CURRICULUM VITAE

DAVID WILLIAM SZYMANSKI
Forensic Science Consultants
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Experience

Forensic Scientist, 2003-present
Forensic Science Consultants, Williamston, MI

Contract Chemical Analyst, 2004-2007
ICP-MS Laboratory, Michigan State University, East Lansing, MI

- ❒ Serve as an expert in trace element analysis of glass and process paint and other crime scene evidence by infrared spectroscopy and scanning electron microscopy (SEM).
- ❒ Developed and put into practice a technique for the trace elemental analysis of glass fragments by laser ablation (LA) ICP-MS for the Michigan State Police.
- ❒ Processed over 30 glass cases for the Michigan State Police Forensic Laboratory.
- ❒ Qualified and testified as an expert witness in glass analysis, Lansing and Saginaw, MI.
- ❒ "New Scientist" Award Recipient, Midwestern Association of Forensic Scientists, an organization of over one-thousand scientists from over thirty states.

ICP-MS Lab Manager and Staff Research Assistant, 2005-present
Department of Geological Sciences, Michigan State University, East Lansing, MI

- ❒ Manage Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and sample preparation laboratories.
- ❒ Supervise and train undergraduate and graduate students in sample preparation and ICP-MS laboratories.

Lab Manager and Graduate Research Assistant, 1997-1998 and 2001-2005
Department of Geological Sciences, Michigan State University, East Lansing, MI

- ❒ Maintain equipment and supplies for X-ray Fluorescence (XRF) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS) laboratories.
- ❒ Prepared a variety of geological, biological and forensic samples for analysis using fusion and chemical techniques (acid digestions).
- ❒ Trained undergraduate and graduate students in sample preparation and ICP-MS operation.

Education

M.S., Forensic Chemistry, December 2004
Michigan State University, East Lansing, MI
Thesis: "Use of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) for the discrimination of glass fragments in forensic casework"

Education (continued)

Ph.D. candidate, Geological Sciences
Anticipated completion, August 2007
Michigan State University, East Lansing, MI
Dissertation: "Petrogenesis of Silicic Tuffs of the Bagaces Formation, Northern Costa Rica: Testing Models of Crustal Evolution"

M.S., Geological Sciences, December 1999
Michigan State University, East Lansing, MI
Thesis: "Faulting in an extensional environment: An emplacement mechanism for the Little Cottonwood Stock, central Wasatch Mountains, Utah"

B.A., Geology, Summa cum laude, May 1996
University of St. Thomas, St. Paul, MN
Minor in Criminal Justice

Competencies

Analytical Chemistry
- ❒ Skilled in ICP-MS and reaction cell operation, maintenance and repair.
- ❒ Proficiency in ICP-MS sample introduction systems, including laser ablation (Cetac LSX 200 Plus), hydride generation (Cetac HGX-100), and concentric nebulization.
- ❒ Preparation of numerous types of samples by fusion and acid digestion.
- ❒ Knowledge of operation and use of X-ray fluorescence (XRF), gas chromatography-mass spectrometry (GC-MS), infrared spectroscopy (IR) and infrared microspectroscopy, and microspectrophotometry.

Microscopy
- ❒ Extensive laboratory experience with polarizing light microscope (PLM).
- ❒ Skilled in use of stereoscope and particle manipulation.
- ❒ Knowledge of operation and use of scanning electron microscopy (SEM) with energy dispersive spectroscopy (EDS)

Languages
- ❒ Bilingual, English and Spanish (written 50%, spoken 50%).

Teaching

Instructor, Summer 2005
Center for Integrative Studies in Science, Michigan State University, East Lansing, MI
- ❒ Taught ISP 203, Geology of the Human Environment, a four-credit introductory geology course for non-science majors.

Graduate Teaching Assistant, 1996-1999 and 2001-2004
Department of Geological Sciences, Michigan State University, East Lansing, MI
- ❒ Instructed and coordinated laboratories in: Introductory Geology
Igneous and Metamorphic Petrology
Structural Geology
- ❒ Directed and assisted in the development of lab exercises and course materials.
- ❒ Guest lectured for faculty members on diverse topics such as earth structure, phase chemistry, geological distribution of trace elements and stable isotopes.
- ❒ Assisted and led student field work in Wisconsin, and Tennessee, Ontairo, Canada.

Teaching (continued)

Graduate Research Assistant, 2004-present
Integrative Studies in Physical Sciences, Michigan State University, East Lansing, MI

- ❒ Develop undergraduate teaching materials for the identification of misconceptions in science in a multi-disciplinary group funded by the National Science Foundation (NSF).

Instructor, Midwestern Association of Forensic Scientists (MAFS) Workshop, May, 2005
Title: Introduction to Forensic Glass Comparisons Using Laser Ablation (LA) ICP-MS
Michigan State University, East Lansing, MI

Guest Lecturer, CJ 805, Survey of Forensic Science, and CJ 210, Forensic Science, fall 2004
Topics: Glass and soil evidence
Michigan State University, East Lansing, MI

Graduate Mentor for Undergraduate Research Project, spring 2004
Department of Geological Sciences, East Lansing, MI

- ❒ Assisted faculty member in training, direction and supervision of an undergraduate Special Problems project in geochemistry.

Guest Lecturer, Polarizing Light Microscopy, Interim Session, 2004
Topic: Crystallography and Crystal Symmetry
Michigan State University, East Lansing, MI

Teaching Awards

Teaching Excellence, 2004-2005
Department of Geological Sciences, Michigan State University

Teaching Excellence, 2002-2003
Department of Geological Sciences, Michigan State University

Nomination for Teaching Excellence, 1998-1999
College of Natural Science, Michigan State University

Teaching Excellence, 1997-1998
Department of Geological Sciences, Michigan State University

International Experience

Field work, Costa Rica, Central America, summer 2001, 2003, and 2004

- ❒ Collected samples from volcanic deposits in central and northern Costa Rica with scientists from the United States and Costa Rica.

Invited Lecturer, July, 2004
Topic: Forensic Geology
University of Costa Rica, San Jose, Costa Rica, Central America

Professional Organizations

American Academy of Forensic Sciences (AAFS)
American Geophysical Union (AGU)
Costa Rican Association of Professional Forensic Scientists
(Asociacion Costarricense de Profesionales en Ciencias Forenses, ACCF)

Professional Organizations
Geological Society of America (GSA)
Michigan Microscopy and Microanalysis Society (MMS)
Midwestern Association of Forensic Scientists (MAFS)

Workshops

Elemental and Isotopic Analysis of Forensic Evidence Workshop, Miami, FL, February 2005
Glass Examination Workshop for Practicing Forensic Scientists, Ames, IA, July 2003
MAFS/MFRC Advanced Trace Evidence Symposium, Ames, IA 2006

Grants and Awards

New Scientist Award, Midwestern Association of Forensic Scientists (MAFS), 2006
Pringle-Drake Endowed Fellowship, Geological Sciences, MSU, 2005
Michigan Space Grant Consortium, Graduate Research Award ($5,000), 2004
Pringle-Drake Endowed Fellowship, Geological Sciences, MSU, 2003
Geological Society of America (GSA) Student Research Grant, 2002
Geological Society of America (GSA) Student Research Grant, 1998
Distinguished Alumni Award, Geological Sciences, MSU, 1997-1998

Publications and Abstracts

Price, J.R., Hull, J., and Szymanski, D.W., 2006, Long-term chemical weathering rates in the periglacial piedmont physiographic province of southeastern Pennsylvania: watershed geochemical mass-balance, saprolitization rates, and evidence for a modern saprolite, GSA Abstracts with Programs, v. 38, no. 7.

Szymanski, D.W., 2006, Application of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) in glass analysis schemes, Midwestern Association of Forensic Scientists Advanced Trace Evidence Symposium, Ames, IA (invited).

Bommarito, C.R., Sturdevant, A.B., and Szymanski, D.W., 2006, Analysis of forensic soil samples via high performance liquid chromatography and ion chromatography, Journal of Forensic Sciences, in press.

Szymanski, D.W., Patino, L.C., Vogel, T.A., Alvarado, G.E.,2006, Juvenile Continental Crust in Costa Rica: High-Silica Miocene-Pliocene Ignimbrites of the Bagaces Formation, Eos Trans. AGU, 87(36), Jt. Assem. Suppl., V41A-11.

Szymanski, D.W., 2004, Use of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) for the discrimination of glass fragments in forensic casework, M.S. Thesis, Michigan State University, 42 p.

Szymanski, D.W., Patino, L.C., Bommarito, C.R., and Siegel, J.A., 2004, Trace element profiles of float glass fragments determined by laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS), Abstracts of the 56th Annual Meeting of the American Academy of Forensic Sciences, Dallas, TX.

Vogel, T.A., Patino, L.C., Alvarado, G.E. and Szymanski, D.W., 2004, Silicic Ignimbrites within the Costa Rican Volcanic Front: Evidence for the formation of continental crust, AGU Western Pacific Meeting, V34-01 (invited).

Publications and Abstracts (continued)

Szymanski, D.W., Patino, L.C., Bommarito, C.R., and Siegel, J.A., 2003, Use of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) for float glass fragment discrimination by elemental analysis: Preliminary results, Midwest Association of Forensic Scientists Fall Meeting, Columbus, OH.

Szymanski, D.W., Patino, L.C., Vogel, T.A., Alvarado, G.E., 2002, Generation of Continental Crust in Central America: New Field and Geochemical Observations on Silicic Magmatism in Costa Rica, Eos Trans. AGU, 83(47), Fall Meet. Suppl., V12C-09.

Patino, L.C., Szymanski, D.W., Vogel, T.A., and Hannah, R.S., 1999, Rare Earth Element analysis of rocks by laser ablation ICP-HEX-MS, GSA Abstracts with Programs, v. 31, no. 7.

Szymanski, D.W., 1999, Faulting in an extensional environment: An emplacement mechanism for the Little Cottonwood Stock, Central Wasatch Mountains, Utah, M.S. Thesis, Michigan State University, 98 pp.

Szymanski, D.W., Cambray, F.W., and Vogel, T.A., 1999, A shear zone associated with emplacement of the Little Cottonwood Stock, Central Wasatch Mountains, Utah, GSA Abstracts with Programs, v. 31, no. 7.

Diner, R., Blackford, M., Crozier, M., Dundon, M., Lee, T., Redborg, K., Stewart, M., Stoehr, G., Szymanski, D.W., and Watkins, D., 1996, Benthic foraminiferal evidence for a northeast connection between the mid-Cretaceous (Cenomanian-Turonian) western interior seaway and the seas of northern Europe, GSA North-Central Section Annual Meeting, Abstracts with Programs, v. 28.

Community Activities

Council Member and Trustee, St. Paul Lutheran Church, East Lansing, MI, 2002-2005.

Keynote Speaker, May, 2004
Topic: “Volcanoes and Minerals: From Magmas to Crystals”
Central Michigan Lapidary and Mineral Society Annual Banquet