Speckin Forensic Laboratories

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Leonard A. Speckin
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FORENSIC DOCUMENT ANALYST

Larry A. Dalman
COMPUTER RECOVERY SPECIALIST

Erich J. Speckin
FORENSIC DOCUMENT ANALYST
INK DATING SPECIALIST

Roger J. Bolhouse MBA
LABORATORY DIRECTOR
CRIME SCENE RECONSTRUCTION
FORENSIC ANALYST & CONSULTANT

Thomas K. Huard Ph.D.
DNA ANALYST & CONSULTANT

Robert Cilwa
FORENSIC FIREARMS EXAMINER

Richard L. Brunelle
RETIRED INK DATING CONSULTANT

Patricia J. Joiner M.S.
FORENSIC CHEMIST

Laurence R. Simson M.D.
FORENSIC PATHOLOGIST

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ANALYTICAL CHEMIST

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Speckin Forensic Laboratories
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EDUCATION

Master of Science in Forensic Science, Forensic Chemistry Concentration
Michigan State University
Graduation Date: Fall 2009
Advisor: Dr. Ruth Waddell Smith
Thesis: Comparison of extraction methods for organic impurity profiling of 3,4-methylenedioxymethamphetamine (MDMA)

Relevant Coursework

Forensic Analysis of Drugs and Alcohol	Advanced Analytical Chemistry
Forensic Chemistry and Microscopic Evidence	Scanning Electron Microscopy
Pharmacology of Drug Addiction	Survey of Forensic Science
Separation Science	Crime Scene Investigation
Law and Forensic Science	Forensic Entomology

Bachelor of Science in Chemistry, American Chemical Society Certified, *Cum Laude*
University of Missouri-Columbia
Minor: Biology
Graduation Date: May 2007

Relevant Coursework

Instrumental Chemistry	Physics with Labs
Analytical Chemistry	Cellular Biology
Physical Chemistry	Calculus
Inorganic Chemistry	Bioethics
Organic Chemistry	Biochemistry

PROFESSIONAL EXPERIENCE

Speckin Forensic Laboratories, Okemos, Michigan: August 2009 to present

- Perform document analysis using Video Spectral Comparator (VSC-2000) and Electrostatic Detection Apparatus (ESDA)

- Identify inks found on questioned documents using thin layer chromatography (TLC) and comparisons to an ink library
- Date inks using densitometer and gas chromatography-mass spectrometry (GC-MS)
- Study the presence of chemicals in ink using gas chromatography-mass spectrometry

INTERNSHIP EXPERIENCE

Speckin Forensic Laboratories, Okemos, Michigan: May 2009 - August 2009

- Worked with forensic chemist in the analysis of questioned documents including microscopic evaluation, ESDA and VSC evaluations
- Assisted in the identification and dating of ink on questioned documents

Michigan State Police, Sterling Heights Laboratory, Michigan; May 2008 - August 2008

- Observed and assisted chemists with analysis of suspected drug cases through microcrystal tests, color tests, microscopic examination, and instrumental analysis, including gas chromatography-mass spectrometry and attenuated total reflectance infrared spectroscopy
- Assisted fire debris analysts in the analysis of fire debris, extracting and analyzing ignitable liquid residues
- Assisted latent print examiners in processing evidence using superglue fuming, powder dusting, ninhydrin, and photography
- Worked with forensic scientist in the analysis of rape kits including the use of indicator tests, microscopes, and staining
- Worked through mock firearms cases involving shell casing comparisons and bullet comparisons using a comparison microscope and handgun analysis

Omaha Police Department Crime Laboratory, Omaha, Nebraska; May - August 2006

- Gained experience in methods of crime scene investigation by assisting technicians in collecting evidence at crime scenes
- Observed processing of evidence in the laboratory including latent print examination

INSTRUMENTATION EXPERIENCE

Gas chromatography	Fourier-transform infrared spectroscopy
Mass spectrometry	Attenuated total reflectance infrared spectroscopy
Microwave-assisted extraction	Headspace-solid phase microextraction
Microspectrophotometry	Ultraviolet-visible light spectroscopy
Polarized light microscopy	Digital and film photography
Comparison microscopy	Scanning electron microscopy

RESEARCH EXPERIENCE

Michigan State University, Advisor: Dr. Ruth Waddell Smith

Comparison of extraction methods for organic impurity profiling of MDMA

- Developed and optimized procedures for the extraction of organic impurities from MDMA tablets using microwave assisted extraction, headspace solid-phase microextraction, and liquid-liquid extraction.
- Analyzed extracts by gas-chromatography-mass spectrometry
- Evaluated the resulting chromatograms and mass spectra using statistical procedures

Discrimination of Cosmetic Face Powders

- Developed methods for the analysis of cosmetic face powders using a variety of analytical techniques including microspectrophotometry, gas chromatography-flame ionization detection, ultra-violet visible spectroscopy, and infrared spectroscopy
- Optimized procedures for analysis of face powders using attenuated total reflectance infrared spectroscopy

ORAL PRESENTATIONS

- *Comparison of Extraction Procedures for Organic Impurity Profiling of Seized MDMA.* Patricia J. Joiner and **Ruth Waddell Smith**. Joint Meeting of the Southwestern, Southern, Midwestern, and Mid-Atlantic Associations of Forensic Scientists. Orlando, FL. October 2009.
- *Optimization of a microwave-assisted extraction (MAE) procedure for the extraction of organic impurities from seized MDMA Tablets*. **Patricia J. Joiner** and Ruth Waddell Smith. Central Regional Meeting of the American Chemical Society. Cleveland, OH. May 2009.

POSTER PRESENTATIONS

- *Optimization of a microwave assisted extraction/headspace solid-phase microextraction (MAE/HS-SPME) procedure for organic impurity profiling of seized 3,4-methylenedioxymethamphetamine (MDMA) tablets.* **Patricia J. Joiner** and Ruth Waddell Smith. American Academy of Forensic Sciences 61st Annual Scientific Meeting. Denver, CO. February 2009.
- *Development of a microwave-assisted extraction/head-space solid phase microextraction procedure for the organic impurity profiling of seized MDMA tablets.* **Patricia J. Joiner** and Ruth Waddell Smith. 37th Annual Midwestern Association of Forensic Scientists Fall Meeting. Des Moines, IA. October 2008.
- *Development of a microwave-assisted extraction procedure for organic impurity profiling of seized MDMA tablets*. Sarah C. Meisinger, **Patricia J. Joiner**, and Ruth Waddell Smith. 236th American Chemical Society National Meeting. Philadelphia, PA. August 2008.
- *Beta-Cyclodextrin alters the secondary-structure of the beta-amyloid peptide*. **Patricia J. Joiner**, John Simpson, and Renee JiJi. University of Missouri-Columbia, Life Sciences Week 2007 Poster Session.

TEACHING EXPERIENCE

Michigan State University, Teaching Assistant
School of Criminal Justice, January 2009 - Present
Course: Forensic Chemistry and Microscopic Evidence (graduate level)

- Organized laboratory exercises for graduate students
- Assisted students in completing laboratory exercises
- Assessed student's performance through grading lab reports

School of Criminal Justice, August 2008 - December 2008
Course: Introduction to Forensic Science (undergraduate level)

- Lectured on the topic of controlled substances
- Maintained course website by posting files and updating quizzes and grades
- Assisted professor in writing quiz and exam questions
- Answered student questions involving course material and website problems

Department of Chemistry, August 2007 - December 2007
Course: Chemistry Laboratory II (undergraduate level)

- Instructed and supervised laboratory experiments and answered student questions
- Evaluated and provided feed-back on students' performance in lab

University of Missouri-Columbia, Teaching Assistant
Department of Chemistry, August 2006 - December 2006
Course: Atoms and Molecules with Lab (undergraduate general chemistry)

- Explained material and worked sample problems during weekly discussion sections
- Answered student questions in class and in one-on-one settings
- Supervised laboratory experiments and techniques
- Assessed students' performance through grading lab reports, homework, and exams

PROFESSIONAL ORGANIZATIONS

- Student member, American Academy of Forensic Sciences, 2008 - Present
- Student member, American Chemical Society, 2008 - Present

VOLUNTEER EXPERIENCE

Church Camp Counselor, Camp Jo-Ota, Macon, Missouri; June 2004, 2005, 2006, 2007

- Improved leadership skills through supervising and interacting with high school and junior high aged youth
- Developed and implemented curriculum ideas and craft activities

OUTREACH ACTIVITIES

Chemistry Day, October 2008

- Supervised children performing forensic related activities the day of the event
- Explained basic theory behind the activities to the participants

Forensic Science Educator's Conference, Michigan State University, August 2008

- Assisted in the set up of lab activities for high school teachers
- Explained the lab and helped teachers complete the lab

"**Crime at the Michigan State University Zoo**," Cub Scout Demonstration, March 2008

- Created crime scene scenario for scouts to solve including evidence to analyze
- Organized activities for scouts including fingerprinting, shoeprint casting, and analyzing hair samples
- Explained scenario and supervised and assisted scouts during the event

"**Using TLC to Solve a Crime**," Girls Math/Science Conference, February 2008

- Organized and prepared thin layer chromatography activity for girls aged 10-12 years
- Explained TLC theory and procedures to girls at the event
- Supervised participants in a laboratory experiment at the event