

# KRISTI A. KNEAS

Department of Chemistry and Biochemistry,  
Elizabethtown College  
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## EDUCATION

Ph.D. Chemistry, University of Virginia; Charlottesville, VA, 2000; Dr. James N. Demas, advisor

A.B. Chemistry, Randolph-Macon Woman's College; Lynchburg, VA, 1995; Dr. William A. Mattson, advisor  
Academic Honors: *magna cum laude*, Honors in Chemistry

## TEACHING EXPERIENCE

08/06-Present Assistant Professor of Chemistry, Elizabethtown College; Elizabethtown, PA

### Major Courses

- Fundamentals of Chemistry Lecture and Laboratory (CH105, CH105L)
- Laboratory Methods in Chemistry (CH201)
- Chemical Instrumentation (CH214)
- Advanced Chemical Instrumentation (CH414)
- Research in Chemistry (CH291, CH292, CH491, CH492)

### Core Course

- General Chemistry: Practical Principles (CH101)

08/00-07/06 Assistant Professor of Chemistry, Maryville College; Maryville, TN

### Major Courses

- Principles of Chemistry I and II Lecture and Laboratory (CHM 121, 121L, 122, 122L)
- Quantitative Chemical Analysis Lecture and Laboratory (CHM 264, 264L)
- Instrumental Methods of Analysis Lecture and Laboratory (CHM364(5), 364(5)L)
- Senior Thesis/ Research Project (CHM 351, 352)

### Core Curriculum Courses

- Perspectives on the College (ORN 110)
- Perspectives on the Environment (FRS 130)
- Perspectives on Community (FRS 140)
- Fundamentals of Chemistry Lecture and Laboratory (CHM 117, 117L)
- The Human Genome Project (SCI 350)

07/03,07/05 Director and Instructor, Summer Science Academy at Maryville College for 5<sup>th</sup>-7<sup>th</sup> Graders

08/99-12/99 Recitation Leader, General Chemistry I, Dr. Francis A. Carey, Supervisor

08/95-08/96 Laboratory Instructor, General Chemistry I and II, Dr. Robert F. Bryan, Supervisor

01/93-05/93 Teacher's Assistant, Randolph-Macon Woman's College, Dr. Luz M. Calle, Supervisor

08/91-12/92 Laboratory Assistant, Randolph-Macon Woman's College, Dr. William A. Mattson, Supervisor

## RESEARCH EXPERIENCE

08/06-Present Department of Chemistry and Biochemistry; Elizabethtown, PA; Supervisor of Chemistry Research Projects and Theses completed by chemistry and biochemistry majors interested in analytical measurements

Specific research projects are designed to further efforts in one of three broad areas of interest: improved instrumentation (e.g. laser spectroscopy, PEM fuel cells), luminescence-based analytical sensing schemes for clinically and environmentally-relevant substances, and analytical sensing schemes for analytes of importance in forensics

### Recent Projects:

- John Tellis ('12) "Smart Hydrogels as Transducers in Luminescence-Based Temperature and Humidity Sensors"
- Zac Kulp ('11) "Low Cost Preparation of Membrane Electrode Assemblies for Polyelectrolyte Membrane Fuel Cells"
- Matt Myers ('11) "Development of Thin Film Sensors Based on "Smart" Hydrogels and an Environment-Sensitive Luminophore"
- Laura Krieger ('10) "Luminescence-Based Oxygen Sensors with Quantum Dots as Internal Reference"
- Chris Strulson ('09) "Smart Hydrogels as Transducers in Luminescence-Based Glucose and Lactate Sensors"
- Jamie Hornock ('08), "High-Performance Liquid Chromatography in Forensic Analyses of Drugs and Inks"
- Shannon Wallen ('08) "Toward Development of Improved Polyelectrolyte Membrane Fuel Cells"
- Dylan Donovan ('08) "Rational Design of Thermo- and pH-Responsive Gold-Cored Hydrogel, Luminescence-Based Sensors"

08/00-07/06 Department of Chemistry, Maryville College; Maryville, TN; Supervisor of required, 2-semester Senior Research Projects and Theses completed by chemistry and biochemistry majors interested in analytical measurements and of research practicum completed during summer.

Specific research projects are designed to further efforts in one of two broad areas of interest: computer interfacing in the chemical laboratory and applied analytical sensing schemes for environmentally-relevant substances

### Representative Projects:

- Drew Armstrong (MC '06), "Cost-Effective Measurement of Fluoride in Dental Products Using Capillary Electrophoresis"
- Ame Czentnar (MC '06) "Measurement of Estrogenic Compounds in Urine using Gas Chromatography-Mass Spectrometry"
- Adam Mabe (MC '05), "Software Development for a Perkin-Elmer LS54B Fluorescence Spectrophotometer and Construction of a Capillary Electrophoresis System"
- Amy Richardson (MC '04), "Instrument Driver File Development in LabVIEW for a Perkin-Elmer Lambda 6 UV-Visible Spectrophotometer"

05/04-08/04 Department of Chemistry, University of Tennessee; Knoxville, TN; Fellow, NSF Research Site for Educators in Chemistry Program, and Research Mentor, NSF Research Experience for Undergraduates Program; Dr. S. Douglas Gilman, host

Student research was directed at developing a fundamental understanding of the factors affecting electroosmotic flow (EOF) in capillary electrophoresis. Independent work was directed at the development of LabVIEW programs for (1) detection of chemiluminescence in forensic applications and (2) measurement of EOF when applying the photobleach method.

Student Projects:

- Alice Brank (MC '07), "Improvement of Online Electroosmotic Flow Measurement by Calibration of Projected Detection and Photobleach Beams"
- Emily Mitchell (Rose-Hulman Institute of Technology '05), "Effect of Biomolecules on Electroosmotic Flow in Capillary Electrophoresis"

05/02-08/02 Department of Chemistry, James Madison University; Harrisonburg, VA; Visiting Scientist and Faculty Mentor, NSF Research Experience for Undergraduates Program involving Deaf Participants, Drs. Gina MacDonald and Daniel M. Downey, hosts

Student research led to the development of an automated method for titrimetric analysis using LabVIEW programming and a LabPRO interface and to the improvement of a traditional paper chromatography laboratory for introductory chemistry. Independent work was directed at the modification of a Spectronic-21 to allow full-spectrum acquisition in LabVIEW.

Student Projects:

- Misti Reagan (MC '03) "Integration of Technology in the Chemical Laboratory: Automated Titrations"
- Matthew Laucka (Gallaudet University '03) "Integration of Technology in the Chemical Laboratory: Analysis of Food Dyes in Commercial Products"

05/01-08/01 Department of Chemistry, University of Virginia; Charlottesville, VA; Visiting Scientist and Faculty Mentor, NSF Research Experience for Undergraduates Program; Dr. James N. Demas, host

05/95-08/00 Department of Chemistry, University of Virginia; Charlottesville, VA; Graduate Student and Advisor of Undergraduate Research Projects; Dr. James N. Demas, Graduate Research Advisor

05/94-08/94 Department of Chemistry, University of Virginia; Charlottesville, VA; Student Participant, NSF Research Experience for Undergraduates Program; Dr. James N. Demas, Advisor

Independent work was aimed at the development of (1) luminescence-based oxygen sensors for use as pressure sensitive paints by Ford Motor Company and (2) methods that provide a better understanding of sensor performance characteristics. Novel polymer supports and inorganic transition metal complexes were synthesized; methods for measuring oxygen solubility and diffusion in polymers were developed; and fluorescence microscopy was established as a viable method to investigate sensor heterogeneity. Student research complimented these efforts.

Student Projects:

- Rachel Bowman (MC '02) "Conventional, Confocal, and Two-Photon Fluorescence Microscopy of Oxygen Sensors"
- Matthew Cuber (Salisbury University '02) "Reversible Photochemistry of Ruthenium Complexes."
- Aaron Lockhart (UVA '00), Louise Sinks (UVA '99), Bryant Nguyen (UVA '98) "Method for Measuring Oxygen Diffusion Coefficients of Polymer Films by Luminescence Quenching"

08/94-05/95 Department of Chemistry, Randolph-Macon Woman's College; Lynchburg, VA; Honors Chemistry Research Student; Dr. William A. Mattson, Advisor

Research led to the development of an automated mixing system to replace traditional Beer's Law calibration curves.

05/94-08/94 Department of Chemistry, James Madison University; Harrisonburg, VA; Student Participant, NSF Research Experience for Undergraduates Program; Dr. Daniel M. Downey, Host, Dr. William A. Mattson, Advisor

Research led to the development of a simple method for determining the presence of matrix interferences and a better understanding of the limitations of the standard addition method in analytical analyses.

## CONSULTATIONS AND FUNDED PROPOSALS

- *Integration of Laser Technology into the Elizabethtown College Chemistry Curriculum* (2007 Pittsburgh Conference Memorial National College Grant, \$13,600)
- *Toward the Rational Design of Polymer Electrolyte Membrane Fuel Cells* (with Dr. Heather Watson, 2007 Collaborative Interdisciplinary Scholarship Program at Elizabethtown College, \$16,800)
- *Construction of an Excited State Lifetime Instrument* (2007 Elizabethtown College Faculty Development Grant, \$3,000)
- *Development of Methods for Monitoring of Isopropyl Alcohol Usage and Recommended Practices for Emission Reductions at DENSO Manufacturing Tennessee, Inc.* (Summer 2005, DENSO International, \$3,220 plus supplies)
- *Preliminary Screening of non-VOC and non-HAP Cleaners for Solder Paste and Flux Used in Electronics Division at DENSO Manufacturing Tennessee, Inc.* (Spring 2005, DENSO International, Free Consultation)
- *Measurement of Fluoride in Dental Products at DenTek Oral Care, Maryville, TN* (Spring 2005, DenTek Oral Care, Free Consultation)
- *Reformulation of the Solvent System Used in the Cleaning of Inks by DENSO Manufacturing Tennessee, Inc.* (Summer 2004, DENSO International, \$10,500)
- *Construction of a Capillary Electrophoresis Instrument for Use in the Maryville College Chemistry Curriculum* (2003 Pittsburgh Conference Memorial National College Grant, \$12,500)
- *LabVIEW and Computer Interfacing in the Chemistry Teaching Laboratory* (2000-2001 Faculty Instructional Technology Fellowship, Maryville College-Title III Grant, \$5,400)

## HONORS AND AWARDS

- Membership in *Phi Beta Kappa* and *Alpha Gamma Sigma* Honor Societies
- Alumni Spotlight—Academic Careers, University of Virginia, Graduate School of Arts and Sciences, Career Services Website <http://artsandsciences.virginia.edu/gradschoolcareer/alumni/spotlight/academiccareers/index.html#a2>) (Spring 2007)
- Featured Faculty Member (“Collaborative Powers”) in *Laurels: Faculty Scholarship at Maryville College* (2004)
- Graduate Year Award for Excellence in Research, UVA, Fall 1999
- W.M. Keck Center for Cellular Imaging Poster Contest, Second Place Prize, 1999
- Founder’s Scholarship, R-MWC, Fall 1991-Spring 1995
- ACS James Lewis Howe Award, Outstanding R-MWC Senior in Chemistry, Spring 1995
- Undergraduate Award in Analytical Chemistry, R-MWC, Spring 1994
- Una Burton Honor Scholarship for Excellence in Chemistry, Spring 1994
- Elizabeth Alsbrook Jibb Award to R-MWC sophomore with most outstanding scholastic record, Spring 1992
- CRC Press Freshman Chemistry Award, Spring 1992

## PUBLICATIONS AND PROPRIETARY REPORTS (\*Denotes Undergraduate Authors)

Kristi A. Kneas, Mike Fontinell, Drew L. Armstrong,\* Alice R. Brank,\* Amanda L. Johnson,\* Chelsea A. Kissinger,\* Adam R. Mabe.\* “Greening up Auto Part Manufacturing: A Collaboration between Academia and Industry” *J. Chem. Educ.* **2009**, *86*, 212-215.

Kristi A. Kneas and Introductory Chemistry Students. “Elizabethtown College’s Pictorial Periodic Table” Published on the web: <http://pictorialperiodictable.wetpaint.com/> (Spring **2009**)

Kristi A. Kneas, Drew L. Armstrong,\* Alice R. Brank.\* *Measurement of Isopropanol Used by DENSO Manufacturing Tennessee, Inc.* (August **2005**; Contents of this report are proprietary.)

Kristi A. Kneas, Drew L. Armstrong,\* Amanda L. Johnson,\* Chelsea A. Kissinger,\* and Adam R. Mabe.\* *Reformulation of the Solvent System Used in the Cleaning of Inks by DENSO Manufacturing Tennessee, Inc.* (August **2004**; Contents of this report are proprietary.)

Rachel D. Bowman,\* Kristi A. Kneas, J.N. Demas, B.A. DeGraff. "Conventional, Confocal and Two-Photon Fluorescence Microscopy for Investigation of Oxygen Sensors." *J. Microsc.* **2003**, *211*, 112-120.

Zachary J. Fuller, William D. Bare, Kristi A. Kneas, Wenying Xu, J.N. Demas, B.A. DeGraff. "Photostability of Luminescent Ruthenium (II) Complexes in Polymers and in Solution" *Anal. Chem.* **2003**, 75, 2670-2677.

Kristi A. Kneas. "A Pictorial Periodic Table Constructed by Introductory Chemistry Students at Maryville College" Published on the web: <http://faculty.maryvillecollege.edu/Kneas/PeriodicTable.htm> (Spring **2003**)

Kristi A. Kneas, J. N. Demas, Bryant Nguyen,\* Aaron Lockhart\*, Wenying Xu, B.A. DeGraff. "A Simple Method for Measuring Oxygen Diffusion Coefficients of Polymers Films by Luminescence Quenching." *Anal. Chem.* **2002**, 74, 1111-1118.

Kristi A. Kneas, J.N. Demas, B.A. DeGraff, Ammasi Periasamy. Invited Paper: "Comparison of Conventional, Confocal, and Two-photon Microscopy for Detection of Microcrystals within Luminescence-based Oxygen Sensor Films" *Proceedings of SPIE* **2001**, 4262, 89-97.

Kristi A. Kneas, J.N. Demas, B.A. DeGraff, Ammasi Periasamy. "Fluorescence Microscopy Study of Heterogeneity in Polymer-supported Luminescence-based Oxygen Sensors." *Microsc. Microanal.* **2000**, 6, 551-561.

Kristi A. Kneas, Wenying Xu, J.N. Demas, B. A. DeGraff, Arden P. Zipp. "Luminescence-based Oxygen Sensors: ReL(CO)<sub>3</sub>Cl and ReL(CO)<sub>3</sub>CN Complexes on Copolymer Supports." *J. Fluorescence* **1998**, 8, 295-300.

Kristi A. Kneas, Wenying Xu, J. N. Demas, B. A. DeGraff. "Dramatic Demonstration of Oxygen Sensing by Luminescence Quenching." *J. Chem. Ed.* **1997**, 74, 696.

Kristi A. Kneas, Wenying Xu, J. N. Demas, B. A. DeGraff. "Oxygen Sensors Based on Luminescence Quenching: Interactions of Tris(4,7-diphenyl-1,10-phenanthroline)ruthenium(II) Chloride and Pyrene with Polymer Supports." *Appl. Spectrosc.* **1997**, 51, 1346-51.

Wenying Xu, Kristi A. Kneas, J. N. Demas, B. A. DeGraff. "Oxygen Sensors Based on Luminescence Quenching of Metal Complexes: Osmium Complexes Suitable for Laser Diode Excitation." *Anal. Chem.* **1996**, 68, 2605-2609.

#### **PRESENTATIONS AND PUBLISHED ABSTRACTS** (\*Denotes Undergraduate Author; Presenter Underlined)

*Approaches in Luminescence-Based Sensor Design: Smart Hydrogels as Transducers and Quantum Dots as Internal Standards.* Kristi A. Kneas, Christopher A. Strulson, Laura M. Krieger, Matthew M. Myers, John C. Tellis, and Zachary M. Kulp. 238<sup>th</sup> National ACS Meeting, Washington, DC, August 2009.

*Green Chemistry in the Automotive Industry: A Collaboration Between Academia and Industry.* (Invited Talk) Kristi A. Kneas. 13<sup>th</sup> Annual Green Chemistry and Engineering Conference, June 2009.

*Low Cost Preparation of Membrane Electrode Assemblies for Polymer Electrolyte Membrane Fuel Cells* (Poster, Talk) Zachary M. Kulp\*, Heather L. Watson, Kristi A. Kneas. Elizabethtown College Scholarship and Creative Arts Day, April 2009; Intercollegiate Student Chemists' Convention, April 2009.

*Toward the Development of Fiber Optic Sensors Based on "Smart" Hydrogels and an Environment-Sensitive Luminophore.* (Poster, Talk) Matthew M. Myers\*; Christopher A. Strulson,\* John C. Tellis,\* Kristi A. Kneas. Elizabethtown College Scholarship and Creative Arts Day, April 2009; Intercollegiate Student Chemists' Convention, April 2009.

*Measurement of Glucose and Lactate Using an Environment-Sensitive Luminophore Embedded in a "Smart" Gel* (Poster, Talk) Christopher A. Strulson\*, Matthew M. Myers,\* John C. Tellis,\* Kristi A. Kneas. Elizabethtown College Scholarship and Creative Arts Day, April 2009; Intercollegiate Student Chemists' Convention, April 2009.

*Smart Hydrogels as Transducers in Luminescence-Based Sensors* (Poster, Talk) John C. Tellis,\* Christopher A. Strulson,\* Matthew M. Myers,\* Kristi A. Kneas. Elizabethtown College Scholarship and Creative Arts Day, April 2009; Intercollegiate Student Chemists' Convention, April 2009.

*Quantum Dots as Internal Reference for Luminescence-Based Sensors.* (Poster) Laura M. Krieger,\* Shannon V. Wallen,\* Christopher A. Strulson,\* and Kristi A. Kneas, 235<sup>th</sup> National ACS Meeting, New Orleans, LA, April 2008; Elizabethtown College Scholarship and Creative Arts Day, April 2008 and April 2009.

*Peer Conference Model and Standardized Grading Rubric for Assessment and Improvement of Students' Laboratory Report Writing* (Talk) Kristi A. Kneas, 20<sup>th</sup> Biennial Conference on Chemical Education, Bloomington, IN, July 2008.

*Measurement of Glucosamine in Dietary Supplements by HPLC.* (Poster) Jamie L. Hornock\* and Kristi A. Kneas, 235<sup>th</sup> National ACS Meeting, New Orleans, LA, April 2008; Elizabethtown College Scholarship and Creative Arts Day, April 2008.

*Monitoring Ink Degradation for Forensic Investigations by HPLC.* (Poster) Jamie L. Hornock\* and Kristi A. Kneas, 235<sup>th</sup> National ACS Meeting, New Orleans, LA, April 2008; Elizabethtown College Scholarship and Creative Arts Day, April 2008.

*Measurement of Temperature and pH Using an Environment-Sensitive Luminophore in a Gold-Cored "Smart" Gel.* (Poster, Talk) Christopher A. Strulson\* and Kristi A. Kneas, 235<sup>th</sup> National ACS Meeting, New Orleans, LA, April 2008; Elizabethtown College Scholarship and Creative Arts Day, April 2008; Intercollegiate Student Chemists' Convention, April 2008.

*Laser Pointer Spectrometry Revisited: Application of Light Sensor and Data Acquisition Device.* (Poster) Shannon V. Wallen\* and Kristi A. Kneas, 235<sup>th</sup> National ACS Meeting, New Orleans, LA, April 2008.

*Toward the Improvement of Polyelectrolyte Membrane Fuel Cells: Sol Gel Membrane Preparation and Inkjet Printing of Catalyst Layers.* (Poster, Talk) Shannon V. Wallen\* and Kristi A. Kneas, Elizabethtown College Scholarship and Creative Arts Day, April 2008; Intercollegiate Student Chemists' Convention, April 2008.

*"Teaching in Different Environments"* (Invited Panelist) University of Virginia Graduate School of Arts and Sciences, March 2007.

*Green Chemistry in the Automotive Industry: Collaborative Efforts to Reformulate Cleaners and Improve Solvent-handling Practices.* (Talk) Kristi A. Kneas, Mike Fontinell, Özge Sezer, Drew Armstrong,\* Alice Brank,\* 231<sup>st</sup> National ACS Meeting, Atlanta, GA, March 2006.

*Pictorial Periodic Table of the Elements Created by Introductory Chemistry Students.* (Talk) Kristi A. Kneas, 231<sup>st</sup> National ACS Meeting, Atlanta, GA, March 2006.

*Green Chemistry in the Automotive Industry: Results of Collaborative Efforts to Reformulate Cleaners and Improve Solvent-handling Practices.* (Poster) Drew Armstrong,\* Alice R. Brank,\* Kristi A. Kneas, Mike Fontinell, Özge Sezer, 231<sup>st</sup> National ACS Meeting, Atlanta, GA, March 2006.

*Greening up the Automotive Industry: Positive Environmental Impacts of Collaborative Research Efforts between Academe and Industry.* (Invited Poster) Alice R. Brank,\* Drew L. Armstrong,\* Kristi A. Kneas, Mike Fontinell, Özge Sezer, 231<sup>st</sup> National ACS Meeting, Atlanta, GA, March 2006.

*Calling and Career: Reflections of a Former NSF-REU Student.* Kristi A. Kneas (Invited Talk), University of Virginia Charlottesville, Research Experiences for Undergraduates in Chemistry Lecture Series, June 2005.

*Software Development for a Perkin-Elmer LS54B Fluorescence Spectrophotometer.* Adam R. Mabe,\* Kimberly C. Collins,\* Sarah E. Hurst,\* Kristi A. Kneas (Poster), 227<sup>th</sup> National ACS Meeting, Anaheim, CA, March 2004.

*To Dye or not to Dye: Effects of para-phenylenediamine in Hair Dyes.* Kimberly C. Collins,\* Terry A. Bunde, Kristi A. Kneas (Poster), 227<sup>th</sup> National ACS Meeting, Anaheim, CA, March 2004.

*Maryville College's Successful Student Affiliates Chapter of the ACS.* Sarah E. Hurst,\* Kimberly C. Collins,\* Adam R. Mabe,\* Rachel A. Huffines,\* and Kristi A. Kneas (Invited Poster), 227<sup>th</sup> National ACS Meeting, Anaheim, CA, March 2004.

*Toward a More Rational Design of Luminescence-Based Oxygen Sensors.* Kristi A. Kneas (Invited Talk), University of Tennessee, Knoxville, Analytical Chemistry Lecture Series, November 2003.

*Maryville College's Successful Student Affiliates Chapter of the ACS.* Sarah E. Hurst,\* Kimberly C. Collins,\* Adam R. Mabe,\* and Kristi A. Kneas (Invited Talk), 55<sup>th</sup> Southeast Regional ACS Meeting, November 2003.

*Development of Automated Acid-Base Titrations Using LabVIEW Programming and a LabPro Interface.* Misti D. Reagan\* and Kristi A. Kneas (Poster), 225<sup>th</sup> National ACS Meeting, New Orleans, LA, March 2003.

*Instructional Technology in the Chemistry Laboratory: LabVIEW Programming and Computer Interfacing.* Kristi A. Kneas, Tiffany M. Easton,\* Misti D. Reagan,\* and Dani Thomas\* (Talk), 223<sup>rd</sup> National ACS Meeting, Orlando, FL, March 2002.

*Conventional, Confocal, and Two-photon Fluorescence Microscopy of Polymer-Supported Oxygen Sensors.* Rachel D. Bowman,\* Kristi A. Kneas, J.N. Demas, Ammasi Periasamy (Poster), Society 223<sup>rd</sup> National ACS Meeting, Orlando, FL, March 2002.

*Comparison of Conventional, Confocal, and Two-photon Microscopy for Detection of Microcrystals Within Luminescence-based Oxygen Sensor Films.* Kristi A. Kneas, J.N. Demas, B.A. DeGraff, Ammasi Periasamy (Invited Talk), International Biomedical Optics Symposium of the Photonics West Meeting, Society for Optical Engineering, San Jose, CA, January 2001.

*The Use of Conventional, Confocal, and Multi-photon Fluorescence Microscopy in Photochemical and Photophysical Investigations of Luminescence-based Oxygen Sensors.;* Kristi A. Kneas, J.N. Demas, B.A. DeGraff, Ammasi Periasamy (Invited Talk), 27<sup>th</sup> Annual Conference of the Federation of Analytical Chemistry & Spectroscopy Societies, Nashville, TN, September 2000.

*Luminescence-based Oxygen Sensors: Fluorescence microscopy as a probe of sensor heterogeneity.* Kristi A. Kneas, J.N. Demas, B.A. DeGraff, A. Periasamy (Talk, Poster, Talk), Rocky Mountain Analytical Conference, Denver, CO, August 1999; 216<sup>th</sup> National ACS Meeting., Boston, MA, August 1998. Eastern Analytical Symposium, Somerset, N.J., November 1998.

*Using an Automated Mixing System to Eliminate the Need for Calibration Curves.* Kristi A. Kneas, William A. Mattson (Talk), Joint Southeast-Southwest Regional ACS Meeting., Memphis, TN, November 1995.

*Oxygen Sensors Based on Luminescence Quenching: A survey of  $ReL(CO)_3Cl$  and  $ReL(CO)_3CN$  complexes on copolymer supports.* Kristi A. Kneas, Wenying Xu, James N. Demas, Benjamin A. DeGraff (Talk), Joint Southeast-Southwest Regional ACS Meeting., Memphis, TN, November 1995.

*Oxygen Sensors Based on Luminescence Quenching: Interactions of  $[Ru(4,7-diphenyl-1,10-phenanthroline)_3]Cl_2$  and Pyrene with Various Polymer Supports.* Kristi A. Kneas, Wenying Xu, James N. Demas, Benjamin A. DeGraff (Talk), 47<sup>th</sup> Joint Southeast-Southwest Regional ACS Meeting., Memphis, TN, November 1995.

*A Novel Demonstration of Luminescence Quenching as a Measure of Oxygen Concentration.* Kristi A. Kneas, Wenying Xu, James N. Demas (Poster), 47<sup>th</sup> Joint Southeast-Southwest Regional ACS Meeting., Memphis, TN, November 1995.

*A Simple Method for Discovering Matrix Interference Effects in Quantitative Analysis.* Kristi A. Kneas, Deanna M. Yaczko, William A. Mattson (Poster), 207<sup>th</sup> National ACS Meeting., San Diego, CA, March 1994.

*Minimizing Chemical Matrix Interferences in Spectrophotometry by Employing an Equal Reactant/Product Molar Absorptivity Curve.* Kristi A. Kneas, William A. Mattson (Poster), 207<sup>th</sup> National ACS Meeting., San Diego, CA, March 1994.

*Detecting and Minimizing Chemical Matrix Interference Effects When Using the Standard Addition Method.* Kristi A. Kneas, William A. Mattson (Poster), 207<sup>th</sup> National ACS Mtg., San Diego, CA, March 1994.

## COMPLETED WORKSHOPS, CLASSES, and CONFERENCES

- Council of Independent Colleges *Vocation in Undergraduate Education Conference*, Indianapolis, Indiana, March 2009.
- *Instrumental Analysis in Forensics*, Richard Saferstein, Eastern Analytical Symposium, Somerset, NJ, November 2008.
- *Chemistry of Art in the Laboratory*, Patricia Hill, 20<sup>th</sup> Biennial Conference on Chemical Education, Bloomington, IN, July 2008.
- *Getting Started with Assessment in General Education*, Linda Suskie, Vice President, Middle States Commission on Higher Education, University of Delaware, September 2007.
- *Understanding and Using Assessment Results*, Linda Suskie, Vice President, Middle States Commission on Higher Education, University of Delaware, September 2007.
- Association of American Colleges and Universities *Core Commitments* Summer Institute, University of Vermont, August 2007.
- *Automating Microsoft Excel Using Visual Basic for Applications.* Zbigniew A. Wilk, Instructor; PITTCON, Orlando, FL, March 2, 2005.
- *Spectroscopy for Fun!* Herbert L. Retcofsky, Instructor; PITTCON, Orlando, FL, Feb. 28, 2005.
- *Advanced Logger Pro 3.* Dan Holmquist, Instructor; 18<sup>th</sup> Biennial Conference on Chemical Education, Ames, IA, July 21, 2004.
- *Process Analytical Chemistry in the Classroom.* Lynn Melton, Instructor; 18<sup>th</sup> Biennial Conference on Chemical Education, Ames, Iowa, July 20, 2004.
- *Writing More Effective Proposals.* John Dwyer and Elizabeth Dorland, Instructors; 18<sup>th</sup> Biennial Conference on Chemical Education, Ames, Iowa, July 20, 2004.
- *The Liberal Arts Institute at Maryville College;* Gerald Gibson, President, and Peggy Cowan, Chair of the Core Curriculum, Instructors; Maryville, TN, June 2003.
- *22<sup>nd</sup> Conference on the First-Year Experience*, Atlanta, Georgia, February 2003
- *American Sign Language I and II* (audit). Sheri Moran, Instructor; Maryville College, Fall-Spring 2001-2002.
- *Funding for Undergraduate Research.* Don Burland, Instructor and other Invited Speakers; Summer Symposium-Research Site for Educators in Chemistry at the University of Tennessee, Knoxville, TN, July 2001.

## CAMPUS AND COMMUNITY LEADERSHIP AND SERVICE

### College Committees and Activities

- Elected Member, Elizabethtown College's Assessment Committee (Spring 2009-Present)
- Member, Elizabethtown College Center for Excellence in Teaching and Learning Board of Directors (Fall 2007-Present)
- Member, Elizabethtown College Middle States Commission on Higher Education Institutional Assessment and Student Learning Assessment Working Group (Spring 2007-Spring 2009)
- Member, Elizabethtown College's Association of American Colleges and University's "Core Commitments: Educating Students for Personal and Social Responsibility" Team, Purposeful Life Work Task Force, and Life Work Group (Spring 2007-Present)
- Member, Elizabethtown College Educational Philosophy Team (Fall 2006-Present)
- Elected Member, Maryville College Faculty Hearings and Appeals Committee (2005-2006)
- Chair (2005-2006) and Member (2001-2006), Maryville College Individualized Instruction Committee
- President (2005-2006) and Member (2000-2006), Maryville College Alpha Gamma Sigma Honor Society
- Member, Maryville College Core Curriculum Review Task Force (2005- 2006)
- Member, Foundations of Excellence™ in the First Year at Maryville College Task Force-Dimension 3: Educated Person, Spring 2004

- Member, Maryville College FRS 140: Perspectives on the American Community Planning Team, January 2001-2006
- Member, Maryville College FRS 130: Perspectives on the Environment Planning Team, January 2001-January 2004
- Maryville College Representative and Contributor, Appalachian College Association Preparation and Submission of NSF-Science, Technology, Engineering, and Mathematics Talent expansion Program Proposal (not funded), Fall 2004-Spring 2005
- Chair, Maryville College Senior Thesis Review Task Force, Spring 2003-January 2004
- Member, Maryville College Windows of Opportunity Strategic Planning Team, Technology Weaver Commission, April 2001-January 2002
- Member University of Virginia Library Advisory Committee 1999-2000
- President, University of Virginia Chemistry Graduate Student Council 1997-1999
- Founding Editor, University of Virginia, Chemistry Graduate Student Council Newsletter 1997-1999

#### Chemistry Outreach and Activities

- Faculty Advisor, Elizabethtown College Student Affiliates Chapter of the American Chemical Society, Fall 2007-Present
- Science Fair Judge, Careers in Science Day Representative, Chemistry Demonstration and Lab Exercise Director at local schools, at least twice yearly, Fall 2000-Present
- Organizer, Elizabethtown College Department of Chemistry and Biochemistry Career Exploration Event, March 2009
- Webmaster, Intercollegiate Student Chemists' Convention, Elizabethtown College, April 2008
- Coordinator, Mid-Atlantic Association of Liberal Arts Chemistry Teachers Annual Meeting, Elizabethtown College, November 2007
- Faculty Advisor, Maryville College Student Affiliates Chapter of the American Chemical Society, Fall 2000-Spring 2006
- External Reviewer, Division of Natural Sciences, Gardner-Webb University, January 2006
- Director, Founder, and Instructor, Summer Science Academy at Maryville College, Summer 2003-Present
- Volunteer Coordinator, Regional Science Olympiad at Maryville College, Spring 2003-2005
- Event Coordinator, Regional Science Olympiad at Maryville College, Spring 2002-2005

#### Civic and Church Involvement

- Senior High Youth Leader and Event Coordinator, Paxton Presbyterian Church, Harrisburg, PA, 2009-current
- Board Member, Little River Watershed Association, Summer 2005-2006
- Member, Blount County TN Habitat for Humanity, Family Selection Committee, Spring 2003-2006
- Member, Congregational Care Committee, First Presbyterian Church of Knoxville, TN, Fall 2003-2006
- Board Member, The Orchestra at Maryville College, Summer 2000-2006
- Member, Maryville College Habitat for Humanity Electrical Work Crew, 2000
- Junior High Youth Leader and Event Coordinator, First Presbyterian Church of Charlottesville, VA, 1997-2000, New Providence Presbyterian Church, Maryville, TN, 2001-2002

#### PROFESSIONAL AFFILIATIONS

- American Chemical Society-Analytical Chemistry and Chemical Education Divisions
- Council of Undergraduate Research

#### REFERENCES

Available upon request.