



CHEMISTRY



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Courses: CHE107, CHE310, CHE321, CHE403, CHE424
CRL107, CRL321, CRL424

Research Experience and Student Research Opportunities:

I involve students in a variety of research opportunities that are related to Analytical Chemistry. The current directions include analyses that are forensic and ecological in nature. One project entails determining the fatty acid residues on a Native American artifact to illuminate the dietary preferences of the culture that generated the artifact. I am also working with a local company that is investigating improved processing of farm waste, such as agricultural runoff, that affects water quality in the Chesapeake watershed.

Selected Presentations and Publications

Papers:

"Thermal imaging of microwave electric fields inside of the surfatron and the microwave plasma torch." with L.L. Dearth-Monroe, E.J. Andrews, E. Bair, Q. Jin, and G.M. Hieftje, Spectrochimica Acta Part B, 57, 267-275, 2002.

"Observations of nonmethane hydrocarbons and oxygenated volatile organic compounds at a rural site in the southeastern United States." with D. Riemer, W. Pos, P. Milne, C. Farmer, R. Zika, E. Apel, K. Olszyna, T. Kliendienst, W. Lonneman, S. Bertman, and P. Shepson, J. Geophys. Res., 103(D21), 28111, 1998.

"Measurements comparison of oxygenated volatile organic compounds at a rural site during the 1995 SOS Nashville Intensive." with E.C. Apel, J.G. Calvert, D. Riemer, W. Pos, R. Zika, T.E. Kleindienst, W.A. Lonneman, K. Fung, E. Fujita, P.B. Shepson, and P.T. Roberts, J. Geophys. Res., 103(D17), 22,295, 1998.

"Observations of isoprene chemistry and its role in ozone production at a semirural site during the 1995 Southern Oxidants Study." with P.B. Shepson, S.B. Bertman, J.S. White, B.G. Splawn, D.D. Riemer, R.G. Zika, and K. Olszyna, J. Geophys. Res. 103(D17) 22,425, 1998.

"Nighttime isoprene chemistry at an urban-impacted forest site." with P.B. Shepson, S.B. Bertman, D.D. Riemer, R.G. Zika, and K. Olszyna, J. Geophys. Res., 103(D17), 22,437, 1998.

Presentations:

AGU 2008, *"Determination of Reactive Nitrogen Species (NO_x, NO_y-HNO₃, Peroxyacyl Nitrates and Total Organic Nitrates) During the PROPHET Summer 2008 Intensive."* With Marjan Alaghmand, Nate Slade, Mary Anne Carroll, Steven Bertman, Philip Stevens, and Paul Shepson.

NEAFS 2008, *"Using Gunshot Residue to Map the Locard Exchange Principle."* with Samantha Shumlas and Amber Loiselle.

NEAFS 2008, *"Crafting a Coherent Chemical Curriculum: Forensic and Toxicological Chemistry."*

NEAFS 2007, *"Investigation of the Effects of Firefighting Foams on the Detection of Accelerants."* with Steven Ferraioli and Sheena Nonnemacher.

AGU 2004 *"Disjunct Eddy Accumulation Measurements of Organic Nitrate Fluxes Over a Forest Site in Northern Michigan"* with D. K. Martins, G.D. Edwards, and P.B. Shepson (abstract # B13B-0225).

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