

Name: Patrick Buzzini  
Title: Associate professor  
College of Criminal Justice  
Sam Houston State University

### Degrees Earned

Ph.D. in Forensic Science (magna cum laude) – 2007.  
School of Criminal Sciences. University of Lausanne, Switzerland.

Four-year degree in Forensic Science (equivalent to a Master of Science degree) – 2001.  
School of Criminal Sciences. University of Lausanne, Switzerland.

### Peer-Reviewed Publications

#### Articles

**Buzzini P**, King Dempsey M, Laughlin GJ, Sparenga SB. The effect of ultraviolet radiation on dyed man-made textile fibers using UV-Vis microspectrophotometry (MSP): Technical aspects on spectral alterations in time. *The Microscope* 2022; 69(1): 3-24.

Polston C, Thompson D, **Buzzini P**. Assessment of the impact of induction spatial effects on magnetic flux measurements of toner printed documents. *Journal of Forensic Sciences* 2021;00: 1-10

**Buzzini P**, Curran J, Polston C. Comparison between visual assessments and different variants of linear discriminant analysis to the classification of Raman patterns of inkjet printer inks. *Forensic Chemistry* 2021; 24: 100336

Polston C, Agalidy YS, Mamedov AA. **Buzzini P**. Technical Note: A Preliminary Evaluation of a Method for the Examination of Text Substitutions Using Magneto-Optical Measurements. *Forensic Science International* 2021; 323: 110776

Moore C, **Buzzini P**. A Review on Porous-Tipped Writing Instruments – Current Market Trends, Properties, and Analytical Methodologies. *Journal of the American Society of Questioned Document Examiners (ASQDE)* 2020; 23(2): 21-31

Aitken C, Chang Ya-Ting, **Buzzini P**, Zadora G, Massonnet G. The evaluation of evidence for microspectrophotometry data using functional data analysis. *Forensic Science International* 2019; 305: 110007

**Buzzini P**, Kammrath BW, De Forest P. Trace evidence? The term trace from adjective to noun. *WIREs Wiley Interdisciplinary Reviews – Forensic Science* 2019 e1342. <https://doi.org/10.1002/wfs2.1342>.

Polston C, Mazzella W, Furbach M, **Buzzini P**. Assessing the Repeatability and Reproducibility of Magnetic Flux Measurements and their Potential to Discriminate Toner Printed Documents. *Journal of the American Society of Questioned Document Examiners (ASQDE)* 2018; 21(2): 45-56.

**Buzzini P**, Polston C, Schackmuth C. On the criteria for the discrimination of inkjet printer inks using micro Raman Spectroscopy. *Journal of Raman Spectroscopy* 2018; 49(11): 1791-1801.

Suzuki EM, **Buzzini P**. Applications of Raman spectroscopy in forensic science. I: Principles, comparison to infrared spectroscopy, and instrumentation. *Forensic Science Review* 2018; 30: 111-135.

- Suzuki EM, **Buzzini P**. Applications of Raman spectroscopy in forensic science. II: Analysis considerations, spectral interpretation, and examination of evidence. *Forensic Science Review* 2018; 30:137-169.
- Joslin Yogi T, Penrod M, Holt M, **Buzzini P**. The Relationship Between Cross-Sectional Shapes and FTIR Profiles in Synthetic Wig Fibers and Their Discriminating Abilities – An Evidential Value Perspective. *Forensic Science International* 2018; 283: 94-102.
- Insana J, **Buzzini P**. The Differences Between Refractive Index Measurements of the External Surface and Bulk Area of Container Glass. *The Microscope* 2016, 64(2): 51-60.
- Buzzini P**, Suzuki E. Forensic Applications of Raman Spectroscopy for the In Situ Analyses of Pigments and Dyes in Ink and Paint Evidence. Year of Light Special Issue. *Journal of Raman Spectroscopy* 2016; 47: 16-27.
- Buzzini P**, Massonnet G. The Discrimination of Colored Acrylic, Cotton, and Wool Textile Fibers Using Micro-Raman Spectroscopy. Part 2: Comparison with the Traditional Methods of Fiber Examination. *Journal of Forensic Sciences* 2015; 60(3): 712-720.
- Muehlethaler C, Massonnet G, **Buzzini P**. Influence of the Shaking Time on the Forensic Analysis of FTIR and Raman Spectra of Spray paints. *Forensic Science International* 2014; 237: 78-85.
- Buzzini P**, Massonnet G. The Discrimination of Colored Acrylic, Cotton, and Wool Textile Fibers Using Micro-Raman Spectroscopy. Part 1: *In situ* Detection and Characterization of Dyes. *Journal of Forensic Sciences* 2013; 58(6): 1593-1600.
- Massonnet G, **Buzzini P**, Monard F, Jochem G, Fido L, Bell S, Marshall L, Stauber M, Coyle T, Roux C, Hemmings J, Leijenhorst H, Van Zanten Z, Wiggins K, Smith C, Chabli S, Sauneuf T, Rosengarten A, Meile C, Ketterer S, Blumer A. Raman Spectroscopy and Microspectrophometry of Reactive Dyes on Cotton Fibers: Analysis and Detection Limits. *Forensic Science International* 2012, 222(1–3): 200-207.
- Weyermann C, Mimoune Y, Anglada F, Esseiva P, Massonnet G, **Buzzini P**. Applications of a Transportable Raman Spectrometer for the *In Situ* Detection of Controlled Substances at Border Controls. *Forensic Science International* 2011; 209: 21-28.
- Mazzella W, Mathieu A, **Buzzini P**. Micro-Raman Spectroscopy of Color Inkjet Printed Documents. *Journal of the American Society of Questioned Document Examiners (ASQDE)* 2006; 9(1): 1-8.
- Monard Sermier F, Massonnet G, **Buzzini P**, Fortini A, Gason F, De Wael K, Rovas P. The Comparison of Efficiency and Sensitivity of Manual and Automatic Fibres Search. *Forensic Science International* 2006; 160: 102-108.
- Pun KM, **Buzzini P**, Margot P. Création d'une banque de données de graffitis à des fins d'investigation: étude préliminaire. *Revue Internationale de Criminologie et de Police Technique et Scientifique* 2006; 59(2): 215-232.
- Buzzini P**, Massonnet G, Monard Sermier F. The Micro Raman Analysis of Paint Evidence in Criminalistics: Casework Examples. *Journal of Raman Spectroscopy* 2006; 37(9): 922-931.
- Voisard R, Champod C, Furrer J, Curchod J, Vautier A, Massonnet G, **Buzzini P**. Nicephor[e]: A web-based solution for teaching forensic and scientific photography. *Forensic Science International* 2006; 167 (2-3): 196-200.
- Thomas J, **Buzzini P**, Massonnet G, Reedy B, Roux C. Raman Spectroscopy and the Forensic Analysis of Black/Grey and Blue Cotton Fibres: Part 1 Investigation of the Effects of Varying Laser Wavelength. *Forensic Science International* 2005; 152(2-3): 189-197.
- Buzzini P**, Massonnet G, Birrer S, Egli N, Mazzella W, Fortini A. Survey of Crowbar and Household Paints in Burglary Cases: Population Study, Transfer and Interpretation. *Forensic Science International* 2005; 152(2-3): 221-234.

Mazzella W, **Buzzini P**. Raman Spectroscopy of Blue Gel Pen Inks. *Forensic Science International* 2005; 152(2-3): 241-247.

Massonnet G, **Buzzini P**, Jochem G, Stauber M, Coyle T, Roux C, Thomas J, Leijenhorst H, Van Zanten, Wiggins K, Russell C, Chabli S, Rosengarten A. Evaluation of Raman Spectroscopy for the Analysis of Colored Fibers: A Collaborative Study. *Journal of Forensic Sciences* 2005; 50(5): 1028-1038.

**Buzzini P**, Massonnet G. **L'application de la spectroscopie Raman en criminalistique : renaissance d'une technique.** *Revue internationale de Criminologie et de Police technique et scientifique* 2005 ; juillet – septembre vol. LVIII n°3 : 363-379.

**Buzzini P**, Massonnet G. A Market Study of Green Spray Paints by Fourier Transform Infrared (FTIR) and Raman Spectroscopy. *Science & Justice* 2004; 44(3): 123-131.

## Chapters

**Buzzini P**, Kerrigan S. Statistics for Forensic Toxicology (Ch. 18). In: Levine BS, Kerrigan S (eds.). *Principles of Forensic Toxicology* (5<sup>th</sup> ed.). Springer International Publishing AG, Zürich (2020): 255-284.

**Buzzini P**, Curran J. Interpreting Trace Evidence (Ch. 7). In: Desiderio VJ, Taylor CE, NicDaéid NN (eds.). *Handbook of Trace Evidence Analysis*. Wiley & Sons, Chichester (2020): 421-454.

**Buzzini P**, Yu Chi-Chung Jorn. General Principles and Techniques of Trace Evidence Collection (Ch. 7). In: Mozayani A, Parish-Fisher C (eds.). *Forensic Evidence Management: From Scene to Courtroom*. Taylor & Francis, CRC Press, Boca Raton, FL (2017): 75-98.

De Forest P, Lucas D, Sensabaugh G, Thornton J, Peterson J, **Buzzini P**. The Last Half a Century of Criminalistics in North America – Technology Ascendant, Science in Decline. In: Champod C, Correvon D, Delémont O, Ribaux O (eds.). *La science forensique - le futur d'une discipline. En l'honneur du Professeur Pierre Margot à l'occasion de son 65<sup>ème</sup> anniversaire*. Presses polytechniques et universitaires romandes. Lausanne, Switzerland: 69-84 (2015).

Crispino F, Bruenisholz E, **Buzzini P**, Dujourdy L, Lock E, Meuwly D, Moret S, Neumann C, Stauffer E, Roux C. Développer une carrière en dehors de la Suisse avec une formation de forensicien de l'Université de Lausanne. In: Champod C, Correvon D, Delémont O, Ribaux O (eds.). *La science forensique - le futur d'une discipline. En l'honneur du Professeur Pierre Margot à l'occasion de son 65<sup>ème</sup> anniversaire*. Presses polytechniques et universitaires romandes. Lausanne, Switzerland : 21-32 (2015).

Bartick E, **Buzzini P**. Raman Spectroscopy in Forensic Science. *Encyclopedia of Analytical Chemistry*. John Wiley & Sons, Chichester, UK (2009).

**Buzzini P**. *L'application de la spectroscopie Raman en criminalistique pour l'analyse du colorant des fibres textiles en acrylique, coton et laine*. Ph.D dissertation, School of Criminal Sciences. University of Lausanne, Switzerland (2007).

**Buzzini P**, Stoecklein W. Forensic Science – Paint, Varnishes and Lacquers. In: Worsfold P., Townshend A., Poole C. (eds.). *Encyclopedia of Analytical Science*. 2<sup>nd</sup> Edition. Elsevier, Oxford, UK. Vol. 2: 453-466 (2005).

## Funded External Grants

Data fusion from infrared, elemental, MSP and Raman analysis techniques to the maximization of the efficiency of the analytical sequence for the forensic examination of paint evidence. National Institute of Justice, Office of Sponsored Programs, US Department of Justice.

Period: 01/01/2022 – 12/31/2024  
Award: \$338,823.

Development of a baseline survey of random presence of glass and paint for the interpretation of evidence in the US Courts. National Institute of Justice, Office of Sponsored Programs, US Department of Justice. Project in collaboration with West Virginia University.

Period: 01/01/2020 – 12/31/2021  
Award: \$115,000 from a total of \$326,820.

Investigation of a time-effective approach to the discrimination and interpretation of inkjet printer inks using micro Raman spectroscopy. National Institute of Justice, US Department of Justice. Period: 01/01/2017 – 12/31/2018  
Award: \$246,838.

The effect of ultraviolet radiation on the Microspectrophotometry (MSP) of dyed fibers. National Institute of Justice, US Department of Justice.  
Period: 01/01/2017 – 12/31/2018  
Role: consultant.

Development of Advanced Raman Spectroscopy Methods and Databases for the Evaluation of Trace Evidence and the Examination of Questioned Documents – Phase II. National Institute of Justice, US Department of Justice. Award #: 2009-DN-BX-K185. Period: 09/23/2009 – 12/31/2012, Award: \$412,650.

## Peer-Review Presentations/Posters

- 2021**      **Buzzini P**, Lepot L. *Micro Raman spectroscopy of textile fibers: Applications and complementarities with routine methods*. Presented at the 2021 Online Forensic Symposium on Current Trends in Forensic Trace Analysis. Hosted by the Center for Forensic Science Research and Education - The Fredric Rieders Family Foundation, Willow Grove, PA July 26-30.
- Lewis A, **Buzzini P**. *The impact of ultraviolet adiation and plane polarized light microspectrophotometry in the characterization and differentiation of black automotive fibers*. Poster presented at the 2021 Online Forensic Symposium on Current Trends in Forensic Trace Analysis. Hosted by the Center for Forensic Science Research and Education - The Fredric Rieders Family Foundation, Willow Grove, PA July 26-30.
- Polston C, **Buzzini P**. *Digital walkthrough of the validation of a method for measuring magnetic flux of toner-printed documents*. Presented at the 73<sup>rd</sup> annual scientific virtual meeting of the American Academy of Forensic Sciences, February 19.
- Moore CG, **Buzzini P**. *An evaluation of gray measurements and hyperspectral imaging (HSI) as a method for differentiating optical characteristics of porous-tipped pen inks*. Poster presented at the 73<sup>rd</sup> annual scientific virtual meeting of the American Academy of Forensic Sciences, February 18
- 2020**      **Buzzini P**. *The methodology of criminalistics developed ... by crossing borders*. Presented to the Young Forensic Scientists Forum (YFSF) at the 72<sup>nd</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Anaheim, CA, February 17-22.
- Polston C, Mazzella W, **Buzzini P**. *Investigating the interlaboratory reproducibility of magnetic flux*

*measurements of toners*. Presented at the 72<sup>nd</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Anaheim, CA, February 17-22.

2020

Lewis A, Palenik C, Palenik S, **Buzzini P**. *Characterization of nylanthrene dyes in the differentiation of macroscopically similar black fibers using light microscopy and UV-Vis microspectrophotometry*. Poster presented at the 72<sup>nd</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Anaheim, CA, February 17-22.

Carpenter M, **Buzzini P**. *Data fusion from spectroscopic techniques for the discrimination of colored automotive paint mixtures*. Poster presented at the 72<sup>nd</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Anaheim, CA, February 17-22.

2019

**Buzzini P**, Curran J, Polston C. The classification of Raman patterns of inkjet printer inks: comparing visual inspection and different variants of linear discriminant analysis methods. Poster presented at the 77<sup>th</sup> Annual General Meeting of the American Society of Questioned Document Examiners (ASQDE), Cary, NC, August 4-8.

Polston C, Thompson DE, **Buzzini P**. Assessing the Impacts of Induction Spatial Effects on Magnetic Flux Measurements of Toners. Presented at the 77<sup>th</sup> Annual General Meeting of the American Society of Questioned Document Examiners (ASQDE), Cary, NC, August 4-8.

Moore C, **Buzzini P**. Evaluation of Gray Value Measurements of Visual Spectral Data to the Characterization of Alcohol-based ink from Colored Felt-Tipped Blending Markers. Poster presented at the 77<sup>th</sup> Annual General Meeting of the American Society of Questioned Document Examiners (ASQDE), Cary, NC, August 4-8.

**Buzzini P**, Curran J, Polston C. The classification of Raman patterns of inkjet printer inks: comparing visual inspection and different variants of linear discriminant analysis methods. Presented at the Inter/Micro 2019 conference. McCrone Research Institute, Chicago, IL, June 10-12.

**Buzzini P**, King MB, Sparenga SB, Laughlin GJ. An update on the effect of ultraviolet radiation on the degradation of dyed fibers as a function of time using UV-Vis microspectrophotometry. Presented at the Inter/Micro 2019 conference. McCrone Research Institute, Chicago, IL, June 10-12.

Lewis A, Day J, **Buzzini P**. Conceptualization of assessing the evidential value of vehicular transmission fluids, brake fluids, and lubricating greases. Presented at the Inter/Micro 2019 conference. McCrone Research Institute, Chicago, IL, June 10-12.

King MB, Sparenga SB, Laughlin GJ, **Buzzini P**. The effect of ultraviolet radiation on the microspectrophotometry (MSP) of dyed textile fibers: Spectral alteration categories. Presented at the 71<sup>st</sup> meeting of the American Academy of Forensic Sciences, Baltimore, MD, February 18-23.

**Buzzini P**, Curran JM, Polston C. The classification of Raman patterns from inkjet printer inks using visual comparisons of spectra and different statistical methodologies. Presented at the 71<sup>st</sup> meeting of the American Academy of Forensic Sciences, Baltimore, MD, February 18-23.

Polston C, Thompson DE, **Buzzini P**. Assessing the impacts of induction spatial effects on magnetic flux measurements of toners. Presented at the 71<sup>st</sup> meeting of the American Academy of Forensic Sciences, Baltimore, MD, February 18-23.

Moore C, **Buzzini P**. Evaluation of gray value measurements of visual spectral data to the characterization. Poster presented at the 71<sup>st</sup> meeting of the American Academy of Forensic Sciences, Baltimore, MD, February 18-23.

Schackmuth MR, **Buzzini P**, Williams DL. *In Silico simulation of fentalog Raman spectra*. Poster presented at the 71<sup>st</sup> meeting of the American Academy of Forensic Sciences, Baltimore, MD, February 18-23.

2018

Polston C, Mazzella W, Fürbach M, **Buzzini P**. *Assessing the forensic potential of magnetic flux measurement of toners*. Presented at the joint meeting of the American Society of Questioned Document Examiners and the Southwestern Association of Forensic Document Examiners. Park City, UT, August 18-23.

**Buzzini P**, Polston C, Schackmuth M. *The discrimination of inkjet printer inks using micro Raman spectroscopy*. Poster presented at the joint meeting of the American Society of Questioned Document Examiners and the Southwestern Association of Forensic Document Examiners. Park City, UT, August 18-23.

Chang Y-T, Aitken C, Zadora G, **Buzzini P**, Massonnet G. *Evidence evaluation and functional data analysis*. Poster presented at the 2018 International Society of Bayesian Analysis (ISBA) World Meeting. Edinburgh, UK, June 24-29.

**Buzzini P**, Polston C, Schackmuth M. *Evaluation of the criteria for the discrimination of inkjet printer inks using micro Raman spectroscopy*. Presented at the Inter/Micro 2018 conference. McCrone Research Institute, Chicago, IL, June 11-15.

King M, **Buzzini P**, Polston C. *The effect of ultraviolet radiation on the microspectrophotometry (MSP) of dyed fibers Part 1 – Photobleaching effect*. Presented at the Inter/Micro 2018 conference. McCrone Research Institute, Chicago, IL, June 11-15.

King M, **Buzzini P**, Polston C. *The effect of ultraviolet radiation on the microspectrophotometry (MSP) of dyed fibers Part 2 – Spectral differences as a function of time*. Presented at the Inter/Micro 2018 conference. McCrone Research Institute, Chicago, IL, June 11-15.

Polston C, Mazzella W, Furbach M, **Buzzini P**. *The evaluation of method parameters affecting magnetic flux measurement of toners as a screening tool for casework application*. Presented at the 70<sup>th</sup> meeting of the American Academy of Forensic Sciences, Seattle, WA, February 19-24.

**Buzzini P**, Curran J, Polston C. *The application of t-stochastic node embedding and random forest statistical methods to classify Raman spectra of inkjet printer inks for purposes of identification and production of investigative leads*. Presented at the 70<sup>th</sup> meeting of the American Academy of Forensic Sciences, Seattle, WA, February 19-24.

**Buzzini P**, Petraco NK. *The evaluation of the joint value of paint and toolmark evidence using Bayesian networks*. Presented at the Impression, Pattern and Trace Evidence Symposium, Arlington VA, January 22-25.

Sun Yi Li, Zebst PJ, **Buzzini P**, Yu J. *Potential impact and application of 3D scanning, 3D modeling, and 3D printing in toolmark examination*. Poster presented at the Impression, Pattern and Trace Evidence Symposium, Arlington VA, January 22-25.

2017

**Buzzini P**, Armstrong D, Neumann C. A kernel-based method for the classification and quantification of the weight of evidence of textile fibers analyzed by microspectrophotometry (MSP). Presented at the 10<sup>th</sup> International Conference on Forensic Inference and Statistics, Minneapolis, MN, September 5-8 2017.

Polston C, Mazzella W, Furbach M, **Buzzini P**. Evaluation of instrument sensitivity and stability for the magnetic flux measurement relative to toner area as a screening tool for casework application. Presented at the 69<sup>th</sup> meeting of the American Academy of Forensic Sciences, New Orleans, LA, February 13-18 2017.

Perry L, **Buzzini P**. The discrimination of less frequently encountered colored pen inks based on their optical properties. Poster presented at the 69<sup>th</sup> meeting of the American Academy of Forensic Sciences, New Orleans, LA, February 13-18 2017.

- 2016** Bucht R, **Buzzini P**, De Forest P, Lucas D, Ross A, Willis S. Strategies for scientific problem-solving with physical evidence. Workshop presented at the 68<sup>th</sup> meeting of the American Academy of Forensic Sciences, Las Vegas, NV February 22, 2016.
- Insana J, **Buzzini P**. Do the bulk area and the exterior surface of modern glass containers exhibit differences in refractive index measurements? Poster presented at the 68<sup>th</sup> meeting of the American Academy of Forensic Sciences, Las Vegas, NV, February 22-27 2016.
- 2015** Insana J, **Buzzini P**. On the differences of refractive index measurements between external surfaces and the bulk of container glass – A preliminary study. Presented at the Impression, Pattern, Trace Evidence Symposium (IPTES). National Institute of Justice – RTI International, San Antonio, TX, August 25-27.
- Cyktor C, **Buzzini P**, Hietpas J, Morris K. Evaluation of the efficiency of recovery methods of trace evidence for pollen particles. Poster presented at the Impression, Pattern, Trace Evidence Symposium (IPTES). National Institute of Justice – RTI International, San Antonio, TX, August 25-27.
- Insana J, **Buzzini P**. On the differences of refractive index measurements between external surfaces and the bulk of container glass – A preliminary study. Presented at the Inter/Micro 2015 conference. McCrone Research Institute, Chicago, IL, June 8-12.
- De Forest P, Bucht R, **Buzzini P**, Hunter C, Lucas D. The Making of the Criminalistics Maestro On the knowledge, skills, and abilities to oversee and coordinate the work on non-routine and complex cases. Presented at the 67<sup>th</sup> Meeting of the American Academy of Forensic Sciences, Orlando, FL, February 16-21.
- Buzzini P**, Meyers A. *Characterization and Discrimination of Inkjet Printer Inks Using Micro Raman Spectroscopy*. Presented at the 67<sup>th</sup> Meeting of the American Academy of Forensic Sciences, Orlando, FL, February 16-21.
- 2014** **Buzzini P**, Meyers A. *Characterization and Discrimination of Inkjet Printer Inks Using Micro Raman Spectroscopy*. Presented at the meeting of the Document Security Alliance (DSA), United States Secret Service, Washington, DC, March 13.
- Joslin T, **Buzzini P**. *A Survey on the Microscopical and Chemical Analysis of Synthetic Wig Fibers*. Poster presented at the 66<sup>th</sup> Meeting of the American Academy of Forensic Sciences, Seattle, WA, February 17-22.
- McWhorter AS, Osia N, Bourlai T, Moroosse T, **Buzzini P**. *Development and Evaluation of an Objective Method for Human Hair Examination Using Image and Mitochondrial DNA Analyses*. Poster presented at the 66<sup>th</sup> Meeting of the American Academy of Forensic Sciences, Seattle, WA, February 17-22.
- 2013** **Buzzini P**, Massonnet G. *The Role of Light Microscopy Examinations in the Discrimination of Textile Fibers in a Forensic Setting*. Presented at the Inter/Micro 2013 conference. McCrone Research Institute, Chicago, IL, July 15-19.
- Buzzini P**. *On the Random Presence and Discrimination of Purple Textile Fibers Collected From Movie Theater Seats*. Presented at the 65<sup>th</sup> Anniversary Meeting of the American Academy of Forensic Sciences, Washington DC, February 18-23.
- Joslin T, **Buzzini P**. *A Preliminary Study Into the Characterization and Differentiation of Synthetic Wig Fibers*. Poster presented at the 65<sup>th</sup> Anniversary Meeting of the American Academy of Forensic Sciences, Washington DC, February 18-23.

- 2012** **Buzzini P.** *The Role of Edmond Locard in the History of Forensic Science – “Every Contact Leaves a Trace” Dissected.* Inter/Micro 2012 conference. McCrone Research Institute, Chicago, IL, July 9-13.
- Palenik CS, **Buzzini P**, Herb J, Groves E. *The Forensic Analysis of Paint Evidence Using Micro Raman Spectroscopy – Part 1: Development of Libraries and Application Methods.* Presented at the Inter/Micro 2012 conference. McCrone Research Institute, Chicago, IL, July 9-13.
- Buzzini P**, Palenik CS, Massonnet G. *The Forensic Analysis of Paint Evidence Using Micro Raman Spectroscopy: – Part 2: Case Examples.* Presented at the Inter/Micro 2012 conference. McCrone Research Institute, Chicago, IL, July 9-13.
- Sisco E, Palmer M, Robinson M, **Buzzini P.** *The Characterization and Discrimination of Pink and Red Nail Polish Lacquers – A Preliminary Study.* Poster presented at the 64<sup>th</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Atlanta, GA, February 20-25.
- 2011** Massonnet G, Muehlethaler C, **Buzzini P.** *The Use of Raman Spectroscopy for Forensic Paint Analysis.* Presented at the 6<sup>th</sup> International Congress on the Application of Raman Spectroscopy in Art and Archeology, Parma, Italy, September 5-8.
- Sisco E, Palmer M, Robinson M, **Buzzini P.** *The Characterization and Discrimination of Pink and Red Nail Polish Lacquers – A Preliminary Study.* Poster presented at the Trace Evidence Symposium, Kansas City, MO, August 8-11.
- O’Donnell DM, Lombardi J, Leona M, Antoci P, **Buzzini P.** *Surface-Enhanced Raman Spectroscopy (SERS) Methods and Databases for the Characterization of Dyes.* Presented at the Trace Evidence Symposium, Kansas City, MO, August 8-11.
- 2010** **Buzzini P**, Massonnet G. *On the Contribution of Raman Spectroscopy to Forensic Science.* Presented at the XXII International Conference on Raman Spectroscopy (ICORS), Boston, MA. August 8-13.
- Buzzini P.** *The Examination of Physical Evidence using Raman Spectroscopy: Overview and Case Examples.* Presented at the annual conference of the Mid-Atlantic Association of Forensic Scientists (MAAFS). State College, PA. May 17-21.
- 2009** **Buzzini P.** *Evaluation and Development of a Forensic Intelligence-Based Framework for the Investigation of Burglaries in West Virginia.* Presented at the Spring Educational Conference of the Chesapeake Bay Division – International Association for Identification (CBD-IAI), Virginia Beach, VA, March 30 – April 3.
- Buzzini P.** *The Role of Edmond Locard in the History of Identification.* Presented at the Spring Educational Conference of the Chesapeake Bay Division – International Association for Identification (CBD-IAI), Virginia Beach, VA, March 30 – April 3.
- 2008** **Buzzini P**, Massonnet G. *The Discrimination of Colored Acrylic, Cotton, and Wool Fibers Using Raman Spectroscopy.* Presented at the 60<sup>th</sup> Annual Scientific Meeting of the American Academy of Forensic Sciences, Washington, DC, February 18-23.
- 2007** **Buzzini P**, Massonnet G, Monard Sermier F, Hafsi S, Ranzi R, Gueissaz L, Jan V. *The Interpretation of Paint Evidence Through the Use of Population Studies: Two Case Examples.* Presented at the Trace Evidence Symposium, Clearwater Beach, FL. August 13-16.
- Buzzini P**, Massonnet G. *The Analysis of Colored Acrylic, Cotton, and Wool Fibers Using Raman Spectroscopy.* Poster presented at the Trace Evidence Symposium, Clearwater Beach, FL. August 13-16.



- 2007** Massonnet G, **Buzzini P**, Lepot L, Gason F, DeWael K, Hemmings J, Jochem G, Van Zanten Z, Van der Weerd J, Arnold J, Blumer A, Palmer R, Ketterer S, Rosengarten A. *EFG Raman Trial 2007: Raman Spectroscopy of Red Cotton Fibers*. Presented at the 15<sup>th</sup> meeting of the European Fiber Group (EFG) of the European Network of Forensic Science Institutes (ENFSI). Madrid, Spain, June 6-8.
- Massonnet G, **Buzzini P**, Voisard R, Curchod J, Hafsi S, Champod C, Furrer J. *On-line Course on Microscopy: Swiss Virtual Campus CVS*. Presented at the 15<sup>th</sup> meeting of the European Fiber Group (EFG) of the European Network of Forensic Science Institutes (ENFSI). Madrid, Spain, June 6-8.
- 2006** **Buzzini P**, Massonnet G, Mazzella W, Monard Sermier F. *Micro Raman Analysis of Paint: Some Case Studies*. Presented at the 4<sup>th</sup> European Academy of Forensic Science (EAFS) Conference, Helsinki, Finland, June 13-16.
- Voisard R, **Buzzini P**, Champod C, Curchod J, Furrer J, Massonnet G, Vautier A. *Nicephor[e]: A Web Based Solution for Teaching Forensic and Scientific Photography*. Presented at the 4<sup>th</sup> European Academy of Forensic Sciences (EAFS) Conference, Helsinki, Finland, June 13-16.
- Gueissaz L, **Buzzini P**, Massonnet G, Jan V. *Tool Paint Traces Recovered on Crime Scene: Chemical Analysis and Management of the Links*. Poster presented at the 4<sup>th</sup> European Academy of Forensic Science (EAFS) Conference, Helsinki, Finland, June 13-16.
- Buzzini P**, Massonnet G, Mazzella W, Monard Sermier F. *The Role of Raman Spectroscopy for the Analysis of Traces in Criminalistics*. Presented at the International Symposium on Forensic Sciences, Amity Institute of Advanced Forensic Science Research & Training, Noida- New Delhi, India, February 22-24.
- 2005** **Buzzini P**, Massonnet G, Monard Sermier F. *Micro-Raman Analysis of Paint: Five Casework Examples*. Presented at the at the 10<sup>th</sup> meeting of the European Paint Group and Glass Group (ENFSI EGG-EPG), Berlin, Germany, October 17-19.
- Thomas J, **Buzzini P**, Massonnet G, Roux C, Reedy B, Robertson J. *The Use of Raman Spectroscopy for Forensic Fibre Examination*. Presented at the 16<sup>th</sup> Australian Conference on Vibrational Spectroscopy, Sydney, Australia, September 24-30.
- Bartick EG, **Buzzini P**, Robertson JM, Ducote MJ., Kavlick M. *Comparison of FT-IR analysis and bacterial culture visual observation for detection of bacterial spores diluted in various common white household powders*. Presented at the 230<sup>th</sup> American Chemical Society (ACS) National Meeting, Washington DC, USA, August 28-September 1.
- Buzzini P**, Massonnet G, Monard Sermier F, Weyermann C. *Micro-Raman Analysis of Paint Evidence in Criminalistics: Casework examples*. Poster presented at the 17<sup>th</sup> meeting of the International Association of Forensic Sciences (IAFS), Hong Kong, China, August 21-26.
- Mimoune Y, Weyermann C, **Buzzini P**, Anglada F, Esseiva P, Massonnet G. *Applications and Limitations of Transportable Raman Analyser for Field Analysis of Drug of Abuse*. Poster presented at the 17<sup>th</sup> meeting of the International Association of Forensic Sciences (IAFS), Hong Kong, China, August 21-26.
- Roux C, Thomas J, **Buzzini P**, Massonnet G. *Comparison of Raman Spectroscopy with Microspectrophotometry for the Forensic Analysis of Fibres: Part 1 Visual Interpretation*. Poster presented at the 17<sup>th</sup> meeting of the International Association of Forensic Sciences (IAFS), Hong Kong, China, August 21-26.
- Roux C, Thomas J, **Buzzini P**, Massonnet G, Doble Ph. *Comparison of Raman Spectroscopy with Microspectrophotometry for the Forensic Analysis of Fibres: Part 2 Chemometric Analysis of Data*.

- Poster presented at the 17<sup>th</sup> meeting of the International Association of Forensic Sciences (IAFS), Hong Kong, China, August 21-26.
- 2005** Massonnet G, **Buzzini P**, Monard Sermier F, Jochem G, Fido L, Bell S, Marshall L, Stauber M, Coyle T, Roux C, Thomas J, Leijenhorst H, Van Zanten Z, Wiggins K, Russell C, Drummond P, Chabli S, Rosengarten A, Meile C, Kretterer S, Blumer A, Zingg C. *Raman Trial 2005: Reactive Dyes on Cotton fibres*. Presented at the 13<sup>th</sup> meeting of the European Fibres Group (ENFSI-EFG), Bled, Slovenia, June 8-10.
- Mimoune Y, Weyermann C, **Buzzini P**, Anglada F, Massonnet G. Applications and limitations of the portable Raman for field analysis of drugs of abuse. Poster presented at the 11<sup>th</sup> meeting of the European Drug Group (ENFSI), Sesimbra, Portugal, May 12-13.
- 2004** Ranzi R, Antonetti G, **Buzzini P**, Massonnet G. *Population Study of Foreign Traces Recovered on Bodies of Damaged Cars*. Presented at the at the 10<sup>th</sup> meeting of the European Paint Group and Glass Group (ENFSI EGG-EPG), Prague, Czech Republic, September 20-22.
- Marin D, Berger N, **Buzzini P**, Massonnet G. *Transfer, Detection and In Situ Raman Analysis of Spray Paint Traces on Clothes*. Presented at the at the 10<sup>th</sup> meeting of the European Paint Group and Glass Group (ENFSI EGG-EPG), Prague, Czech Republic, September 20-22.
- Massonnet G, **Buzzini P**, Jochem G, Fido L, Beattie R, Bell S, Stauber M, Coyle T, Roux C, Thomas J, Leijenhorst H, Van Zanten Z, Wiggins K, Russell C, Chabli S, Rosengarten A, Marshall L, Bartick E, Murphy M. *Raman Trial 2004: Green Cotton*. Presented at the 12<sup>th</sup> meeting of the European Fibre Group (ENFSI EFG), Prague, Czech Republic, June 8-9.
- 2003** **Buzzini P**, Massonnet G, Mizrahi S. *Analysis of Green Spray Paints: Population Study and its Application in a Forensic Casework*. Presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Massonnet G, **Buzzini P**, Jochem G, Stauber M, Coyle T, Roux C, Thomas J, Leijenhorst H, Van Zanten, Wiggins K, Russell C, Chabli S, Rosengarten A. *Evaluation of Raman Spectroscopy for the Analysis of Coloured Fibres: A Collaborative Study*. Presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Merciani P, Monard Sermier F, **Buzzini P**, Massonnet G, Taroni F. *A study of the cross transfer of fibers*. Presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Thomas J, **Buzzini P**, Massonnet G, Roux C. *A Further Look at the Raman Spectroscopy for the Forensic Examination of Fibres*. Presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Thomas J, **Buzzini P**, Massonnet G, Roux C. *Optimisation of Laser Wavelength for the Raman Analysis of Fibres*. Poster presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Thomas J, **Buzzini P**, Massonnet G, Roux C, Robertson J. *Raman Spectroscopy vs Current Fibre Examination Techniques*. Poster presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes (ENFSI), Istanbul, Turkey, September 22-27.
- Dujourdy L, Pocognoli S, Hess S, **Buzzini P**, Massonnet G, Margot P. *Chemometric Analysis of Raman Spectroscopy Data on MDMA in « Ecstasy » Tablets*. Poster presented at the 3<sup>rd</sup> meeting of the European Association of Forensic Sciences (EAFS), European Network of Forensic Sciences Institutes

(ENFSI), Istanbul, Turkey, September 22-27. Poster classified in the top 15 Best Posters Award: [www.enfsi.org/fame/top15](http://www.enfsi.org/fame/top15).

- 2003** Thomas J, **Buzzini P**, Massonnet G, Doble P, Reedy B, Roux C. *Investigation of Raman Spectroscopy for the Analysis of Cotton Fibres*. Presented at the SWGMAT Meeting, FBI Academy, FBI Laboratory, Quantico, Virginia, United States, January 27.
- 2002** **Buzzini P**, Massonnet G, Taroni F, Birrer S, Egli N, Mazzella W, Fortini A. *Survey of Crowbar Paints in Burglary Case: Population Study, Transfer and Interpretation*. Presented at the 8<sup>th</sup> meeting of the European Paint Group and Glass Group (ENFSI EGG-EPG), Madrid, Spain, September 18-20.
- Buzzini P**, Massonnet G, Taroni F, Birrer S, Egli N, Mazzella W, Fortini A. *Survey of Crowbar and Household Paints in Burglary Case : Population Study, Transfer and Interpretation*. Presented at the 16<sup>th</sup> meeting of the International Association of Forensic Sciences (IAFS), Montpellier, France, September 2-7.
- Monard Sermier F, Massonnet G, **Buzzini P**, Fortini A. *Comparison of Efficiency and Sensitivity of Manual and Automatic Fibres Research*. Presented at the 10<sup>th</sup> meeting of the European Fibre Group (ENFSI EFG), Paris, France, June 12-14.

#### *Contributions to the legal community*

- 2021** **Buzzini P**. *There is no shortcut to achievement: The importance of the scientific method*. Closing the courthouse doors to misleading forensic evidence. Virtual seminar to the Texas Criminal Defense Lawyers Association, April 1.
- 2014** **Buzzini P**. *Relevant Questions to the Interpretation of Physical Evidence*. 2014 Spring Essentials of Forensic Science for Legal Professionals Program, West Virginia University-Forensic Science Initiative, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV, March 11.
- 2013** **Buzzini P**. *Basics on the Interpretation of Physical Evidence*. Continuing education provided to the Public Defender Bar Association of the State of Kentucky. Essentials of Forensic Science for Legal Professionals Program, West Virginia University-Forensic Science Initiative, National Institute of Justice (NIJ), US Department of Justice, Louisville, KY, September 18-19.
- Buzzini P**. *An Overview on Trace Evidence: The Compelling Contribution of Microscopic Clues for Associative and Reconstructive Purpose*. Applications of Forensic Science for the Legal Professional – Webinar Series. Forensic Science Initiative, West Virginia University, Morgantown, WV, May 29.
- 2011** **Buzzini P**. *An Overview on Trace Evidence*. Forensic Science Training for Capital Prosecutor Attorneys. Sponsored by Bureau of Justice Assistance and the National Clearinghouse for Science, Technology and the Law (NCSTL), the National Institute of Justice (NIJ) and the Center for American and International Law. St. Petersburg, FL, August, 29-31.
- Buzzini P**, Neumann C. *Pattern Evidence - Fingerprints, Shoe Prints, Bitemarks and Fracture Matches*. Forensic Science Training for Capital Prosecutor Attorneys. Sponsored by Bureau of Justice Assistance and the National Clearinghouse for Science, Technology and the Law (NCSTL), the National Institute of Justice (NIJ) and the Center for American and International Law. St. Petersburg, FL, August, 29-31.
- Buzzini P**. *Overview on trace evidence*. Forensic Science Training for Capital Defense Attorneys. Sponsored by Bureau of Justice Assistance and the National Clearinghouse for Science, Technology and the Law (NCSTL), the National Institute of Justice (NIJ) and the Center for American and International Law. Plano, TX, June 6-8.

- 2008**            **Buzzini P.** *The Principles of Forensic Science – Beyond Technology.* West Virginia Circuit Judges’ Education Conference. Morgantown, WV, December 2-5.
- 2008**            **Buzzini P.** *Basic Tracks of Forensic Science.* Annual conference of the West Virginia Public Defender Association. Snowshoe, WV, June 20-21.

### **Work or Professional Experiences**

**Buzzini P,** Law E. *Ballistics in murder cases.* 5<sup>th</sup> annual Harris County Capital Murder Training, Houston, TX, May 13 2022.

*There is no shortcut to achievement: The importance of the scientific method.* Closing the courthouse doors to misleading forensic evidence. Virtual seminar to the Texas Criminal Defense Lawyers Association, April 1 2021.

Coble MD, Kalafut T, **Buzzini P.** *Interpreting and communicating DNA evidence in a probabilistic genotyping universe.* Workshop presented at the 73<sup>rd</sup> annual scientific virtual meeting of the American Academy of Forensic Sciences, February 15 2021.

*Research updates, evidence Interpretation and collaboration Opportunities.* Webinar presented at Texas Department of Public Safety (DPS) Comparative Disciplines Statewide meeting, December 10, 2020.

*Training and mentorship in trace evidence. Institut National de Criminalistique et de Criminologie (INCC) of the Gendarmerie nationale algérienne.* International Criminal Investigative Training Assistance Program (ICITAP), US Department of Justice. Alger, Algeria, December 9-13, 2018; May 13-18 2017; November 13-24 2016; May 29-June 2 2016; November 15-26 2015; May 24-June 5, 2015; November 16-27, 2014; May 18-22, 2014; March 16-24, 2014; November 17-28, 2013; March 24-April 4, 2013; November 18-29, 2012; March 25-April 5, 2012; November 11-25, 2011.

*On the forensic contribution of micro-Raman spectroscopy to the chemical characterization of inkjet printer inks - an investigative approach.* Webinar presented to SPACT - the Center for Security Printing and Anti-Counterfeiting Technology. Rapid City, SD, July 20 2017.

De Forest P, Lucas D, Margot P, Roux C, Willis S, Bucht R, **Buzzini P.** *Our Future Reflects Our Past: The Evolution Of Criminalistics.* Panel session presented at the 69<sup>th</sup> meeting of the American Academy of Forensic Sciences, New Orleans, LA, February 13-18 2017.

*Trace evidence.* 2015 Forensic Science Educator Training (FSET). Sam Houston State University, Institute for Forensic Research, Training, and Innovation. Huntsville, TX; July 13-16, 2015.

*Questioned Documents.* 2015 Forensic Science Educator Training (FSET). Sam Houston State University, Institute for Forensic Research, Training, and Innovation, Huntsville, TX; July 13-16, 2015.

*Interpretation of fiber evidence.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; June 19, 2015.

*Characterization and comparisons of dyed fibers course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; June 17-18, 2015.

*Identification of natural and man-made fibers course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; June 15-16, 2015.

*Cours de formation en microscopie forensique appliquée.* Training workshop on forensic microscopy taught (in French) to forensic science personnel from Algeria, Mali, and Tunisia. Sponsored by: International Criminal Investigative Training Assistance Program (ICITAP), US Department of Justice. West Virginia University, Morgantown, WV, April 19-23, 2015.

*Forensic examination of paint evidence course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; May 12-14, 2015.

*Characterization and comparisons of dyed fibers course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; July 22-25, 2014.

*Identification of natural and man-made fibers course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; July 15-17, 2014.

*Forensic examination of paint evidence course.* Continuing Education Program, West Virginia University, National Institute of Justice (NIJ), US Department of Justice, Morgantown, WV; July 8-10, 2014.

*Applications of Raman Spectroscopy for Trace Evidence Examinations.* 8 hrs. Workshop at the 66<sup>th</sup> Annual Scientific Meeting at the American Academy of Forensic Sciences (AAFS), Seattle, WA, February 17, 2014.

*Forensic animal hair identification and human hair comparisons – Part 1.* Workshop to the Forensic Science Services of the South African Police Service (SAPS). West Virginia University, Morgantown, WV, August 15-26 2011.

*Forensic animal hair identification and human hair comparisons – Part 2.* Workshop to the Forensic Science Services of the South African Police Service (SAPS). Pretoria, South Africa, October 31-November 4, 2011.

*Trace evidence for the crime scene investigator.* Workshop at the Chesapeake Bay Division of the International Association for Identification (CBD-IAI). Fall Educational Conference. Morgantown, WV, October 22, 2011.

*Interpretation of trace evidence using the Bayesian approach.* Workshop at the Extravaganza Continuing Education for Forensic Professionals Program, West Virginia University-Forensic Science Initiative, National Institute of Justice (NIJ), US Department of Justice, Boston, MA, August 2-6, 2010.

*Applications of Raman spectroscopy in forensic sciences.* Workshop at the Extravaganza Continuing Education for Forensic Professionals Program, West Virginia University-Forensic Science Initiative, National Institute of Justice (NIJ), US Department of Justice, Boston, MA, August 2-6, 2010.

*Mock Crime Scene Investigation Challenge.* 3-day workshop at the Spring Educational Seminar and Conference of the Chesapeake Bay Division – International Association for Identification (CBD-IAI), Virginia Beach, VA, March 22-26, 2010.

*Applications of Raman spectroscopy in forensic sciences.* Workshop at the 62<sup>nd</sup> annual scientific meeting of the American Academy of Forensic Sciences, Seattle, WA, February 22-27, 2010.

*The Applications of Raman spectroscopy in trace evidence.* Workshop at Trace Evidence Symposium, Clearwater Beach, FL, August 2-7, 2009.

*Microscopical hair examination for DNA analysts.* Two-day course for forensic personnel at the West Virginia State Police Forensic Laboratory, Charleston, WV, July 23-24, 2009.

*Applications of Raman spectroscopy in forensic sciences.* Workshop at the Extravaganza Continuing Education for Forensic Professionals Program, West Virginia University-Forensic Science Initiative, National Institute of Justice (NIJ), US Department of Justice, Las Vegas, NV, June 15-20, 2009.

*The applications of Raman spectroscopy in forensic sciences.* Workshop at the 18<sup>th</sup> conference of the International Association of Forensic Sciences (IAFS), New Orleans, LA, July 22, 2008.

*Trace evidence casework.* Continuing education training course for crime laboratory personnel. West Virginia University. Morgantown, June 23-27, 2008.

*Basic light microscopy and electron microscopy.* Continuing education training course for crime laboratory personnel. West Virginia University. Morgantown, WV, June 16-20, 2008.

*Workshop on light microscopy.* Chesapeake Bay Division of the International Association for Identification (CBD-IAI). Spring Educational Conference. Morgantown, WV, April 18, 2008.

*The applications of Raman spectroscopy in forensic sciences.* Workshop at the 4<sup>th</sup> European Academy of Forensic Science (EAFS) Conference, Helsinki, Finland, June 13-16, 2006.