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CAREER OBJECTIVE

Mentoring and education of young scientists, particularly those in underrepresented groups; Research in analytical chemistry, including method development, particularly at the interface of chemistry and life sciences

RESEARCH INTERESTS

Capillary and micro- electrophoresis; Microfluidics; BioMEMS (biomedical microelectromechanical systems); Miniaturized analytical methods development for life science applications; Biological applications of fluorescence

EDUCATION

Ph.D., Analytical Chemistry, May 2002, Louisiana State University and A&M College, Baton Rouge, LA
Dissertation: "Capillary and Microdevice Electrophoresis: Heteroduplex Analysis for Tuberculosis Drug Susceptibility and Ligase Detection Reaction for Colorectal Cancer Detection"; Advisor: Dr. Steven Soper

B.S., Chemistry, (cum laude) December 1996, Southern University and A&M College, Baton Rouge, LA

AWARDS AND HONORS

US Delegate, 52nd Meeting of Nobel Laureates, Lindau, Germany, 2002
National Research Council Postdoctoral Fellowship (NIST), 2001 – 2002
American Dissertation Fellowship, American Association of University Women, 2001
Science and Engineering Alliance Exemplary Leadership Award, 2000
Board of Regents Pre-doctoral Fellowship, LSU, 1997 - 2001
Packard Foundation Scholarship, SU, 1995 - 1996
Timbuktu Academy Full Scholarship, SU, 1994 - 1996
Honors College Full Scholarship, SU, 1992 - 1996

PROFESSIONAL EXPERIENCE

Academic Appointments

Assistant Professor, Department of Chemistry, Mississippi State University, Mississippi State, MS
7/03 – Present Tenure-track appointment involving research, teaching and service.

Postdoctoral Research

National Research Council Postdoctoral Research Associate - National Institute of Standards and Technology (NIST), Chemical Science and Technology Laboratory, Process Measurements Division, Process Sensing Group, Gaithersburg, MD

1/02 – 7/03 Developed method of hydrogel entrapment of proteins for microfluidic based analysis; Evaluated effect of surface treatment, polymerization time, monomer concentration, incubation time; Evaluated specificity of antibody/antigen interactions; Explored various applications

Doctoral Research

Board of Regents Research Fellow - LSU, Department of Chemistry, Baton Rouge, LA

08/97 - 01/02 Developed capillary and microdevice methods for genetic mutation detection: mutations in *rpoB* in mycobacterium tuberculosis associated with rifampin resistance using heteroduplex analysis, and mutations in K-ras for early detection of colorectal cancer using ligase detection reaction; Built capillary and microdevice electrophoresis instruments with laser-induced fluorescence detection; Supervised undergraduate researcher for two years, as well as summer students; Trained incoming graduate students on laboratory procedures and instrument usage.

Undergraduate Research

Research Assistant - Albemarle Corporation/Staff Plan, Biocides Division, Baton Rouge, LA

01/97 - 09/97 Developed synthesis of biocide product with improved yield and purity, shorter process time, decreased process steps and increased raw material utilization; Characterized product using wet chemical analysis, NMR and FTIR; Evaluated scale-up methods for pilot plant operation; Initiated patent application for product synthesis; Performed studies for EPA product registration

Intern - Albemarle Corporation, Flame Retardants Division, Baton Rouge, LA

05/96 - 08/96 Explored low temperature oligomerization solvent process for flame retardant additive for high impact polystyrene; Isolated key intermediate; Characterized intermediate and product using gel permeation chromatography, GC, NMR and FTIR

Intern - The Upjohn Company, Upjohn Labs, Biotechnology Development, Kalamazoo, MI

05/95 - 08/95 Evaluated purification process for production of polyclonal antibody product for transplant patients; Evaluated compatibility of developmental assays with in-process assays using lab and production scale samples; Determined protein concentration, anti-red blood cell activity, total IgG binding and CD marker inhibition using perfusion chromatography, micro-hemagglutination assays, and flow cytometry

Technical Experience

Intern – The Upjohn Company, Quality Control, Spectroscopy Group, Kalamazoo, MI

05/94 – 08/94 Performed FTIR identification testing on raw and in-process materials and final product; Performed LIMS tracking and analysis results input

Other Teaching Experience

Teaching Assistant – LSU, Department of Chemistry, Baton Rouge, LA

1998 Prepared and delivered lectures for general chemistry laboratory; Supervised undergraduate student experiments; Prepared laboratory equipment and reagents; Evaluated and graded student performance, laboratory reports and exams

Private Tutor – LSU, Department of Chemistry, Baton Rouge, LA

1999-2000 Tutored undergraduate students in general and organic chemistry

UNIVERSITY ACTIVITIES

Member, Council on Minority Affairs, Mississippi State University, 2003

Faculty Advisor, Student Affiliates Chapter of the American Chemical Society, 2003

Member, Graduate Studies Committee, LSU Department of Chemistry, 2000-2001

Member, Search Committee for the Vice Chancellor of Research and Dean of the Graduate School, LSU, 2000-2001

PROFESSIONAL ACTIVITIES/MEMBERSHIP

Member, National Organization of Black Chemists and Chemical Engineers (NOBCChE)
LSU Student Chapter, 1998-2002; Baton Rouge Professional Chapter, 1997-1998
Organizer, Southeast Regional Quiz Bowl, Southeast Regional Meeting and LSU-NOBCChE Banquet and Symposium; Moderator, National Quiz Bowl; Chair, LSU Scholarship Committee; Science Fair Judge and classroom guest speaker, local public schools
Student Outreach Coordinator, Alumni Member, Science and Engineering Alliance, Inc., 1992 – present
Member, American Chemical Society, 1998-present
Sigma Xi, Scientific Research Society, NIST Chapter, 2003 - present
Corporate Representative, Albemarle Corporation Junior Achievement Program, 1997

SYNERGISTIC ACTIVITIES

Invited Speaker, Gordon Research Conference on Chemical Education – Research and Practice, Ventura, CA, Jan 2004;
Research advisor for underrepresented high school and undergraduate students (Fall 2003 – present)
Minority Recruiting Coordinator, Graduate Recruitment Committee, MS State Univ. Chemistry Dept;
Member and Co-chair, Assistant Professors Focus Group, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) – This focus group is dedicated to the support, development and training of assistant professors within the organization;
Alumnus and Outreach Coordinator, Science and Engineering Alliance (SEA), Washington, D.C. – The SEA consists of a consortium between four historically black colleges and several government agencies and laboratories dedicated to the education and training of minority scientists and engineers;
Faculty Advisor, MS State University Student Chapter of NOBCChE; and,
Faculty Advisor, Student Affiliates Chapter of the American Chemical Society, (Fall 2003 – Spring 2004).

PUBLICATIONS

G. Thomas, D. Williams, *S. Soper, *Capillary Electrophoresis-based Heteroduplex Analysis with a Universal Heteroduplex Generator for Detection of Point Mutations associated with Rifampin Resistance in Tuberculosis*, *Clinical Chemistry* 2001, 47, 1195 - 1203.

G. Thomas, H. Farquar, *S. Sutton, R. Hammer, S. Soper, *BioMEMS using Electrophoresis for the Analysis of Genetic Mutations*, *Expert Review of Molecular Diagnostics* 2002, 2, 429 - 447.

S. Qi, X. Liu, S. Ford, *J. Barrows, **G. Thomas**, et al, *Microfluidic Devices Fabricated in (poly) methylmethacrylate using Hot-embossing with Integrated Sampling Capillary and Fiber Optics for Fluorescence Detection*, *Lab on a Chip*, 2002, 1, 88 – 95.

G. Thomas, *NOBCChE's 2002 Annual Meeting*, The Minority Scientists Network. <http://www.miscinet.org> (accessed September 2002).

G. Thomas, H. Farquar, *S. Sutton, R. Sinville, R. Hammer, S. Soper *Detection of Low Abundant Mutations in K-ras for Colorectal Cancer Using Capillary and Microdevice Electrophoresis*, *Electrophoresis*, 2004, 25, 1668-1677.

G. Thomas, L. Locascio, M. Tarlov, *Hydrogel Immobilized-Antibodies for Microfluidic Protein Analysis*, (manuscript in preparation).

PRESENTATIONS

1. Tuberculosis Drug Susceptibility Testing Using Capillary Electrophoresis and Heteroduplex Analysis, PITTCOON, New Orleans, LA, 2000. (oral)
2. Tuberculosis Drug Susceptibility Testing Using Capillary Electrophoresis and Heteroduplex Analysis, 27th Annual NOBCCChE Conference, Miami, FL, 2000. (oral)
3. Technology Advances for Heteroduplex Analysis of Genetic Mutations, PITTCOON, New Orleans, LA, 2001. (oral)
4. Capillary and Microdevice Electrophoresis for Genetic Applications: Rifampin Resistance in Mycobacterium Tuberculosis, 28th Annual NOBCCChE Conference, Baltimore, MD, 2001. (oral)
5. Capillary and Microdevice Electrophoresis for Genetic Applications, 2001 Gordon Conference on Analytical Chemistry, Connecticut College, CT, 2001. (poster)
6. Capillary and Microdevice Electrophoresis, smallTalk 2001, San Diego, CA, 2001. (poster)
7. Capillary and Microdevice Technology for Genetic Applications, Department of Chemistry Seminar Series, Morgan State University, Baltimore, MD, 2002. (invited, oral)
8. A Chemist's Role in the Human Genome Project, 16th Annual Julia M. Martin College of Sciences Symposium, Southern University and A&M College, Baton Rouge, LA, 2002. (invited, oral)
9. Capillary and Microdevice Technology for Genetic Applications, 29th Annual NOBCCChE Conference, New Orleans, LA, 2002. (oral)
10. Microdevice-based Analysis using Hydrogel Immobilized Proteins, smallTalk 2002, San Diego, CA, 2002. (poster)
11. Microdevice-based Analysis using Hydrogel Immobilized Proteins, Frederick Conference on Capillary Electrophoresis, Frederick, MD, 2002. (poster)
12. Microfluidic Sensors for Protein Analyses, American Chemical Society, New Orleans, LA, 2003. (oral)
13. Microfluidic Sensors for Protein Analyses, Federation of Analytical Chemistry and Spectroscopy Societies National Meeting, Ft. Lauderdale, FL, 2003. (invited, oral)
14. Capillary and Microfluidic Electrophoresis for Bioanalytical Applications, Life Science Biotechnology Institute, Mississippi State University, Starkville, MS, Nov 2003. (invited, oral)
15. Microfluidic Applications in Biological Analyses, Johns Hopkins University Applied Physics Laboratory, Laurel, MD, Dec 2003. (invited, oral)