ewing, Advisor
1995-1999	University of Chicago B.S. Chemistry, B.S. Geology
1992-1995	Illinois Mathematics and Science Academy, Aurora, IL
1991-1992	Saint Edward's Catholic Central High School, Elgin, IL

## Employment

2005 - Present	Vice President and Senior Research Microscopist, Microtrace, a forensic laboratory specializing in small particle analysis using microchemistry and microscopy.
2004-2005	Federal Bureau of Investigation (ORISE sponsored) Post-Doctoral Fellow in the Counter Terrorism and Forensic Science Research Institute.
1999-2004	Graduate Student Research Assistant in the Electron Microbeam Analysis Laboratory, University of Michigan. Duties include training and assistance to university scientists in TEM, EMPA, XRD, and SEM/EDS.
1999-2000	Graduate Student Instructor for Determinative Methods (GS-455). Teaching responsibilities included XRD, SEM, Microprobe, Raman, FTIR.
1993-2004	Microscopist (consultant) at Microtrace, a forensic laboratory specializing in small particle analysis using microchemistry and microscopy.

## Appointments and Committees

- Chemistry/Instrumental Analysis Scientific Area Committee's (SAC's) Materials (Trace) Subcommittee within the Organization of Scientific Area Committees (OSAC), appointed by Mark Stolorow of the National Institute of Standards (NIST) (2014-present)
- North Carolina Forensic Science Advisory Board Member, Charter Member, Appointed by the Attorney General of the State of North Carolina. Acting as an advisor to the NC State Crime Laboratory to strengthen the laboratory system. (2012-present)

- ASTM International, Subcommittees: E30 - Forensic Sciences, E30.01 – Criminalistics, E30.11 - Interdisciplinary Forensic Science Standards, Participating Member (2014-present)
- Scientific Working Group for the analysis of Geological Materials (SWGCEO), charter member (2012-2014).
- Independent Review Board for Lawrence Livermore National Laboratory “U and Pu Impurities” Project (2013)
- UNESCO International Union of Geological Sciences (IUGS) Initiative on Forensic Geology Geological (IoFG) Trace Evidence Advisor. (2011-present)
- FermiLab Community Advisory Board Member (2010)
- Board of Directors, RQA Food Forensics LLC (2008-2016)
- Alumni Board Member, University of Michigan Department of Geological Sciences (2005-2015)

## **Professional Affiliations**

- International Association of Geoanalysts (2016-2017)
- American Society of Trace Evidence Examiners (ASTEE), Charter Member (2009-present)
- American Academy of Forensic Sciences, Fellow (2001-present)
- Midwestern Association of Forensic Scientists, Member (2007–present)
- Mineralogical Society of America (2000-present)
- Geological Society of America (2002-present)
- Sigma Xi – Scientific Research Society, Member (1998-2013)
- American Chemical Society (1998-present)
- State Microscopical Society of Illinois (1998-2000, 2007-2010)
- Materials Research Society (2002-2004)

## **Honors**

- Editorial Board Member of the American Academy of Forensic Sciences, appointment to editorial board (2019)

- Certificate of Recognition by the Midwestern Association of Forensic Scientists for appointment to the Materials (Trace) OSAC Committee, Board of Directors (2015)
- Horace H. Rackham Distinguished Dissertation Award (Highest honor given to dissertations produced under the auspices of the University), University of Michigan (2004)
- John Dorr Graduate Academic Achievement Award – Department of Geological Sciences, University of Michigan (2004)
- Geological Society of America, Travel Grant, (2004)
- Graduate Fellowship Recipient, Department of Energy - Office of Civilian Radioactive Waste Management, (2002-2004)
- Best Paper Award, C.S. Palenik and R.C. Ewing, "Microanalysis of Radiation Damage Across a Zoned Zircon Crystal" - Materials Research Society National Meeting (2001)
- Geological Society of America Travel Grant (2004)
- Scott Turner Research Grant in the Earth Sciences (2001, 2002)
- Member, Rackham Graduate Student Forum (2002)
- Co-President, University of Michigan Geology Club (2000-2002)
- Dean's List, University of Chicago (1995-96, 1997-98, 1998-99)

### **Expert Testimony and Deposition**

- Qualified as expert witness in State, Federal and Military courts
- List can be provided upon request.

### **Additional Training and Experience**

- DSC Advanced Applications Workshop, taught by Dr. Aniket, Applications Specialist, Perkin Elmer, 1 day workshop at Microtrace LLC (2019)
- Forensic drug analysis seminar, taught by Terry DalCason, Research Chemist, DEA, retired, 1 day seminar at Microtrace LLC (2019)
- Current topics in asbestos analysis seminar, taught by Dr. Eric J. Chatfield at Microtrace LLC, 1 day seminar (2019)
- Electron Backscatter Diffraction and Aztec HKL Training Course taught by Michael Hjelmstad, Oxford Instruments, 3 day workshop, Pleasanton, California (2019)
- Electron Backscatter Diffraction workshop taught by Richard McLaughlin, Oxford Instruments, 2 day workshop (2019)
- ICP-MS Workshop taught by Dr. Peter C. Weiss at the Forensic Science Institute of the Bundeskriminalamt, Wiesbaden, Germany (2018).

- DOJ Grants Financial Management Training. 8 credit hours. Certificate of Completion (2018).
- Fiber, Dye, and Paint Analysis: Approaches of the Netherlands Forensic Institute (NFI). Lectures and discussions by Jaap van der Weerd, reporting officer on fibre and paint investigations. Lecture and Discussions (2017).
- GSR Analysis and Interpretation. Lectures by Robert Berk, Illinois State Police Crime Laboratory, Retired. Lecture and discussions (2017).
- Advanced Trace Evidence Analysis in The Netherlands (MH17 crash investigation). Lecture and Discussions by Dr. Peter Zoon, Nederlands Forensisch Instituut, Divisie Chemische en Fysische Sporen, Microsporen & Materialen (2017).
- Fluorescence Microscopy. Lectures and Workshop taught by Dr. Steve Ruzin, Director, College of Natural Resources Biological Imaging Facility. 1.5 days of laboratory and lecture (2016).
- $\mu$ -XRF of glass: A practical explanation of ASTM E2926. Lectures by Troy Ernst, Michigan State Police Forensic Laboratory and Ted Manasian, Ohio Bureau of Criminal Investigation. Presented by NIJ / RTI (2016).
- Forensic Hair Analysis. Lecture by Dick Bisbing, retired from McCrone Associates and Michigan State Police. 3 days of laboratory and lecture (2015).
- Introduction to Basic Human Body Tissues. Taught by Dr. Lynne Herold, retired from the Los Angeles County Sheriff's Department Scientific Services Bureau. 2 day workshop (2015).
- Pistol Training. Taught by Jerry Kau, NRA-IPA-IA-ISV-IVA-Certified instructor (2015).
- Blood Spatter and trace Evidence in the Sam Shepard Case. Lecture and discussion presented by Bart Epstein (retired Assistant Director of from the Minnesota Bureau of Criminal Apprehension) (2014).
- Asbestos Analysis by TEM - Instruction in the Standard Methods for the Analysis of Asbestos. Taught by James R. Millette, Ph.D. and Steven P. Compton, Ph.D. of MVA Scientific Consultants, Duluth, GA. 3 day workshop (2014).
- Thermal Field Emission SEM Operations Training Course. Taught by Natasha Erdman, Ph.D. and Tony Laudate of JEOL at JEOL USA, Peabody, MA. 2 day workshop (2014).
- Forensic Applications of Infrared and Raman Spectroscopy. Taught by Ed Suzuki, Ph.D. of the Washington State Police Forensic Laboratory at Microtrace, Elgin, IL. 4 day workshop (2013).
- Post Mortem Root Banding Hair Workshop. Taught by Stephen Shaw, Sandy Koch, and Karen Korsberg Lowe of the Federal Bureau of Investigation and Amy Michaud (of the Bureau of Alcohol, Tobacco, Firearms, and Explosives) at the Smithsonian Institute. 1 day workshop (2013).
- Nanotechnologies in Textiles Workshop. Taught by Prof. Seshadri Ramkumar (of Technical Textiles in the Department of Environmental Toxicology, Texas Tech University). Webinar (2013).
- Automotive and Industrial Paint Workshop. Taught by Tim Moczulewski and Jon Granberg of PPG Industries at the Oak Creek, WI Coatings Plant in conjunction with the Midwestern Association of Forensic Scientists Annual Meeting. ½ day workshop (2012).
- The Analysis of Low Explosives. Taught by Edward C. Bender, ATF Laboratory, Retired. Held at Midwestern Association of Forensic Scientists Annual Meeting, Milwaukee, IL. 1 day workshop

(2012).

- Optical Mineralogy. Taught by Prof. Mickey Gunter of the University of Idaho. 1.5 day workshop held at Microtrace LLC.
- ISO 17025 Without Tears. Taught by Terry Mills of ANSI-ASQ-FQS, Tampa, FL. Three day workshop (2012).
- Geology of Volcano National Park. Taught by Phillip Ong, M.S. at Volcano National Park, Big Island, HI. One day session (2012).
- Natural Fiber Identification. Taught by Skip Palenik at McCrone Research Institute. One day training session (2011).
- Animal Hair Identification. Taught by Bonnie Yates of the U.S. Fish and Wildlife National Forensic Lab at the National Institute of Justice Trace Evidence Symposium. One Day Workshop (2011).
- Quartz Grain Surface Textures. Taught by Prof. Peter Bull of Oxford University at Microtrace LLC. One Day Workshop (2011).
- Forensic Paint Examinations and Comparisons. Taught by Scott Ryland of the Florida Department of Law Enforcement (2010).
- An Introduction to Glass Science and Technology workshop. Taught by J. Terry Fisk of JTF Microscopy Services (formerly of the Corning Glassworks Research Lab, New York) (2010)
- Wood Identification workshop, taught by Dr. Regis Miller of the Center of Wood Anatomy Research, Forest Products Laboratory (2009)
- Microspectrophotometry User Course. Workshop taught by Dr. Jim Throne of CRAIC instruments at Microtrace (2009)
- Airborne Fungus Spores. Workshop taught by Dr. John Haines of the New York State Museum and Science Services, Albany, NY at McCrone Research Institute (2009)
- Energy Dispersive X-ray Spectroscopy- Thermo Noran System 6. Workshop taught by Dr. Dave West, ThermoFisher Scientific at Microtrace (2009)
- Private workshop on SERS sample preparation and analysis with Dr. Marco Leona of the New York Metropolitan Museum of Art (2008)
- Fluorescence Microscopy Workshop, taught by Dr. Steve Ruzin of the University of California at Berkeley at McCrone Research Institute (2008)
- Cement and Concrete Microscopy, taught by Don Campbell of the Campbell Petrographic Services, Inc. Dodgeville, Wisconsin (2007)
- Heavy Mineral Identification, taught by Maria Mange of the University of California at Davis (2007)
- Forensic Paint Examination, taught by Scott Ryland of the Florida Department of Law Enforcement, Lansing, MI (2007)
- Hardwood Identification workshop, taught by Dr. Regis Miller of the Center of Wood Anatomy Research, Forest Products Laboratory (2007)

- Advances and Changes in Forensic Paint Examination Workshop, taught by Scott Ryland of the Florida Department of Law Enforcement at California Associate of Criminalists Semi-annual workshop (2006)
- Forensic Soil Examination Workshop, taught by Dr. Ray Murray, Dr. Robert Graham, Marianne Stam, Dr. Lynne Macdonald, Dr. George Sensabaugh, Skip Palenik and Chris Palenik, at California Associate of Criminalists Semi-annual workshop.
- Paper Fiber Identification Workshop, taught by Dr. Walter Rantanen of the Integrated Paper Service (2006)
- Wood Identification Workshop, taught by Dr. Walter Rantanen of the Integrated Paper Services (2006)
- Softwood Identification workshop, taught by Dr. Regis Miller of the Center of Wood Anatomy Research, Forest Products Laboratory (2006)
- Orientation Imaging Microscopy and Phase Identification EBSD workshop, taught by David Dingley and Matthew Nowell, TSL/EDAX, Draper, Utah, (2005)
- Forensic Analysis of Paint, taught by Ed Suzuki, Ed Bartick, FBI Academy, Quantico, VA (2004)
- FTIR Spectroscopy, taught by Edward Bartick, John Reffner, Edward Suzuki, FBI Academy, Quantico, VA (2004)
- Cathodoluminescence Microscopy Workshop, taught by V. Barbin, M. Schvoerer, K. Ramseyer, Florence, Italy (2004)
- Spent Nuclear Fuel workshop, Chicago, IL (2004)
- Lock and Security workshop, Folger-Adams Security, Lemont, IL (2004)
- Metal Working instruction workshop, taught by Julian Broad, Shop Supervisor, University of Michigan (2004)
- Scientific Glassblowing workshop, taught by Harald Eberhart, Master Glassblower, Ann Arbor, MI (2003)
- Secondary ionization mass spectroscopy (SIMS) of uraninite, under Prof. M. Fayek, Oak Ridge National Laboratory, TN (2003)
- Spindle Stage Methods workshop, Instructors: Prof. D. Bloss, Prof. M. Gunter, Dr. S. Su, McCrone Research Institute, Chicago, IL (July, 2003)
- Actinide Chemistry workshop, Institute for Transuranic Elements, Karlsruhe, Germany (June 2003)
- Micro-Raman spectroscopy research on radiation damage in zircon, under Prof. L. Nasdala, Universität Mainz, Germany (March 2002)
- Micro-XRF experimentation, Advanced Photon Source, Argonne, IL (2002)
- Engineering Mineralogy of Ceramic Materials workshop, University of Siena, Italy (June 2001)
- Forensic Fiber Examination, Instructor: S. Palenik, Department of Public Safety, Austin, TX (June, 2000)



- Synthesis of Hf-borosilicate glasses, under Prof. L.L. Davis, Pacific Northwest National Laboratory, Hanford, WA (February, 2000)
- Design and development of the “Microtrace Forensic Fiber Reference Collection”, with S. Palenik, Microtrace, Elgin, IL (1998-1999)
- Study of automobile paint finish systems, under Dr. W. Stoecklein, Forensic Science Institute of the Bundeskriminalamt, Wiesbaden, Germany (Summer 1998)
- Study of inclusions in the Allende meteorite, Prof. L. Grossman and Dr. S. Simon, Department of Geophysical Sciences, University of Chicago (1996-1998)
- Mentorship study of Gel-based inks, under L. Olson, National Forensic Laboratory, Internal Revenue Service (1994-1995).
- Infrared Spectroscopy Interpretation, Bowdoin College, Maine, (June, 1996)
- Microchemical Methods, Instructor: S. Palenik, McCrone Research Institute, Chicago, IL (1996)
- Scanning Electron Microscopy, Instructor: Stevens, McCrone Research Institute, Chicago, IL (1994)
- NMR Spectroscopy use and interpretation, IMSA, Aurora, IL (1993-1995)
- Polarized Light Microscopy, Instructor: J. Delly, McCrone Research Institute, Chicago, IL (1992)

## Analytical Techniques

Include but are not limited to: Polarized light microscopy, thermal microscopy, scanning electron microscopy, electron microprobe, energy dispersive X-ray spectroscopy, high-resolution transmission electron microscopy, Raman microspectroscopy, infrared microspectroscopy, cathodoluminescence, UV/visible spectroscopy, scanning white light interferometry, UV/visible/near infrared microspectrophotometry, powder x-ray diffraction, micro-X-ray fluorescence, phase contrast microscopy, differential interference contrast microscopy, fluorescence microscopy, gas chromatography-mass spectroscopy, electron backscatter diffraction, differential scanning calorimetry, thin layer chromatography.

## Research Grants

The development of objective approach to the characterization and interpretation of paint evidence by SEM/EDS (National Institute of Justice, 2017-IJ-CX-0027) – Role: Principal Investigator

Nanotrace: Applications of subvisible to nanoscale particles in trace evidence (National Institute of Justice, 2015-DN-BX-K0033) – Role: Principal Investigator

Advanced research in Microspectrophotometry of Fibers: Analysis and Interpretation (National Institute of Justice, 2012-DN-BX-K040) – Role: Principal Investigator

Development of a Turnkey Analytical System for the Forensic Comparison and Identification of Fiber Dyes on Casework-sized Fibers (National Institute of Justice, 2012-DN-BX-K42) – Role: Principal Investigator

Raman spectroscopy of automotive and architectural pigments: in situ identification and evidentiary Significance (National Institute of Justice, 2011-DN-BX-K557) – Role: Principal Investigator

Fundamentals of Forensic Pigment Identification by Raman microspectroscopy: A practical identification guide and spectral library (National Institute of Justice, 2010-DN-BX-K236) – Role: Principal Investigator

## **Graduate Committees**

Samuel Yatzkan (2017) Detection and Persistence of Gunshot Residue (GSR) on Facial Features using SEM/EDX. Master of Science in Forensic and Investigative Science, West Virginia University. Additional committee members: Prof. Keith Morris (chair) and Prof. Susan Bell.

Barbara Fallon (2016) A Tale of two corchorus species: jute and its substitutes in commercial goods. Forensic Science – Master of Science, Michigan State University. Additional committee members: Prof. Ruth Smith (chair) and Prof. Jeremy Wilson.

Katelyn Hargrave (2013) A New Technique for the Identification of Dyes Extracted from Fibers. Master of Science in Forensic Science, University of Illinois at Chicago.

## **Publications and Teaching**

### **Courses and Workshops Taught**

Development of an objective approach to the characterization and interpretation of paint evidence by SEM/EDS. (2019) Forensic Technology Center of Excellence Webinar Series - Emerging Research: Forensic Chemistry, 4 April 2019.

Applications of Raman Spectroscopy for Trace Evidence Examinations (2018) – workshop taught by Buzzini, P, Suzuki, E.M., Palenik, C.S., Bowen, A.M. at the American Academy of Forensic Sciences Annual Meeting, Seattle, WA.

Advanced Trace Evidence Analysis (2016). Topics included: dye and pigment identification, soil analysis, nanoparticle analysis – workshop taught by Palenik C. at the 8<sup>th</sup> Annual Asian Network of Forensic Sciences meeting, Bangkok, Thailand.

Petrographic identification of soil minerals (2015) - workshop taught by Palenik, S. and Palenik, C.S. at the National Institute of Justice Impression, Pattern and Trace Evidence Symposium (IPTES), San Antonio, TX.

Applications of Raman Spectroscopy for Trace Evidence Examinations (2014) – workshop taught by Buzzini, P, Suzuki, E.M., Palenik, C.S., Bowen, A.M. at the American Academy of Forensic Sciences Annual Meeting, Seattle, WA.

What did you just step in? (2011) – workshop taught with Mooney, K.E., Flohr, D.B., Bowen, A, Stoney, D, Bisbing, R., Hopen, T., Murray, R., Palenik, C.S., Palenik, S., Schneck, W.M., Stam, M. at the American Academy of Forensic Sciences Annual Meeting, Atlanta, GA.

Classification of Pigments by Raman Spectroscopy (2011) – workshop taught at the Midwestern Association of Forensic Sciences Ruby Jubilee Meeting, Lombard, IL.

Identification of Animal Hairs (2011) – workshop taught with Skip Palenik and Jason Beckert at the American Academy of Forensic Sciences Annual Meeting, Chicago, IL.

Advanced Hair and Fiber Microscopy – synthetic fiber section (2009) taught with Skip Palenik and Jason Beckert at McCrone Research Institute, Chicago, IL.

#Methods in Stereomicroscopy (2009) Customized Class. Rockville, MD.

#Forensic Pigment Analysis (2009) National Institute of Justice (NIJ) Trace Evidence Symposium, Clearwater Beach, FL.

Special topics in Forensic Science (2008) taught with Skip Palenik and Jason Beckert at McCrone Research Institute, Chicago, IL.

#Palenik, C.S (2005-2008) Trace evidence in forensic science. Seminar presented at Northwestern University Forensic Science Series, Chicago, IL (presented annually)

Introductory workshop to Forensic Microscopy (2007) taught with Skip Palenik at the Federal Bureau of Investigation (FBI) / National Institute of Justice (NIJ) Trace Evidence Symposium, Clearwater Beach, FL.

### **Book Chapters and Peer Reviewed Reports**

Palenik, C.S. (2015) Forensic Microscopy in Forensic Chemistry (ed. Jay Seigl) American Academy of Forensic Sciences under Wiley Publications.

Palenik, C.S., Palenik, S., Groves, E., Herb, J. (2013) Raman spectroscopy of automotive and architectural paints: in situ pigment identification and evidentiary significance. Submitted in completion of NIJ grant 2011-DN-BX-K557.

Palenik, C.S., Palenik, S., Herb, J., and Groves, E. (2011) Fundamentals of Forensic Pigment Identification by Raman Microspectroscopy: A practical identification guide and spectral library for forensic science laboratories. Submitted in completion of NIJ grant 2010-DN-BX-K236.

Palenik, C.S. and Buscaglia, J. (2007) Applications of cathodoluminescence in Forensic Science, in Forensic analysis on the Cutting Edge: new methods for trace evidence analysis, ed. R. Blackledge, Wiley.

Palenik, C.S. (2004) Isotopic and Neutronic Composition of the Okelobondo Natural Nuclear Reactor. Ph.D. Thesis, University of Michigan.

Palenik, S.J. and Palenik, C.S. (2004) Microscopy and microchemistry of physical evidence, in Forensic Science Handbook II, 2<sup>nd</sup> ed. Ed. R. Saferstien, Prentice Hall.

### **Journal Articles**

Palenik, C.S. (2019) The Role of Collections in Trace Evidence. *The Microscope*, 67(2).

Palenik, C.S., Groves, E., Insana, J., Palenik, S. (2019) Locating, Identifying and Comparing Sub Visible Paint Particles. *Journal of Forensic Sciences*. doi: 10.1111/1556-4029.14062.

Palenik, C.S., Brinsko-Beckert, K., Insana, J., and Palenik, S.J. (2018) Analytical and transfer characteristics of a fluorescent detection spray: Implications for subvisible and nanotrace particle transfers. *Forensic Science International* Volume 286, May 2018, 96-105.

Groves, E.G., Palenik, S.J., and Palenik, C.S. (2018) A Generalized Approach to Forensic Dye Identification: Acquisition and Development and Utility of Reference Libraries. *Journal of the American Association of Analytical Chemists (JAOAC)* 101(5) 1385-1396.

Groves, E.G., Palenik, S.J., and Palenik, C.S. (2018) Reproducibility of high-performance thin-layer chromatography (HPTLC) in textile dye analysis. *Forensic Chemistry*, 8, 104–110.

Groves, E.G., Palenik, S.J., and Palenik, C.S. (2016) A Survey of Extraction Solvents in the Forensic Analysis of Textile Dyes. *Forensic Science International* (268) 139-144.

Groves, E.G. and Palenik, C.S. (2016) Applications of Blue Light Curing Acrylic Resin to Forensic Sample Preparation and Microtomy. *Journal of Forensic Science*. March 2016, Vol. 61, No. 2 489-493.

Palenik, C.S. and Palenik, S. (2014) Seeing Color: Practical Methods in Pigment Microscopy. *The Microscope*, v62, 51-61.

Trejos, T., Koons, R., Becker, S., Berman, T., Buscaglia, J., Duecking, M., Eckert-Lumsdon, T., Ernst, T., Hanlon, C., Heydon, A., Mooney, K., Nelson, R., Olsson, K., Palenik, C., Pollock, E.C., Rudell, D., Ryland, S., Tarifa, T., Valadez, M., Weis, P., Almirall, J. (2013) Cross-validation and evaluation of the performance of methods for the elemental analysis of forensic glass by  $\mu$ -XRF, ICP-MS, and LA-ICP-MS. *Anal Bioanalytical Chemistry*, 405: 5393-5409 (DOI 10.1007/s00216-013-6978-y).

Jantzi, S.C., Trejos, T., Zdanowicz, V. Dalpe, C., Palenik, C.S., Koons, R. Becker, S., Pollock, E.C., Hanlon, C., Almirall, J.R. (submitted) Inter-laboratory comparison of laser ablation inductively-coupled plasma mass spectrometry (LA-ICP-MS), micro X-ray fluorescence ( $\mu$ XRF) and laser-induced breakdown spectroscopy (LIBS) methods for bulk soil analysis. *Forensic Science International*.

Palenik, C.S. and Diaczuk P. (2013) *Plumbum microraptus*: Microscopic indicators of a bullet hole in a synthetic fabric. *The Microscope Journal* and reprinted in the *Journal of the American Society of Trace Evidence Examiners* (Volume 4, Issue 2, August 2013).

Ernst, Troy, Berman, Ted, Buscaglia, JoAnn, Eckert-Lumsdon, Tiffany, Hanlon, Christopher, Olsson, E. Kristine, Palenik, Christopher, Ryland, Scott, Trejos, Tatiana, Valadez, Melissa, Almirall, Jose (submitted 2012) Chemistry Signal-to-noise ratios in forensic glass analysis by micro x-ray fluorescence spectrometry. *X-ray Spectrometry*. DOI 10.1002/xrs.2437

Trejos, T, Koons, R., Becker, S., Berman, T., Buscaglia, J., Duecking, M., Eckert-Lumsdon, T., Ernst, T. Hanlon, C., Heydon, A., Mooney, K., Nelson, R., Olsson, K., Palenik, C., Pollock, E.C., Rudelli, D. Ryland, S., Tarifa, A., Valadez, M., Weis, P. Almirall, J. (2) Forensic analysis of glass by  $\mu$ -XRF, SN-ICP-MS, LA-ICP-MS and LAICP-OES: Evaluation of the performance of different criteria for comparing elemental composition. *Journal of Analytical Atomic Spectrometry*, 38, 1270-1282. DOI: 10.1039/c0xx00000x.

Trejos, T, Koons, R., Becker, S., Berman, T., Buscaglia, J., Duecking, M., Eckert-Lumsdon, T., Ernst, T. Hanlon, C., Heydon, A., Mooney, K., Nelson, R., Olsson, K., Palenik, C., Pollock, E.C., Rudelli, D. Ryland, S., Tarifa, A., Valadez, M., Weis, P. Almirall, J. (accepted) Forensic analysis of glass by  $\mu$ -XRF, ICP-MS, LA-ICP-MS and LA-ICP-OES - Part I: Method Standardization

Egan, J.M.; Mooney, K.; Palenik, C.S.; Mueller, K.T., and Golombeck, R. (2006) Synthesis, Isolation, and Characterization of Chlorinated Products of Bleached 1-(methylamino)anthraquinone. *Journal of Forensic Sciences*.

Reich, M., Kesler, S.E., Utsunomiya, S., Palenik, C.S., Chrysosoulis, S.L., and Ewing, R.C. (2005) Solubility of gold in arsenian pyrite. *Geochimica et Cosmochimica Acta*, 69, 2781-2796.

Palenik, C.S. and Palenik, S.J. (2004) Forensic Science and Academic Science, Comment on Forensic Science: Oxymoron? *Science*, 303, 1136.

Utsunomiya, S., Palenik, C.S., Valley, J.W., Cavosi, A.J., Wilde, S.A. and Ewing, R.C. (2004) Nanoscale behavior of Pb in an Archean zircon. *Geochimica et Cosmochimica Acta*, 68, 4679-4686.

Ewing, R.C., Palenik, C.S. and Konikow, L. (2004) Comment on: "Probabilistic Risk Analysis for a High-Level Radioactive Waste Repository" by B. L. Cohen in *Risk Analysis*, vol. 23, 909-915, *Risk Analysis*, in press.

Palenik, C.S., Utsunomiya, S., Reich, M., Kesler, S.E. and Ewing, R.C. (2004) Invisible Gold Revealed: Direct imaging of gold nanoparticles from a Carlin-type deposit. *American Mineralogist*, 89, 1359-1366.

Davis, L.L., Darab, J.G., Qian, M., Zhao, D., Palenik, C.S., Li, H., Strachan, D.M. and Li, L. (2003) Hafnium in peralkaline and peraluminous boro-aluminosilicate glass and glass sub-components: a solubility study. *Journal of Non-Crystalline Solids*, 328, 101-122.

Palenik, C.S., Nasdala, L. and Ewing, R.C. (2003) Radiation damage in a zircon. *American Mineralogist*, 88, 770-781.

Jensen, K.A., Palenik, C.S. and Ewing, R.C. (2002) U<sup>6+</sup>-phases in the weathering zone of the Bangombe U-deposit: Observed and predicted mineralogy. *Radiochimica Acta*, 90, 1-9.

Palenik, C.S. (2000) The role of the forensic scientist in the new millennium. *Academy News (American Academy of Forensic Sciences)*, 23-24.

Palenik, C.S. (1989) The microscopical differentiation of dog and cat hairs, *The Microscope*, 38(4), 415-421.

### **Conference Proceedings**

Palenik, C.S., Jensen, K.A. and Ewing, R.C. (2004) The impact of uncertainties in geochemical modeling on performance assessments: Lessons from natural analogues. *Materials Research Society Spring Meeting*, San Francisco, CA.

Palenik, C.S. and Ewing, R.C. (2002) Microanalysis of radiation damage across a zoned zircon crystal. *Proceedings of the Materials Research Society*, 713, JJ8.8.1-JJ8.8.6.

Zhao, D., Davis, L.L., Li, L., Palenik, C.S., Wang, L.M, Strachan, D.M. and Ewing, R.C. (2000) Gadolinium and hafnium alumino-borosilicate glasses: Gd and Hf solubilities. *Proceedings of the Materials Research Society*, vol. 608, 683-689.

### **Other Publications**

Palenik, C. S.; Palenik, S.; Groves, E. (2019). *Microscopy | Forensic Microscopy*. In Worsfold, P., Poole, C., Townshend, A., Miró, M., (Eds.), *Encyclopedia of Analytical Science*, (3rd ed.). vol. 7, pp 57–64, Elsevier.

Palenik, C.S. and Jackson, G. (2016) Forensic Myths and Methods. *The Analytical Scientist*, March 2016 #38, 24-32.

Palenik, C.S., Palenik, S.J., and Groves, E.G. (2014) *Forensic Microscopy*, In: Reedijk, J. (Ed.) Elsevier Reference Module in Chemistry, Molecular Sciences and Chemical Engineering. Waltham, MA: Elsevier. 07-Aug-14 doi: 10.1016/B978-0-12-409547-2.11426-X.

Palenik, C. and Nytes, B. (2014) *Mercury Wings*, (ed.) Bethany Halford in *Chemical and Engineering News, Newsprints*. Volume 92 Issue 22, p40, June 2, 2014.

Palenik, C. (2013) Consumer Complaint Sample Analyses: Considerations for Outsourcing Sample Analysis, Submitted to Society of Consumer Affairs Professionals – Customer Relationship Management CRM Magazine. Summer 2013.

Palenik, C. (2011) A Better Fate For Mercury?, Letter to the Editor, Chemical and Engineering News, 18 April 2011, 89(16), p6.

Palenik, C. (2005) Big "I" in Owens. Letter to the Editor, New York Times, November 13.

Utsunomiya, S., Palenik, C.S., and Ewing, R.C. (2004) Nano- to Atomic Scale Imaging of Heavy Trace Metals Utilizing Advanced Microscopy Techniques in The Dekker Encyclopedia of Nanoscience and Nanotechnology. Marcel Dekker Pub., NY

Palenik, C.S. and Palenik, S.J. (2004) Forensic Microscopy, in Encyclopedia of Analytical Sciences, 2nd Ed., eds. Worsfold, P., Townshend, A and Poole, C. Elsevier, NY.

Palenik, C.S. and Palenik, S.J. (1999) Forensic Fiber Reference Collection Manual. Microtrace: Elgin, IL 46p.

Palenik, S.J. and Palenik, C.S. (1999) Forensic Fiber Identification Course Guide. Microtrace: Elgin, IL, 32p.

### **Abstracts and Talks**

\*Keynote or Plenary address; #Invited talk; ^Session chair, %Scheduled/Accepted

#Palenik, C.S. (2020) Developments in the forensic analysis of automotive paints by SEM/EDS. Pittcon 2020, Chicago, IL.

Palenik, C.S., Groves, E, Michely, L., Lim, Y.C., and Palenik, S.J. (2020) A survey of elements detectable in automotive paint layers by SEM/EDS. American Academy of Forensic Sciences Annual Meeting, Anaheim, CA.

Lewis, A., Palenik, C.S., Palenik, S., Buzzini, P. (2020) Characterization of Nylanthrene Dyes in the Differentiation of Macroscopically Similar Black Fibers using Light Microscopy and Visible Microspectrophotometry. American Academy of Forensic Sciences Annual Meeting, Anaheim, CA.

#Palenik, C.S. (2019) Microanalysis in forensic paint investigations. Midwest Microscopy and Microanalysis Society (M<sup>3</sup>S), Round Lake, IL.

Brinsko Beckert, K., Palenik, S., Palenik, C.S. (2018) Nanoparticles as Trace Evidence. Joint Meeting of the Southern Association of Forensic Scientists (SAFS) and the American Society of Trace Evidence Examiners in Ashville, NC.

#Palenik, C.S. (2018) Advanced topics in forensic microscopy. Talk given at the Bundeskriminalamt in Wiesbaden, Germany.

Palenik, C.S. and Michely, L. (2018) Analytical considerations for the elemental analysis and forensic comparison of automotive paints. Inter/Micro 2018, Chicago, IL.

White, K.M. and Palenik, C.S. (2018) Product Discoloration: Analysis of an Unknown Red Colorant. Inter/Micro 2018, Chicago, IL

Groves, E.G., Michely, L. and Palenik, C.S. (2018) A Survey of Elements Detected in Multi-layered Automotive Paint Samples by SEM-EDS. Inter/Micro 2018, Chicago, IL.

%White, K.M., Nytes, B.N., and Palenik, C.S. (2018) Applications of Glass Microspheres as Forensic Trace Evidence. Pittcon 2018, Orlando, FL.

%White, K.M. and Palenik, C.S. (2018) Forensic Study of Known Toner Particles. Pittcon 2018, Orlando, FL.

% Brinsko Beckert, K. and Palenik, C.S. (2018) Nanoparticles as trace evidence: Part I. Recognition and collection. Pittcon 2018, Orlando, FL.

% Brinsko Beckert, K. and Palenik, C.S. (2018) The Forensic Analysis of 3D Printer Dust Particles. Pittcon 2018, Orlando, FL.

%Palenik, C.S. (2018) Nanotrace Evidence in Forensic Investigations. National Association of Criminal Defense Lawyers. Making Sense of Science XI: Forensic Science and the Law. Las Vegas, NV.

% Palenik, C.S. (2018) High Order Trace Transfers: Considerations for the analysis of subvisible and nanoparticles. American Academy of Forensic Science 70<sup>th</sup> Annual Scientific Meeting, Seattle, WA.

% Palenik, C.S. (2018) Fulgurites in litigation. American Academy of Forensic Science 70<sup>th</sup> Annual Scientific Meeting, Seattle, WA.

Palenik, C.S. (2017) Fulgurites and Forensic Science: A Novel Application of Forensic Geology. Inter/Micro-2017, Chicago, IL.

Insana, J. and Palenik, C.S. (2017) Application of Rietveld Refinement to Forensic Samples. Inter/Micro-2017, Chicago, IL.

White, K.M. and Palenik, C.S. (2017) A Forensic Study of Known Toner Nanoparticles, Inter/Micro-2017, Chicago, IL.

Brinsko Beckert, K. and Palenik, C.S. (2017) The forensic analysis of 3-D printer dust particles. Inter/Micro-2017, Chicago, IL.

#Palenik, C.S. (2017) Scientific Foundations Session 1, National Commission on Forensic Science. National Institute of Justice, Washington, DC.

#Palenik, C.S. (2016) Counterfeit materials and their relation to forensic science. Interpol Forensic Science Managers Symposium, Lyon France.

#Palenik, C.S. (2016) The invaluable role of a technician in forensic science. Fall Annual Meeting of the Midland Section of the American Chemical Society, Midland Michigan.

\*Palenik, C.S. (2016) Forensic microscopy and the lost art of observation. Fall Annual Meeting of the Midland Section of the American Chemical Society, Midland Michigan.

#Palenik, C.S. (2016) Advanced trace evidence analysis: from micro to nano. Asian Forensic Sciences Network Annual Meeting 2016, Bangkok, Thailand.

#Palenik, S.J. and Palenik, C.S. (2016) The Utilization of Microscopy in Developing Investigative Leads from the Examination of Microscopic Trace Evidence in Forensic Investigations. Microscopy and Microanalysis 2016 Meeting, Dayton, OH.

Hargrave, K.H., Nytes, B.N., Hopen, T., Palenik, C.S. (2016) Applications of Glass Microspheres as Forensic Trace Evidence. Presentation at Inter/Micro 2016, Chicago, IL.

Groves, E.G. and Palenik, C.S. (2016) A practical approach to forensic dye identification: method and validation. Presentation at Inter/Micro 2016, Chicago, IL.

Palenik, C.S., Groves, E.G., and Palenik, C.S. (2016) Dye Identification in Casework: How far can you go? Presentation at Inter/Micro 2016, Chicago, IL.

Scott, K.R., Palenik, C.S., Palenik, S., Morgan, R.M. (2016) A multidisciplinary approach to the collection and analysis of aquatic trace evidence from clothing exhibits. Australian and New Zealand Forensic Science Society International Symposium. Auckland, New Zealand.

Scott, K., Morgan, R., Palenik, C.S. and Palenik, S.J. (2015) Developing the techniques available for the collection and analysis of forensic evidence in freshwater crime scene environments. National Institute of Justice Impression, Pattern and Trace Evidence Symposium (IPTES), San Antonio, TX.

Fallon, B.L., Palenik, C.S. and Palenik, S.J. (2015) Jute and its Substitutes in Common Goods. National Institute of Justice Impression, Pattern and Trace Evidence Symposium (IPTES), San Antonio, TX.

Palenik, C.S. (2015) Decreasing the Scale and Increasing the Scope of Trace Evidence. National Institute of Justice Impression, Pattern and Trace Evidence Symposium (IPTES), San Antonio, TX.

^Palenik, C.S. (2015) Surrounded by Spheres: Microspheres and nanospheres in the world around us. Inter/Micro 2015. Chicago, IL.

Nytes, B.N., Palenik, C.S., Palenik, S.J. (2015) Microchemistry: Not such a small thing. Inter/Micro 2015. Chicago, IL.

Hargrave, K., Palenik, S.J., Beckert, J., Palenik, C.S. (2015) Characterization of Extracted Dyes by Capillary Microspectrophotometry: Proof of Concept. Inter/Micro 2015. Chicago, IL.

Fallon, B.L., Palenik, C.S., and Palenik, S. (2015) A Tale of Two Corchorus Species: Jute and Its Substitutes in Common Goods. Inter/Micro 2015. Chicago, IL.

^#Palenik, C.S. (2015) Keynote Address. Microscopy and the lost art of observation. SCIX 2015, Providence Rhode Island.

#Palenik, C.S. (2015) Microscopy: My Professional Hobby. State Microscopical Society of Illinois monthly speaker series. Chicago, IL.

Palenik, C.S. and Palenik, S.J. (2015) Microtrace to Nanotrace: Extracting information at increasingly smaller length scales. American Academy of Forensic Sciences Annual Meeting, Orlando, FL.

^,#Palenik, C.S. (2014) Identification and Significance of Colorants in Forensic Casework. World Forensic Festival (IAFS 2014, AFSN 2014, APMLA 2014), Seoul, Korea.

Palenik, C.S. and Palenik, S.J. (2014) Seeing Color: Practical Methods in Pigment Microscopy. Inter/Micro 2014, Chicago, IL.

Hargrave, K., Beckert, J., Palenik, C.S., White, K., Sigman, M. (2014) The Comparison of Similarly Colored Fabrics and Yarns Using Comparison Microscopy and Microspectrophotometry. Inter/Micro 2014, Chicago, IL.

Nytes, B., White, K.M., and Palenik, C.S. (2014) You Found WHAT in Your Pizza?: Characterization of a condom allegedly baked into a pizza. Inter/Micro 2014, Chicago, IL.

White, K.M., Palenik, C.S., Beckert, J.B., and Hargrave, K. (2014) Evaluating Different Methods of Comparison for Fibers with Subtle Variations in Dye Concentration. Inter/Micro 2014, Chicago, IL.

#Palenik, C.S. (2014) Food Forensics: Key Considerations for Consumer Complaint Sample Analysis. Food Labs Conference at PittCon, Chicago, IL.



#Palenik, C.S. (2013) Applications of colorant identification in forensic science. SCIX 2013 Annual Meeting, Milwaukee, WI.

Groves, E. and Palenik, C.S. (2013) The use of blue light curing resins in forensic sample preparation, Inter/Micro 2013, Chicago, IL.

Palenik, C. and Beckert, J. (2013) Between the fringes: overlooked topics in microspectrophotometry, Inter/Micro 2013, Chicago, IL. (abstract accepted, talk not given due to illness)

Groves, E. and Palenik, C.S. (2013) Colorant basics: chemical organization of a dye and pigment database, Inter/Micro 2013, Chicago, IL.

Palenik, S. and Palenik, C.S. (2013) Development of a systematic approach to forensic dye identification, Inter/Micro 2013, Chicago, IL.

Nytes, B., Palenik, S.J. and Palenik, C.S. (2013) Fitting the Mold: An Exploration into Sourcing of Glass Fragments, Inter/Micro 2013, Chicago, IL.

Palenik, C.S. (2013) Microanalytical methods of materials characterization in forensic science. International Cement Microscopy Association Annual Meeting, Rosemont IL.

#Palenik, C.S. and Palenik, S.J. (2013) Applications of Forensic Microanalytical Methods to the Identification and Sourcing of Particulate Matter in Pharmaceutical Products, Microscopy & Microanalysis 2013 sponsored by the Microscopy Society of America, Indianapolis, IN.

Palenik, C.S. (2013) Systematic in situ Identification of Pigments in Paint by Raman Microspectroscopy, AAFS, American Academy of Forensic Sciences National Meeting, Washington, DC.

Palenik, C.S. and Beckert, J.B. (2012) The Forensic Analysis of Paint Evidence Using Micro-Raman Spectroscopy, MAFS 2012, Milwaukee, WI.

Groves, E.G., Herb, J., Palenik, C.S. (2012) Benefits of Using Cross-Sectioning in Forensic Analysis of Automotive Paints, Inter/Micro 2012, Chicago, IL.

Palenik, C.S., Buzzini, P., Herb, J., Groves, E. (2012) The Forensic Analysis of Paint Evidence Using Micro-Raman Spectroscopy Part I: Development of Libraries and Application Methods, Inter/Micro 2012, Chicago, IL.

Buzzini, P., Palenik, C.S., and Massonnet, G. (2012) The Forensic Analysis of Paint Evidence Using Micro-Raman Spectroscopy Part II: Case Examples, Inter/Micro 2012, Chicago, IL

Sliwa, S., Groves, E., Palenik, M.C. (2012) Mapping Elemental and Refractive Index Variation in Container Glass, Inter/Micro 2012, Chicago, IL.

Herb, J., Palenik, C.S., and Palenik, S.J. (2012) Four Score and Seven Years Ago" or Was It? : Authenticating President Abraham Lincoln's Signature, Inter/Micro 2012, Chicago, IL.

Palenik, C.S. and Palenik, S. (2012) Development of a Pigment Classification Scheme by Raman Spectroscopy. American Academy of Forensic Sciences National Meeting. Atlanta, GA.

#Palenik, C. (2011) Forensic Soil Examination at the NIJ Sponsored Elemental Analysis Working Group Meeting Miami, Florida – October 12-13, 2011.

Buscaglia, J., Palenik, C.S., Brokus, S.A., Silletti, D.K., Cooper, D.E., Purcell, D.K., Peaslee, G.F. (2011) Applications of Cathodoluminescence (CL) Microscopy and Spectroscopy to Forensic Evidence. Presented

at Cathodoluminescence (CL 2011), a topical conference (TC) of the Microbeam Analysis Society (MAS), co-sponsored by the Australian Microbeam Analysis Society (AMAS) held at the National Institute of Standards and Technology (NIST), Gaithersburg, MD, USA on October 24-28, 2011.

#Palenik, CS. Beyond Comparison: Developing Investigative Leads from Trace Evidence. Eastern Analytical Symposium. Somerset, New Jersey.

Palenik, CS, Palenik, S., Herb, J., Beckert, J., Nytes, B. Chemical Classification of Pigments by Raman Spectroscopy for Forensic Applications. NIJ Trace Evidence Symposium, Kansas City, MO (2011).

Palenik, CS, Palenik, S., Beckert, J., Nytes, B., Groves, E. (2011) Improvements in analytical precision in the forensic analysis of glass through the use of metal filters in  $\mu$ -XRF analysis. NIJ Trace Evidence Symposium, Kansas City, MO.

Jantzi, S.C., Trejos, T., Zdanowicz, V., Dalpe, C., Palenik, C.S., Koons, R., Wong, D., Hanlon, C., Pollock, E., Becker, S., Almirall, J. (2011) Inter-Laboratory Comparison of LA-ICP-MS,  $\mu$ XRF and LIBS methods for Bulk Soil Analysis

Ernst, T., Trejos, T. Valadez, M., Koons, R., Buscaglia, J., Olsson, K., Ryland, S. Berman, T., Eckert-Lumsdon, T. Hanlon, C., Palenik, C., Almirall, J. (2011) When is a peak, a peak? Calculating detection and quantification limits for micro X-ray fluorescence spectrometry of glass samples.

Herb, J.N. and Palenik, C.S. (2011) Use of surface enhanced Raman spectroscopy (SERS) applied to the study of fluorescing pigments and dyes. American Academy of Forensic Sciences National Meeting, Chicago, IL.

Nytes, B.N, Beckert, J., Palenik, C.S., and Palenik, S. (2011) Obtaining investigative forensic information from the analysis of rodents in food products. American Academy of Forensic Sciences National Meeting, Chicago, IL.

Palenik, CS, Wilke, B. (2010) Raman spectroscopy of organic pigments. American Academy of Forensic Sciences National Meeting, Seattle, WA.

Palenik, CS, Nytes, B.N., Beckert, J., Bonta, H, and Palenik, S (2009) Raman spectroscopy of Forensic Evidence. Trace Evidence Symposium (National Institute of Justice (NIJ), Clearwater Beach, FL.

Buscaglia, J., Palenik, C.S., and Peaslee, G. (2009) Trace evidence applications of cathodoluminescence (CL) microspectrophotometry. Trace Evidence Symposium (National Institute of Justice (NIJ), Clearwater Beach, FL.

Wilke, B. and Palenik, C.S. (2009) Organic Pigments: Analytical characterization and classification by Raman spectroscopy. Inter/Micro 09, Chicago, IL.

Palenik, CS, Bonta, H, and Palenik, S (2009) Microanalysis of Architectural Tinting Pigments. American Academy of Forensic Sciences National Meeting. Denver, CO.

#Palenik, CS (2008) Food Forensics: Applications of microscopy and microchemistry to contamination issues in the food industry. Presented to the Griffith Laboratory Global Summit Meeting, Lombard, IL.

#Palenik, CS (2008) Big Picture Clues from Microscopic Particles: Applications of Geology to Forensic Science. Colgate University, NY.

Peaslee, GF, Buscaglia, J, Palenik, CS (2008) Cathodoluminescence as a Forensic Tool. 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM. Houston, TX.

Bales, H. and Palenik, CS (2008) Planar Section of Multilayer Paint Chips. Inter/Micro 2008, Chicago, IL.

Palenik, S. and Palenik, CS (2008) A Practical Technique for the Recognition of Modern Sculptures Proffered as Ancient Works of Art. Inter/Micro 2008, Chicago, IL.

Palenik, CS and Bonta, H. (2008) Microanalytical Characterization of Architectural Paint Pigments. Inter/Micro 2008, Chicago, IL.

#Palenik, CS (2008) Workshop on Raman Spectroscopy of Forensic Evidence. International Association of Forensic Sciences Conference Proceedings. New Orleans, LA.

Peaslee, GF, Palenik, CS, and Buscaglia, J (2008) Application of Cathodoluminescence Microspectrophotometry for Forensic Comparison of Concrete Samples. International Association of Forensic Sciences Conference Proceedings.

Palenik, CS, Palenik, S., and Nytes, B. (2008) An introduction to the *in situ* identification of pigments in automobile and architectural paints by Raman microspectroscopy. Proceedings of the American Academy of Forensic Sciences National Meeting, Washington DC.

Palenik, CS and Nytes B (2007) The *in situ* identification of pigments in CMYK printing inks. Inter/Micro 2007, Chicago, IL.

Palenik, CS and Palenik, SJ (2007) Ensuring the Continued Role of Science in the Forensic Examination of Trace Evidence. Proceedings of the 2007 American Academy of Forensic Sciences National Meeting, San Antonio, TX.

Palenik, SJ and Palenik, CS (2007) Developing Investigative Leads through Trace Evidence. Proceedings of the 2007 American Academy of Forensic Sciences National Meeting, San Antonio, TX.

#Palenik, CS (2007) Forensic Trace Evidence: Big Picture Clues from Microscopic Particles. Saturday Science Fun Lecture Series, Freedom Hall, Park Forest, IL.

#Palenik, CS (2006) Trace Evidence for the Public Defender. Missouri State Public Defender Winter Workshop, St. Louis, MO.

#Palenik, CS (2006) Forensic Microscopy of Fibers. Presentation at Philadelphia University seminar series.

#Palenik, CS (2006) Cathodoluminescence in Forensic Science. Presentation Soil Analysis workshop at California Association of Criminalists Fall Seminar.

Palenik, S.J. and Palenik, C.S. (2006) Developing Forensic Investigative Leads through the Microscopical Examination of Trace Evidence. Geological Society of America National Meeting, Philadelphia, PA. GSA Abstracts with Programs 38 (7).

Palenik, C.S. (2006) Novel applications of cathodoluminescence microscopy. Inter/Micro-06, Chicago, IL.

Palenik, C.S. and Buscaglia, J. (2006) Cathodoluminescence in Forensic Science. American Academy of Forensic Sciences National Meeting, Seattle, WA.

Mooney, K.E., Koons, R.D., Buscaglia, J. and Palenik, C.S. (2006) Discrimination of Automobile Side Windows by Micro-XRF. American Academy of Forensic Sciences National Meeting, Seattle, WA.

Palenik, C.S. (2006) From PhD to Professional: Bridging the Gap. 3<sup>rd</sup> Annual Northwestern University PLU Career Forum.

#Palenik, C.S. (2005) Applications of microscopy and microchemistry in forensic science. Talk given at Chemistry Dept. seminar, University of Wisconsin Platteville.

Egan, J.M., Mooney, K.E., Palenik, C.S., Rickenback, M.P., Golombeck, R.A. and Mueller, K.T. (2005) Synthesis, Isolation, and Characterization of Chlorinated Products of Bank Security Dye Packs Upon Bleaching, Pittcon - 2005, August, 2005.

Palenik, C.S. and Buscaglia, J. (2005) Cathodoluminescence microscopy in forensic science. 2006 Annual meeting of the American Academy of Forensic Sciences. Seattle, WA.

#Palenik, C.S. and Buscaglia, J. (2005) Applications of cathodoluminescence in the forensic analysis of trace evidence. 2005 Annual meeting of SWGMAT (Scientific Working Group for Materials Analysis sponsored by the FBI), Washington, D.C.

\*Palenik, C.S. and Buscaglia, J. (2005) Applications of cathodoluminescence in forensic geology. 2005 Goldschmidt Conference, Moscow, Idaho, *Geochimica et Cosmochimica Acta*.

Fayek, M., Palenik, C.S. and Ewing, R.C. (2005) Characterization of Nd, Te and U isotope ratios in  $UO_2$  using SIMS. 2005 Goldschmidt Conference, Moscow, Idaho, *Geochimica et Cosmochimica Acta*.

Palenik, C.S., Fayek, M., Fleming, R. and Ewing, R.C. (2004) Isotopic composition and neutronics of the Okélobondo natural nuclear reactor. Geological Society of America, Fall National Meeting, Denver, CO.

Palenik, C.S. (2004) Microanalytical Characterization of a Natural Nuclear Reactor. Inter/Micro-04, Chicago, IL, *Microscope*, 52, 156.

\*Ewing, K.A., Palenik, C.S. and Ewing, R.C. (2004) The natural fission reactors at Oklo, Gabon: Lessons for modeling the long-term behavior of a nuclear waste repository. International Geological Congress, Florence, Italy.

Palenik, C.S., Jensen, K.A and Ewing, R.C. (2004) The impact of uncertainties in geochemical modeling on performance assessments. Materials Research Society Spring Meeting, San Francisco, CA.

Jensen, K.A., Palenik, C.S., Fayek, M., Evins, L.Z., Janeczek, J., and Ewing, R.C. (2003) The spent nuclear fuel analogue of the Oklo-Okélobondo and Bangombé natural fission reactors. Nordic Geological Winter Meeting, Sweden.

Palenik, C.A., Fayek, M., Jensen, K.A., and Ewing, R.C. (2003) Analysis of Fission Products and Pu Migration in the Okelobondo Reactor Zone Using SIMS. Geological Society of America, Fall National Meeting, Seattle, WA, 35(6), 237.

Utsunomiya, S., Palenik, C.S., Ewing, R.C., Valley, J.W., Cavosie, A.J., and Wilde, S.A. (2003) Fate of Pb in an Archean Zircon. Geological Society of America, Fall National Meeting, Seattle, WA 35(6), 594.

Reich, M., Palenik, C.S., Utsunomiya, S., Becker, U, Stixrude, L. Kesler, S.E. and Ewing, R.C. (2003) Solubility Limit of Gold in Arsenian Pyrite from Carlin-Type and Epithermal Deposits: EMPA, SIMS, HRTEM and Quantum-Mechanical Constraints. Geological Society of America, Fall National Meeting, Seattle, WA 35(6), 358.

Palenik, C.S. and Stoecklein, W. (2003) Batch to batch differentiation of automobile paints. Inter/Micro-03, Chicago, IL

Jensen K.A., Palenik C.S., and Ewing R.C. (2003) Thermodynamic prediction of observed uranium minerals in the supergene-weathered Bangombé U-deposit: implications for blind prediction modeling. Uranium Geochemistry 2003, Nancy, France.

Palenik, C.S., Utsunomiya, S, Kesler, S.E. and Ewing, R.C. (2002) Gold nanoparticles in arsenian pyrite from a Carlin-type deposit observed by HRTEM. Geological Society of America, Fall National Meeting, Denver, CO.

Palenik, C.S, Jensen, K.A. and Ewing, R.C. (2002) Thermodynamic prediction of observed uranyl phases in the supergene-weathered Bangombe U-deposit: Implications for Blind Prediction Modeling. International Mineralogical Association, Scotland, England.

Jensen, K.A., Palenik, C.S., Ewing, R.C. and Burns, P.C. (2001) Uranyl Phases in the Bangombe U-Deposit, Migration '01, Bregenz, Austria.

Jensen, K.A., Palenik, C.S., Ewing, R.C. and Burns, P.C. (2001) Oxidative Alteration of the Oklo-Okelobondo and Bangombe U-Deposits in Gabon: Observed and Predicted Mineralogy, American Chemical Society - Fall National Meeting, Chicago, IL.

Palenik, C.S., Lian, J. and Ewing, R.C. (2001) Microanalysis of radiation damage across a zoned zircon crystal. Materials Research Society, Fall National Meeting, Boston, MA.

Palenik, C.S., Lian, J. and Ewing, R.C. (2001) Zircon as a host for the disposal of Plutonium, Workshop on Engineering Mineralogy of Ceramic Materials, ISEPS, Siena, ITALY.

Jensen, K.A., Palenik, C.S., Ewing, R.C., Burns, P. (2000) The role of sulfates during supergene weathering in the Oklo-Okelobondo uranium deposits, Geological Society of America, Reno, NV.

Stoecklein, W. and Palenik, C.S. (1998) Forensic analysis of automotive paints: Evidential value and the batch problem. Presentation – 4<sup>th</sup> meeting of the European Paint Group. Paris, France, October 5-6.

Palenik, C.S., (1998) Analysis of Chrome-Bearing Spinel from the Allende Meteorite Geophysical Science Exposition '98, University of Chicago.

Simon, S.B., Grossman, L., Ebel, D., Palenik, C. (1998) Large Relict Chromium Spinel from Allende: A link to Murchison?, 29th Lunar and Planetary Science Conference, Houston, TX.

Palenik, C.S. and Olson, L. (1995) Identification of Gel-Based Inks, INTER/MICRO-95, Chicago, IL.

Palenik, C.S. Original Paint Finish Systems on Foreign Automobiles (1994) INTER/MICRO-94, Chicago, IL.