Michael Axel Nichols

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Education

Ph.D. Physical Organic Chemistry, **Duke University**, Durham, NC, 1990
B.S., Chemistry, American Chemical Society Certified, *Summa Cum Laude*, **Clarion University of Pennsylvania**, Clarion, PA, 1986

Teaching Experience

John Carroll University, University Heights, OH, Assistant Professor, 1994-2000; Associate Professor, 2000-present.
Courses taught: General Chemistry Lecture, Chemical Principles (Honors General Chemistry) Lecture and Laboratory, Organic Chemistry Lecture and Laboratory, Theoretical Organic Chemistry (MS and Advanced Undergraduate), Organic Spectroscopy (Advanced Undergraduate), Environmental Chemistry (non-majors) Lecture and Laboratory, Chemistry and Society (non-majors) Laboratory.

Ohio University, Athens, OH, Visiting Assistant Professor, 1993-94
Courses taught: General Organic Lecture and Laboratory, Introduction to Organic and Biochemistry.

Kansas State University, Manhattan, KS, Temporary Assistant Professor, 1992-93
Courses taught: General Organic, Organic Chemistry Lecture and Laboratory, General Chemistry, Advanced Organic Laboratory.

Research Experience

Brown University, Providence, RI, Department of Chemistry, Post-Doctoral Associate 1990-1992
Research Advisor: Professor Paul G. Williard
Research involved the use of single crystal x-ray crystallography and heteronuclear NMR to study solid-state and solution structures of organoalkali compounds.

Duke University, Durham, NC, Department of Chemistry, Research Associate, 1986-1990
Thesis Advisor: Professor Edward M. Arnett (Emeritus)
Ph.D. Dissertation Title: "Thermochemistry and Solution Structures of Organolithium Compounds in Non-Polar Solvents"
Dissertation research involved use of heteronuclear NMR, colligative property methods, and solution calorimetry to determine solution structures and the reactivity of organolithium compounds.

Publications (* indicates undergraduate author)

Catherine Miller, Kimberly E. Kern,* Meghan Brown,* Michael A. Nichols, Allen D. Hunter, Matthias Zeller, *"Crystal Structure, Synthesis and Physical Characterization of a Five-Coordinate Copper(II) Chloride-8-[(2'-pyridylmethylene)amino]quinoline (PQAM) Complex"*, *Journal of Chemical Crystallography*, in preparation.

Michael A. Nichols and Mark J. Waner, *"Kinetic and Mechanistic Studies of the Deuterium Exchange in Classical Keto-Enol Tautomeric Equilibrium Reactions", Journal of Chemical Education* **2010**, *87(9)*, 952-955.

Michael A. Nichols, Christina M. Leposa*, Allen D. Hunter, Matthias Zeller, *"Crystal Structures of Hexameric and Dimeric Complexes of Lithioisobutyrophenone", Journal of Chemical Crystallography,* **2007**, *37(12)*, 825-829.

Michael A. Nichols, Rachel M. Sobinsky*, Allen D. Hunter, Matthias Zeller, *"Crystal Structure of an n-Butyllithium · 1,2-Dipiperidinoethane Dimer Complex"*, *Journal of Chemical Crystallography* **2007**, *37(6)*, 433-438.

Delia Waldmuller, Barbara J. Kotsatos*, Michael A. Nichols, and Paul G. Williard, *"Synthesis of [^{15}N,^{15}N']-N,N,N',N'-TMEDA and Its Use in Solvation Studies of [^{6}Li]-n-Butyllithium," Journal of the American Chemical Society* **1997**, *119*, 5479-5480.

Michael A. Nichols, Delia Waldmuller, and Paul G. Williard*, "^{6}Li and ^{15}N NMR Studies of Mixed Alkali Metal Cation Hexamethyldisilazide Bases"*, *Journal of the American Chemical Society* **1994**, *116*, 1153-1154.

J. William Suggs, Michael J. Dube and Michael A. Nichols, "*Synthesis and Structure of a Product, Formed During DNA Nicking with a Cyclometalated Nuclease, Consisting of an Adenine Bridging 2 Palladium(II) Complexes", Journal of the Chemical Society – Chemical Communications* **1993,** 307-309.

Michael A. Nichols and Paul G. Williard, *"Solid-State Structures of n-Butyllithium Complexes with TMEDA, THF, and DME", Journal of the American Chemical Society* **1993**, *114*, 1568-1572.

Lloyd M. Jackman, Denise Cizmeciyan, Paul G. Williard, and Michael A. Nichols*, "Hexameric Lithium Phenolate. Crystal Structures and ^{7}Li Quadrupole Coupling in Solid and Solution Phases," Journal of the American Chemical Society* **1993**, *115*, 6262-6267.

Paul G. Williard and Michael A. Nichols, *"Structural Characterization of Mixed Alkali Metal Bis(trimethylsilyl)amide (HMDS) Bases", Journal of the American Chemical Society* **1991**, *113*, 9671-9673.

Michael A. Nichols, Andrew T. McPhail, Edward M. Arnett, *"Chelation of 2-Substituted-1-lithoxide --- Structural and Energetic Factors of Relevance to Synthetic Organic Chemistry"*, *Journal of the American Chemical Society* **1991**, *113*, 6222-6233.

Edward M. Arnett, Michael A. Nichols, and Andrew T. McPhail, "*Structural and Energetic Evidence for O-Li-N Chelation in a Model for Asymmetric Induction", Journal of the American Chemical Society* **1990**, *112*, 7059-7060.

Edward M. Arnett, Franklin J. Fisher, Michael A. Nichols and Anthony A. Ribiero*, "Structure-Energy Relations for the Aldol Reactions," Journal of the American Chemical Society* **1990**, *112*, 801-808.

Edward M. Arnett, Franklin J. Fisher, Michael A. Nichols and Anthony A. Ribiero, "*Thermochemistry of a Structurally Defined Aldol Reaction"*, *Journal of the American Chemical Society* **1989**, *111*, 748-749.

Acknowledged Contributions to Other Publications

"NMR Studies of Structure and Reorganization Dynamics of an [Li-6]-Allylic Lithium Compound Complexed to [N-14,N-15]-N,N,N ',N '-tetramethylethylenediamine: Inversion and Ligand Lithium Exchange", *Journal of the American Chemical Society, Fraenkel, G.; Liu, H.* **2004**, *126*, 5202-5206.

"Cyprinid Fishes as Samplers of Benthic Diatom Communities in Freshwater Streams of Varying Water Quality", Canadian Journal of Fisheries and Aquatic Sciences, Rosati, TR, Johansen, JR, Coburn, MM **2003**, *60*, 117-125.

Reports and Data Provided to Government and Public Agencies

Consumer Investigation: What's In Your Water? (NewsChannel5 Tests Bottled, Tap Water) NewsChannel5 – WEWS – Cleveland, OH, Analyzed several brands of bottled water and Cleveland tap water and provided results and did an on-air interview, Nov 2009.

"Analyzing the Water Quality of Water Entering the Langerdale Retention Basin in South Euclid, OH: Pre-Construction Data", data was provided to the Cuyahoga Soil and Water Conversation District in support of obtaining funding for this project, Spring 2007.

Report of the Water Chemistry of the Major Inflows and Outflow of Green Lake, Summers 2005/2006", was provided to the City of Shaker Heights, OH and the Doan Brook Watershed Partnership, September 2006.

"Report on the Effectiveness of Bioaugmentation Treatment of Green and Marshall Lakes Using Live Liquid Micro Organisms (LLMO)" provided to the City of Shaker Heights, OH and the Doan Brook Watershed Partnership for research conducted during Summer 2004 and 2005.

Data collected in the Euclid Creek Watershed provided to Ohio Environmental Protection Agency, for preparation of the Euclid Creek Watershed TMDL, Jan. 2005, available at: http://www.epa.state.oh.us/dsw/tmdl/EuclidCreekTMDL.html and for use in the evaluation of Section 401 Water Quality Certification to First Interstate Properties, LTD., Legacy Village Project, Lyndhurst, OH, 2002.

Master of Science Theses Directed

"Syntheses of [^{15}N]-Labelled EDA-Related Ligands and Their Complexes with n-Butyllithium", Michelle Tscheiner, M.S. Chemistry, 2003, ABT.

"Screening for Permethrin Pesticide in Creek Chub Fish and Doan Brook Water Samples", Rachel Nicholson, M.S. Biology Completed, August 2003 (Co-Advisor with Dr. Miles Coburn, Department of Biology).

"Kinetic Studies of the Deprotonation of Isobutyrophenone by Lithium Bis(trimethylsilyl)amide Using Proton NMR", Joseph L. Redley, M.S. Chemistry Completed, September 1999.

"Structural and Energetic Studies of Transmetalation Reactions Between Lithium Bis(trimethylsilyl)amide and Sodium, Potassium and Cesium Alkoxides", James E. Reddy, M.S. Chemistry Completed, 1997.

"Synthesis of [^{15}N]-Pyrollidine and Its Use in the Solvation Studies of Organolithium Compounds", Marc A. Falcone, M.S. Chemistry Completed, 1996.

Grants and Fellowships Obtained

"Development of an Advanced Organic Spectroscopy Course", John Carroll University, Summer Course Development Fellowship, $5,000, Summer 2008.

"Physical Organic Studies of Organoalkali Reagents and Their Reactions", John Carroll University, Grauel Fellowship (Leave), Fall 2004.

Major Author of the Department of Chemistry's successful *Heuer Award for Outstanding Achievement in Undergraduate Science Education* from the Council of Independent Colleges, $10,000, Spring 2002.

"Evaluation of Two Constructed Wetlands to Remediate Urban-Run Off", Michael Nichols, Summit County Soil and Water Conservation District, Twinsburg, OH, $4,900, 2001-2002.

"The Use of Trimethylsilylmethyllithium as an Initiator in Polymerization Reactions of Polystyrene", American Chemical Society POLYED Undergraduate Research Fellowship for Erin Shaneyfelt, $3,500, Summer 2002.

"Acquisition of Calorimetry Instrumentation", Michael Nichols, David P. Mascotti, and Mark Waner, National Science Foundation, MRI Program, $97,378, 2001-2003.

"REU Site in Chemistry", Michael Nichols (PI), David W. Ewing, and David P. Mascotti, National Science Foundation, $ 167,000, 2000-2002, including supplements supporting an "Ethics in Science" component, and two Research Experiences for Teachers (RET) supplements ($26,000 total) to support high school teachers in water quality related research projects (2001-2002).

"Incorporation of World-Wide-Web Resources into Introductory Chemistry Courses, Catherine Miller and Michael Nichols, JCU Faculty Instructional Grants Program, $300, AY 1998-1999.

"Determination of the Solution Structures of Lochmann-Schlosser Superbasic Reagents Using ^{6}Li, ^{15}N, and ^{13}C NMR Spectroscopy", Research Corporation Cottrell College Science Award, 1998-1999, $38,120 total support.

"Using NMR to Determine the Structures of Methylation Products of a Steroid Prepared from DHEA", Ohio Board of Regents STARS Lloyd O. Brown Undergraduate Research Assistantship for Charles Nnewihe, $2400 to student, Fall 1997.

"Syntheses and Applications of Polymer-bound Chiral Lithium Amide Bases", Ohio Board of Regents STARS Program for Charles Nnewihe, $2,400 to student, Academic year 1996-1997.

"Energetic Differences Between Transmetalation and Mixed Organoalkali Complex Formation", Ohio Supercomputer Center, Startup Grant, 10 Resource Units ($500), December 1995.

"Synthesis of [^{6}Li,^{13}C] n-Butyllithium and NMR Structure Studies of Lochmann-Schlosser Superbases", Cambridge Isotope Laboratories (CIL) Research Grant Program, $240 in supplies, August 1995.

"Solution Structures of n-Butyllithium in the Presence of N,N,N',N'-Tetramethylethylenediamine: An Application of Triple Isotopic Labeling NMR", John Carroll University Summer Research Fellowship, $ 3,750, Summer 1995.

"An Independent General Chemistry Laboratory Project: How Does Robin Leach's Silver Cleaning Plate Work?", Ohio Board of Regents STARS Project for Charles Nnewihe, $1,200 to student, Spring 1995.

Substantive Support Provide for Other Grants

"Project CLEAN", Western Reserve Resource Conservation and Development Council, Painesville, OH
I provided a substantial letter of support for an Ohio EPA Educational Fund grant submitted by Project CLEAN, a consortium group of institutions in Northeast Ohio sharing ideas about environmental courses/research/service learning. The grant was funded ($50,000) and will help to involve local colleges and universities in the Euclid Creek Volunteer Monitoring Program. Spring 2007.

"Purchase of Water Quality Instrumentation for the Euclid Creek Watershed Volunteer Water Quality Monitoring Program", I provided my expertise to the Cuyahoga County Soil and Water Conservation District in the preparation of this successful grant proposal to the Ohio State University Extension Office, $3,000 (approx.), Fall 2005.

"Fun with Forensic Chemistry Summer Kids Camp" I also assisted Faith Whitworth in obtaining a $2,000 grant from the Institute for Chemical Education – University of Wisconsin-Madison, for beta-testing the "Fun with Forensic Chemistry" Summer Kids Camp in Summer 2005.

Presentations by Michael Nichols and Collaborators
(Presenter in **Bold**)

*"GC-MS Analyses of the Composition and Dynamic Behavior of Perfumes", **Michael A. Nichols**, Chemistry Department Seminar Series, John Carroll University, September 2009. (Oral Presentation)*

*"Kinetic and Mechanistic Studies of β-Dicarbonyls Undergoing Deuterium Exchange with CD_3OD: Classical Keto-Enol Tautomerism Revisited", **Mark J. Waner** and **Michael A. Nichols**, Central Meeting of the American Chemical Society (CERMACS), Cleveland, OH, May 2009 and National Meeting of the American Chemical Society, Philadelphia, PA, September, 2008 (Poster Presentations), Central Meeting of the American Chemical Society (CERMACS), Covington, KY, May 2007 (Oral Presentation).*

*"Synthesis, Spectroscopic Characterization and X-Ray Structure of a New Five-Coordinated Chlorocopper(II) Complex with a Fluorigenic Ligand", **Catherine Miller,** Kimberly E. Kern, and Michael A. Nichols, Central Meeting of the American Chemical Society (CERMACS), Cleveland, OH, May 2009. (Poster Presentation)*

*"Using Headspace GC-MS to Identify the Top, Middle, and Base Notes of a Perfume", Jacquelyn Daugherty (Laurel School) and **Michael A. Nichols**, A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2009. (Poster Presentation)*

*"Comparison of Authentic Designer and Designer Imposter Scents by Gas Chromatography – Mass Spectrometry and Principal Component Analysis", Amy Betschart and **Michael A. Nichols**, Central Meeting of the American Chemical Society (CERMACS), Columbus, OH, June 2008 (Poster Presentation) and Society for Applied Spectroscopy May Conference, John Carroll University, May 2008. (Oral Presentation).*

*"Analysis of the Enantiomeric Composition of Linalool in a Variety of Essential Oils Using Proton NMR and GC-MS" **Michael A. Nichols**, Central Meeting of the American Chemical Society (CERMACS), Columbus, OH, June 2008. (Oral Presentation)*

*"The Use of Camtasia Studio® and a Graphics Tablet in Recording Organic Chemistry Lectures and Their Dissemination as a Form of Asynchronous Learning" **Michael A. Nichols**, Panel Session, Celebration of Scholarship!, John Carroll University, March 2007, Central Meeting of the American Chemical Society (CERMACS), Columbus, OH, June 2008. (Oral Presentations)*

*"Analysis of Hydrogen Peroxide-Fe(II)-Mediated Linoleic Acid Peroxidation Products by GC-MS: Development of a Biochemistry Lab Experiment", **Michael A. Nichols** and Devin C. Hale, Central Meeting of the American Chemical Society (CERMACS), Columbus, OH, June 2008. (Poster Presentation)*

*"Isolation and Identification of the Components Found in the Spice Coriander", **Michael A. Nichols** and Gloria Gyimah, American Chemical Society Central Regional Meeting, Covington, KY, May 2007 (Poster Presentation)*

*"Mechanistic and Synthetic Studies of Polystyrene Polymerization Using a Sterically Hindered Alkyl Lithium Initiator", **Michael A. Nichols** and Olga Masliantchouk, American Chemical Society Central Regional Meeting, Covington, KY, May 2007 (Oral Presentation)*

*"An Overview of the Euclid Creek Watershed Volunteer Water Quality Monitoring Program", **Michael A. Nichols**, A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2007. (Poster Presentation)*

*"Preparation of Ultra-Low Molecular Weight Polystyrene: Mechanistic and Structural Studies", **Michael A. Nichols**, A Celebration of Scholarship! Grauel Fellowship Panel Session, John Carroll University, March 2007. (Oral Presentation)*

*"Chemical and Microbiological Studies of the Effectiveness of Bioaugmentation to Prevent Algal Growth in Two Urban Lakes in the Doan Brook Watershed (OH), **Michael A. Nichols**, Adrienne Clark, and Keith Jones, American Chemical Society Central Regional Meeting, Midland, MI, May 2006. (Poster Presentation)*

*"Kinetic and Mechanistic Studies of the Deprotonation of Isobutyrophenone Using a Sterically-Hindered Lithium Amide Base", **Michael A. Nichols** and Christina Leposa, American Chemical Society Central Regional Meeting, Midland, MI, May 2006. (Oral Presentation)*

*"Chemical & Microbiological Studies of the Effectiveness of Bioaugmentation to Prevent Algal Growth in Two Shaker Heights Lakes in the Doan Brook Watershed", **Michael A. Nichols**, Keith Jones and Martin Reese, Celebration of Scholarship Science Poster Session, John Carroll University, Spring 2005 and **Keith Jones**, Michael Nichols, and Martin Reese, Ohio Lake Management Society 10th Annual Ohio Limnology Conference and 20th Annual OLMS Symposium, Mt. Sterling, OH, March 2005. (Poster and Oral Presentation)*

*"What, Chemicals in the Water?: An Overview of Water Quality Testing and Applications", **Michael A. Nichols**, Keynote Address: Cleveland Regional Council of Science Teachers (CRCST), Fall Conference, October 2004, John Carroll University. (Oral Presentation)*

*"Determining the Effectiveness of Two Constructed Wetlands for Urban-Runoff Water Remediation", **Michael A. Nichols**, Jamie Cannon and Dave Ritter, Woodlake Environmental Field Station 2002 Annual Conference, Cuyahoga Valley National Park, October, 2002 and at the Society for Applied Spectroscopy Annual May Meeting, John Carroll University, May 2002. (Oral Presentations)*

*"What, Chemicals in the Water?: An Overview of Environmental Chemistry/Biology Projects at John Carroll University", **Michael A. Nichols,** Department of Chemistry, Clarion University of Pennsylvania, October, 2002. (Oral Presentation)*

*"An Overview of the Summer Chemistry Research Program", **Michael A. Nichols**, Celebration of Scholarship Poster Session, John Carroll University, March, 2002. (Poster Presentation)*

*"Chemical and Microbiological Studies of an Urban Stream (Euclid Creek) Before, During, and After a "Storm Event", **Michael Nichols**, Rebecca Taylor and Destiny Nemeth, 45th Annual May Conference of*

the Cleveland Section of the Society for Applied Spectroscopy, May, 2001, John Carroll University. (Oral Presentation)

*"Determination of Organoalkali Solution Structures Using Heteronuclear NMR", **Michael A. Nichols**, Department of Chemistry, Youngstown State University, Youngstown, OH, April 2000. (Oral Presentation)*

*"Kinetic Studies of Ketone Deprotonation Reactions Using ^{1}H, ^{6}Li, ^{15}N NMR", **Michael A. Nichols** and Joseph Redley, 42nd Annual May Conference of the Society for Applied Spectroscopy, John Carroll University, May 1998. (Oral Presentation)*

*"Solid-State X-ray Crystallographic and Heteronuclear NMR Solution Structure Studies of n-Butyllithium • TMEDA Complexes", **Michael A. Nichols**, Goodyear Tire and Rubber Company, Akron, OH, November 1997. (Oral Presentation)*

*"The Use of [^{15}N]-Labeled Amines in the Solvation Studies of Organolithium Compounds", **Michael A. Nichols**, Marc A. Falcone, Barbara Kotsatos, 29th Central Regional Meeting of the American Chemical Society, Midland, MI, May 1997; **Michael A. Nichols**, 10th Annual NMR User's Meeting, University of Akron, Akron, OH,, August 1997. (Oral Presentations)*

*"The Use of Isotopically-Labeled Organoalkali Compounds in Solution Structure Studies", **Michael A. Nichols**, Department of Chemistry, Clarion University of Pennsylvania, Clarion, PA, November 1996. (Oral Presentation)*

*"Transmetallation Reactions Between Sodium, Potassium, and Cesium Alkoxides and Lithium Amides", **Michael A. Nichols**, James E. Reddy, 28th Central Regional Meeting of the American Chemical Society, Dayton, OH, June 1996. (Oral Presentation)*

*"^{6}Li, ^{13}C, and ^{15}N NMR Structural Studies of n-Butyllithium Complexes", **Michael A. Nichols**, 8th Annual NMR Users Conference , University of Akron, Akron, OH, August 1995. (Oral Presentation)*

*"Applications of Heteronuclear NMR to Determination of the Solution Structures of Organoalkali Compounds", **Michael A. Nichols**, Meeting of the Society for Applied Spectroscopy, Independence, OH, August 1995. (Oral Presentation)*

Presentations at Workshops

"Introductory Chemical Water Analyses", Michael A. Nichols, This was part of a Level 1 QDC (Qualified Data Collection) training session for Project CLEAN. Brecksville Reservation of Cleveland Metroparks. Fall 2007.

*"Working with NSF Fastlane and How a Funded Undergraduate Research Program Can Transform a Department", **Michael A. Nichols**, given at the Grant Basics for Faculty At JCU Workshop, John Carroll University, February, 2006.*

*"Fingerprint Analysis: Hands-On Activities for Middle and High School Students", **Michael A. Nichols**, given at the Second Annual Teachers' Symposium at the Cleveland Museum of Natural History, Cleveland, OH, February, 2006.*

Graduate and Undergraduate Research Student Presentations

*"The Use of GC-MS and PCA to Classify and Identify Different Types of Gourmet Cinnamons", **Meghan May** and Michael Nichols, Celebration of Scholorship!, John Carroll University, March 2011. (Poster Presentation).*

*"Solvent and Concentration Effects on the Thermodynamics of the Keto-Enol Equilibrium of Ethyl Acetoacetate and Acetylacetone", **Grace Mahfouz,** Mark Waner and Michael Nichols, Celebration of Scholarship!, John Carroll University, March 2011 and OFIC Poster Session, State Capital Building, Columbus, OH, April 2011. (Poster Presentations).*

*"Preparing Short Chains of Polystyrene Polymer with Low Molecular Weight", **Grace Mahfouz** and Michael Nichols, Celebration of Scholarship!, John Carroll University, March 2010. (Poster Presentation).*

*"Synthesis and Use of the Ligand PQAM in Copper Analysis", **Meghan Brown** and Michael A. Nichols, Celebration of Scholarship!, John Carroll University, March 2010 and March 2011. (Poster Presentation); American Chemical Society, Meeting-in-Minature, Ursuline College, March 2011. (Oral Presentation).*

*"Analysis of Hydrogen Peroxide-Fe^{2+}- Mediated Linoleic Acid Peroxidation Products Using GC-MS", **Danielle Maholtz** and Michael Nichols Celebration of Scholarship!, John Carroll University, March 2010 and March 2011. (Poster Presentation). American Chemical Society, Meeting-in-Minature, Ursuline College, March 2011. (Oral Presentation).*

*"Kinetic and Mechanistic Studies of the Deuterium Exchange in Classical Keto-Enol Tautomeric Equilibrium Reactions", **Cassie Giorgio** and Michael Nichols, Celebration of Scholarship!, John Carroll University, March 2010. (Poster Presentation).*

*"Kinetic and Mechanistic Studies of the Deuterium Exchange in Classical Keto-Enol Tautomeric Equilibrium Reactions", **Nick Toney** and Michael Nichols, Celebration of Scholarship!, John Carroll University, March 2010. (Poster Presentation).*

*"Comparison of Authentic Designer and Designer Imposter Scents by Gas Chromatography – Mass Spectrometry and Principal Component Analysis", **Amy Betschart** and Michael A. Nichols, Celebration of Scholarship!, John Carroll University, March 2009 and March 2008. (Poster Presentation).*

*"Synthesis and Purification of a Fluorogenic Reagent Used in a Spectrofluorimetric Copper Assay", **Kim Kern**, Catherine Miller and Michael A. Nichols, Celebration of Scholarship!, John Carroll University, March 2008 (Poster Presentation) and National Conference on Undergraduate Research (NCUR08), Salisbury, MD, April 2008. (Oral Presentation)*

"Analysis of Hydrogen Peroxide-Fe(II)-Mediated Linoleic Acid Peroxidation Products by GC-MS: Development of a Biochemistry Lab Experiment", Michael A. Nichols and ***Devin C. Hale****, Celebration of Scholarship!, John Carroll University, March 2008. (Poster Presentations)*

"Heavy Metal Analysis of Chlorophyll Containing Vegetables", ***Louis Volino****, Catherine Miller and Michael A. Nichols, Celebration of Scholarship!, John Carroll University, March 2008. (Poster Presentation)*

"Mechanistic and Synthetic Studies of Polystyrene Polymerization Using a Sterically Hindered Alkyl Lithium Initiator", ***Olga Masliantchouk*** *and Michael A. Nichols, A Celebration of Scholarship! Science Poster Session, March 2007. (Poster Presentation) and American Chemical Society, Cleveland Section, Meeting-in-Miniature, Notre Dame College, March 2007. (Oral Presentation)*

"Kinetic and Mechanistic Studies of the Deprotonation of a Sterically-Hindered Ketone Using a Sterically-Hindered Lithium Amide Base", ***Christina Leposa*** *and Michael A. Nichols, Meeting-In-Miniature of the Cleveland American Chemical Society, Cleveland State University, March 2006 and A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2006. (Oral and Poster Presentations)*

"Characterization of the Product(s) of the Polymerization of Styrene Initiated by a Sterically-Hindered Alkyllithium Compound", ***Rachel Sobinsky*** *and Michael A. Nichols, A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2006. (Poster Presentation)*

"Isolation and Structure Determination of the Major Components of the Spice Coriander", ***Gloria Gyimah*** *and Michael A. Nichols, A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2006 and the STARS Research Conference, University of Akron, March 2006. (Oral and Poster Presentations)*

"Determining the Sources of Nutrient Inflows into Green Lake", ***Adrienne Clark*** *and Michael A. Nichols, A Celebration of Scholarship! Science Poster Session, John Carroll University, March 2006. (Poster Presentation)*

"Attempted Correlations Between Metals and Colors in Children's Sidewalk Chalk", ***Melanie Lawrence*** *and Michael Nichols, Bridges to Success Summer Seminar Presentation, Cuyahoga Community College, Metro Campus, July, 2005.*

"Screening for Lead in Children's Sidewalk Chalk", ***Melanie Lawrence*** *and Michael Nichols, Bridges to Success in the Sciences Spring Poster Session, Cuyahoga Community College, Metro Campus, May 2005.*

"Determination of Lead and Cadmium in Various Chalks" ***Melanie Lawrence*** *and Michael A. Nichols, Bridges to Success in the Sciences Presentation Session, Cuyahoga Community College, Metro Campus, July 2004 and April 2004.*

"Chemistry Camp for Kids at John Carroll University", ***Roylene Coggins****, Faith Whitworth, and Michael A. Nichols, Bridges to Success in the Sciences Presentation Session, Cuyahoga Community College, Metro Campus, August 2003.*

*"Which De-Icer is Best? Development of an Environmental Chemistry Experiment", **Roylene Coggins** and Michael A. Nichols, Bridges to Success in the Sciences Poster Session, Cuyahoga Community College, Metro Campus, April 2003.*

*"Evaluation of Urban Streams for Metals Contamination using ICP-MS", **Melissa March**, Michael Setter, Michael A. Nichols, and Miles Coburn, Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002; Woodlake Environmental Field Station 2002 Annual Conference, Cuyahoga Valley National Park, October, 2002 and A Celebration of Scholarship!, John Carroll University, Spring 2003 (Poster Presentations)*

*"The Analysis of Pyrethroid Insecticides in Doan Brook, Creek Chubs, and Green Sunfish", **April Stauffer**, **Rachel Nicholson**, Miles Coburn, and Michael A. Nichols, Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002; Woodlake Environmental Field Station 2002 Annual Conference, Cuyahoga Valley National Park, October, 2002 (Poster Presentations)*

*"Computational and Experimental Studies of Organoalkali Transmetallation Reactions", **Heather Jackson** and Michael A. Nichols, Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002.*

*"Chemical Studies of a Landfill Leachate in Parma, OH", **Frank Colabro**, **William Wade** and Michael A. Nichols, Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002.*

*"Preparation of a Web-Site to Aid High School Student Identification of Freshwater Diatoms and Their Application in Water Quality Studies of Urban Streams"; **William Brochak** and Michael A. Nichols, Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001. (Poster Presentation)*

*"Anionic Polymerization Reactions of Styrene Using Trimethysilylmethyllithium as an Initiator"; **Erin Shaneyfelt** and Michael A. Nichols, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001, Cleveland Section, American Chemical Society Meeting-in-Miniature, Case Western Reserve University, Cleveland, OH, March, 2002 and Ohio-Michigan REU Poster Session, Kent State University, Kent, OH, July 2002. (Poster and Oral Presentations)*

*"Determination of the Efficiency of Artificial Wetland Use for Remediation of Urban Run-Off Water"; **Jamie Cannon**, William Brochak, Steve Halady, Mary Lenczewski, Chepchumba Yego, and Michael A. Nichols, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001 and Cleveland Section, American Chemical Society Meeting-in-Miniature, Case Western Reserve University, Cleveland, OH, March, 2002. (Poster and Oral Presentations)*

*"Chemical and Microbiological Studies of an Urban Watershed – Euclid Creek"; **Steve Halady**, Jamie Cannon, William Brochak, Mary Lenczewski, Chepchumba Yego, and Michael A. Nichols, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001. (Poster Presentation)*

*"Chemical and Microbiological Studies of an Urban Stream – Stickney Creek"; **Chepchumba Yego**, Steve Halady, Jamie Cannon, Mary Lenczewski, William Brochak, and Michael A. Nichols, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001. (Poster Presentation)*

*"Studies of the Equilibrium Reaction Between a Sodium and Potassium Amide Base and a Ketone", **Terry Powell**, and Michael A. Nichols, Ohio-Michigan NSF-REU Undergraduate Poster Session, John Carroll University, July, 2001. (Poster Presentation)*

*"A Chemical and Microbiological Survey of an Urban Watershed: Euclid Creek", **Destiny Nemeth**, Rebecca Taylor and Michael A. Nichols, REU Poster Session, 16th Biennial Conference on Chemical Education, University of Michigan, Ann Arbor, MI, August 2000. (Poster Presentation)*

*"Chemical and Microbiological Analyses of an Urban Stream (Euclid Creek) Before, During, and After a "Storm Event"", Destiny Nemeth, **Rebecca Taylor** and Michael A. Nichols, REU Poster Session, 16th Biennial Conference on Chemical Education, University of Michigan, Ann Arbor, MI, August 2000 and NCUR 2001 Meeting, University of Kentucky, Lexington, KY, March 2001. (Poster and Oral Presentations)*

*"Chemical and Microbiological Studies of an Urban Stream: Big Creek", **John Gadja**, Terry Greathouse and Michael A. Nichols, Bridges to Success in the Sciences Poster Session, Cuyahoga Community College, Metro Campus, Cleveland, OH, April 2000. (Poster Presentation)*

*"The Effects of Co-solvents on the Formation of Mixed Alkali Metal Complexes", **Cynthia Homer** and Michael A. Nichols, 75th Anniversary Celebration of Iota Sigma Pi, Cleveland State University, March 2000 and American Chemical Society Meeting-In-Minature, Baldwin-Wallace College, March 2000. (Poster Presentation)*

*"Solution Structure Studies of Alkyllithium • EDA-Derived Ligand Complexes", **Cynthia Homer** and Michael A. Nichols, 9th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics, Argonne, IL, November 1998. (Oral Presentation)*

*"NMR Studies of (a) Iodination Reactions and (b) Solution Structures of an Alkyllithium Compound", **Christopher Callam**, Linda Brazdil and Michael Nichols, Yeager Award Presentation, May Meeting of the Society for Applied Spectroscopy, John Carroll University, May 1998. (Oral Presentation)*

*"Synthesis and Solution Structure Studies of Lithium Amides Derived from Substituted Phenethanols", **Christina Sinar** and Michael A. Nichols, 7th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics, Argonne National Laboratory, Argonne, IL, November 1996; American Chemical Society, Cleveland Section, Meeting-in-Minature, Cleveland State University, April 1997; American Chemical Society, Cleveland Section, Meeting-in Minature, John Carroll University, March 1998; 2nd Undergraduate Poster Session on Capitol Hill sponsored by CUR, Washington, DC, April 1998; 1998 NCUR Conference, Salisbury State University, Salisbury, MD, April 1998; Undergraduate Poster Session, 30th ACS Central Regional Meeting, Cleveland, OH, May 1998. (Oral and Poster Presentations)*

*"Synthesis of [^{13}C,^{6}Li]-n-Butyllithum, [^{15}N,^{15}N']-TMEDA, and [^{15}N,^{15}N']-Bis(pyrollidino)ethane and Their Use in Determining the Solution Structures of n-Butyllithium Amine Complexes", **Jesse More** and*

Michael A. Nichols, ACS, Cleveland Section, Meeting-in-Minature, John Carroll University, March 1998; 1998 NCUR Conference, Salisbury State University, Salisbury, MD, April 1998; Undergraduate Poster Session, 30th ACS Central Regional Meeting, Cleveland, OH, May 1998. (Oral Presentations)

"Aggregation State Studies of Mixed [^{6}Li,^{15}N]-Lithium and [^{15}N]-Potassium Bis(trimethylsilyl)amides", ***Joseph Redley*** *and Michael A. Nichols, ACS, Cleveland Section, Meeting-in-Minature, John Carroll University, March 1998; Research Poster Session, 30th ACS Central Regional Meeting, Cleveland, OH, May 1998. (Oral and Poster Presentations)*

"Synthesis and Characterization of Silyl Linked Manganocene and Chromacene Compounds", ***Charles O. Nnewihe****, Sherri Lovelace-Cameron, Falami Ladipo, and Michael Nichols, ACS, Cleveland Section, Meeting-in-Minature, John Carroll University, March 1998; STARS Research Conference, Ohio University, Athens, OH, April 1998. (Oral Presentations)*

"Isolation and Identification of Organic Compounds Obtained from Natural Products", ***Charles Nnewihe*** *and Michael A. Nichols, STARS Research Conference, Bowling Green State University, March 1997. (Oral Presentation)*

"An Independent General Chemistry Laboratory Project: How Does Robin Leach's Silver Cleaning Plate Work?", ***Charles Nnewihe*** *and Michael Nichols, STARS Research Conference, Miami University of Ohio, April 1996. (Oral Presentation)*

"Transmetalation Reactions Between Sodium, Potassium, and Cesium Alkoxides and Lithium Amides", ***James Reddy*** *and Michael A. Nichols American Chemical Society, Cleveland Section, Meeting-in-Minature, Notre Dame College of Ohio, March 1996. (Oral Presentation)*

"The Synthesis of Chiral Lithium Amide Bases Derived from Optically-active Alcohols, ***Timothy Gallagher*** *and Michael A. Nichols, American Chemical Society, Cleveland Section, Meeting-in-Minature, Notre Dame College of Ohio, March 1996. (Oral Presentation)*

Additional Non-Presented Undergraduate Research Student Projects and Participating Students

"Preparation of EDA-Derived Ligands"; Brad Hauser, Spring 2009.

"Preparations and IR Analyses of Non-polar Silica Gel and Sand and Their Use in Demonstrating Hydrophobicity and in Solid-Phase Extraction", Jody Dailey, Fall 2006 – Fall 2007.

"Preparation of Alkali Metal HMDS – EDA-Derived Ligand Complexes; Structure Determination by X-ray Crystallography"; Jeff Koehler, Spring 2007 – Spring 2008.

"Analyzing the Water Quality of Water Entering the Langerdale Retention Basin in South Euclid, OH: Pre-Construction Data", Brittany Krist, Spring 2007.

"Evaluating the Effectiveness of Freezing as a Preservation Method of Natural Water Samples", Marla Marino, Spring 2001.

"Assignment of GC-MS Spectra for Complex Mixtures of Pesticides", Destiny Nemeth, Spring 2001.

"Development of GC/MS Methods to Analyze Water for Pesticides and Herbicides", William Wade, Fall 2000.

"Metals Analysis of Water", John Ivancic, Fall 2000.

"Development of Methods for Water Analysis and Application to Well Water", Michelle Minadeo, Spring 2000.

"Development of Multimedia Materials for Organic Chemistry Lecture Courses Using PCSpartan", Kathy Jagodnik, Spring 1999.

"Development and Documentation of Web-Based Resources for Chemistry", John Kochilla, Spring 1999.

"Synthesis of [^{13}C,^{6}Li]-n-Butyllithum, [^{15}N,^{15}N']-TMEDA, and [^{15}N,^{15}N']-Bis(pyrollidino)ethane and Their Use in Determining the Solution Structures of n-Butyllithium Amine Complexes", Jesse More, Fall 1997 – Spring 1998; Lilly Fuchs, Fall 1998 – Spring 1999; Marina Antar, Summer 1999; Tracy Thomson, Spring 2000.

"Studies of Alkali Transmetalation Reactions", Timothy Rankin, Summer 1998.

"Isolation and Characterization of Organic Compounds from Natural Sources", Charles Nnewihe, Fall 1996 – Spring 1997; James Sindelar, Fall 1996 - Spring 1997; Amy Rak (post-bac student), Summer 1999.

"Synthesis and Solution Structure Studies of Lithium Amides Derived from Substituted Phenethanols", Eryn Ace, Summer 1995; Christina Sinar, Summer 1996 – Spring 1998; Timothy Gallagher, Spring 1996.

Middle and High School Science Fair Project Mentoring

Jane Kim, Beaumont High School, "Determination of Anti-oxidant Properties of Vitamin Waters Using a DPPH UV-Vis Assay"; I helped this student use an UV-Vis assay using a free-radical compound DPPH to determine the total anti-oxidant capacity of various commercial vitamin waters. Fall 2010.

Jane Lodwick, Beaumont High School, "Analyses of Different Desalination Pre-treatments to Reduce the Ionic Content of Ocean Seawater"; I helped this student determine the ionic content of seawater that was treated with different chemicals. Fall 2009.

Jacquelyn Daugherty, Laurel School, "Using Headspace GC-MS to Identify the Top, Middle, and Base Notes of a Perfume"; this student performed a year-long research project where GC/MS was used to measure the kinetics of evaporation of different components of a number of perfumes. Fall 2008 - Spring 2009.

Katrina Feldkamp, Beaumont High School, "Analysis of PAH's Obtained from Lake Erie Water Upwind of a Coal Power Plant"; I helped this student analyze water samples for PAH's using solid-phase extraction and GC/MS. Fall 2008 and 2009.

Ashley Grimes, Beaumont High School, "Titration of the Malic Acid in Apples"; this student came to JCU to perform an acid/base titration of the juice extracted from apples to determine the amount of malic acid present. Fall 2008.

Jonathan Ungvarsky, Home-schooled Student, "Greening of Potatoes Using Various Light Sources"; this student came to JCU to use a UV/Vis spectrophotometer and fluorimeter to analyze potatoes for chlorophyll that results when potatoes are subjected to irradiation with halogen, fluorescent, and incandescent lights. Spring 2009.

Jonathan Ungvarsky, Padua Franciscan High School, "Trick or Toxic Treat? Does Mexican Candy Contain Lead?"; this student used out graphite furnace atomic absorption spectrophotometer to measure the lead concentrations of imported Mexican candy and assorted domestic (US) brands. Spring 2008.

Katrina Feldkamp, Beaumont High School, "Quantitative Monitoring of Apple Browning Using Reflectance Spectrophotometry"; I helped this student monitor the browning of apples in air using a reflectance spectrometer to obtain quantitative data and compare those to apples coated with citrus juices. Fall 2007.

Cat Haag, Beaumont High School, "Nutrient and Microbiological Testing of Water Samples from the Euclid Creek Watershed"; this student will be collecting water samples from various sites in the Euclid Creek Watershed and analyzing it for nutrients (ammonia, potassium and phosphorous) and fecal coliform, fecal streptococcus, and E. coli bacteria in my lab, Fall 2007.

Obi Onyeacholem, Beaumont High School, "Analysis of Various Cosmetic Products for Propylene Glycol"; this student continued her project from the previous year, but doing a more in-depth study on the limitations of using GC-MS to detect propylene glycol in various cosmetic products, Fall 2006.

Alyssa Jeswald, Beaumont High School, "Bacterial Growth in Skim and 2% Milk"; this student analyzed milks that had been left at an elevated temperature for a variety of bacteria including E. coli, coliform bacteria, and fecal streptococci, Fall 2006.

Anna Faist, Beaumont High School, "Leaching of Mercury from Freshly-Filled Teeth into Various Beverages"; I helped this student determine the concentrations of mercury in solutions containing teeth that contained freshly fillings using cold-vapor spectroscopy, Fall 2006.

Jenny Haag, Beaumont High School, "Metals Analysis of Tattoo Inks"; I helped this student measure the concentrations of various metals in commercial and homemade tattoo inks using Graphite Furnace Atomic Absorption Spectrometry, Fall 2006

Isaac Hoffman, Shaker Heights Middle School, "Dependence of Algal Growth on Phosphorous"; I am helping this student with his project where he is varying the amount of phosphorous in a series of water samples containing algae to determine how phosphorous affects the amount of algae growth, Fall 2006.

Grace Kozan, Beaumont High School, "How Much "C" Do you See? A Comparison of the Loss of Vitamin C Over Time in Three Varieties of Orange Juice"; I helped Grace standardize the concentration of her iodine standard solutions, Fall 2005

Chrissy Orovets, Beaumont High School, "Gone With the Wind: Horizontal Axis versus Vertical Axis Wind Turbines"; this student compared the voltage outputs of home-made horizontal axis and vertical axis wind turbines, Fall 2005

Alicia Petrarca, Beaumont High School, "Essential Oils: Essential Antibacterial Agents?"; this student came to my lab and performed a fairly in-depth project where she isolated and grew up E. coli bacteria and determined whether they growth could be inhibited using essential oils of peppermint, spearmint, and pennyroyal oils. The project involved basic microbiological techniques, Fall 2005

Jenny Haag, Beaumont High School, "Only Skin Deep? An Analysis of Tattoo Inks and Their Effects on Yeast Cells"; the portion of the project I helped with was the microwave digestion and analysis of tattoo inks for various metals using atomic absorption spectroscopy, Fall 2005

Obi Onyeacholem, Beaumont High School, "Analysis of Various Cosmetic Products for Propylene Glycol and IPBC"; project involved extraction of cosmetic products and analysis for propylene glycol and for a trace preservative, Fall 2005

Valerie Smith, Beaumont High School, "Effectiveness of Sunscreens"; this project involved performing a free-radical coupling reaction in the presence of UV light and coating the test tubes with sunscreens to determine their effectiveness, Fall 2005

Linda Chai, Independence High School, on a project where she analyzed honey samples that had been wrapped in plastic wrap and microwaved for different phthalate esters using GC/MS, Spring 2004

Mary Ryan, Beaumont High School, "Is there Mercury in Fish Oil Supplements?"; she digested various fish oil caplets and analyzed them for mercury using cold vapor atomic absorption spectroscopy, Fall 2004

Chrissy Orovets, Beaumont High School, "Fuel Cell Efficiency: Is It Possible to Run a Fuel Cell with a Solar Cell?"; where she assembled a solar cell and connected it to a fuel cell and determined the voltages produced by each, Fall 2004

Krissy Cox, Beaumont High School, "What's Sticking to Your Lips"; she used the graphite furnace atomic absorption spectrometer to measure the amount of lead in various brands of commercial lipsticks, Fall 2003

Katie Coyne, Beaumont High School, "Chocolate: What's the Buzz? Chemical Components of Various Chocolates"; she used our GC/MS instrument to measure the amount of caffeine in various brands of chocolates, Fall 2003

Dorothy Knutsen, Hawken School, she came and used our NMR for some experiments studying a lignin complex with cobalt in a project performed at OMGAmerica, Fall 2003

Andrea Srsen, Beaumont High School, pesticides in apples (organic and non-organic) were extracted and analyzed by GC-MS, Fall 2002

Daniella Turchov, Beaumont High School; she analyzed for plasticizers in olive oil by GC/MS after microwaving the oil in various plastic wraps, Fall 2002

Alicia Petrarca, Beaumont High School, "Maybe She's Born With It. Maybe It's TLC"; she analyzed different mascara's using TLC, Fall 2002

Jeff Smith, 7th Grade Student in Solon, OH - Determined the efficiency of charcoal and lobster chitin in removing iron, copper and zinc from water, Fall 2001

Professional Consulting

Owner, MA Nichols Chemical and Educational Consulting LLC, established 2010. Company website: http://mancecllc.intuitwebsites.com/.

Reviewer for the following chemistry texts:

"Experiments in Chemistry: Featuring MeasureNet®", 1st Edition by Atwood, Stanton and Zhu, Thomson Higher Education Learning, 2003.

"Organic Chemistry", 4th Edition by Carey, McGraw-Hill Publishing, 1999.

"General Chemistry", 3rd Edition by Umland and Bellama in a comparative review to "Chemistry", 6th Edition by Chang, Brooks Cole Publishing, 1999.

"Organic Chemistry Miniscale and Microscale Laboratory Experience", 1st Edition by Schoffstall, Gladdis and Druelinger, McGraw-Hill Publishers, 1998.

"Chemistry", 1st Edition by McMurry and Fay, Prentice-Hall Publishers, 1996.

Served as reviewer for two grant proposals from the American Chemical Society Petroleum Research Fund Program, 2000, 2006.

Provided various organic and analytical analyses for a number of companies and government agencies including PAVCO, Inc., Quality Borate, Schwebels Baking Company, the City of Shaker Heights, the Cuyahoga Soil and Water Conservation District, and the Cuyahoga Planning Commission.

Professional Service Activities

Currently Developing a volunteer water monitoring program for Dugway Brook and the City of University Heights, OH. Also developing a monitoring program for rain gardens to be installed at John Carroll University in Fall/Winter 2011.

Speaker at Career Relevance Day for Rotary Club of Cleveland Project YESS, Steamship Mather, Cleveland, OH, Summers 2010 and 2011.

John Carroll University Representative on Northeast Ohio Science and Engineering Fair Board of Directors, Fall 2010 – present.

Served as a Science Fair Judge at:

St. Dominic's Middle School Science Fair, Shaker Heights, OH, 2008-2010.
Dunbar Elementary School Science Fair, Maple Heights, OH, June 2007.
John H. and Ruth W. Melvin Memorial STEM Scholar Competition, Ohio Academy of Science Meeting, Cuyahoga Community College, April 2007.
Northeast Ohio Science and Engineering Fair, Cleveland, OH, Spring 2001-2002, 2004-2008, 2010.
St. Francis Assisi School Science Fair, Gates Mills, OH, Spring 2001-2003, 2005-2009.
Ohio State Science Day, Columbus, OH, Spring 2000-2003.
Buckeye Science Fair, Columbus, OH, Spring 2003-2004.
Intel International Science and Engineer Fair, Cleveland, OH, May 2003.
Horizon Science Academy Science Fair, Cleveland, 2003.

Served as Chair of Poster Sessions and Co-Chair for Undergraduate Poster Session, Central Regional Meeting of the American Chemical Society, Cleveland, OH, May 2009.

Helped with "GAK (Grand Assembly of Kits) Day", American Chemical Society, Cleveland Section, for National Chemistry Week, Fall 2006 - 2010.

I aided Drs. Miller and Waner in the National Chemistry Week Program at the South Euclid-Lyndhurst Library, Fall 2007.

Served as Organic Session Chair, American Chemical Society, Cleveland Section, Meeting-In-Miniature, Notre Dame College, March 2007.

Participated and developed a number of hands-on activities for the Green Earth Festival, sponsored by Generation Green, John Carroll University, Spring 2007.

Performed Polymer Demonstrations and Hands-on Activities for Middle School Children at Shaker Heights Middle School, Fall 2002 and Spring 2003-2007.

Participated in JCU Chemistry Department's "Chemistry Camp for Kids" Summer Program, where I led hands-on activities in water quality testing, pin-hole photography, chemiluminescence and light-stick experiments, and performed demonstrations with liquid nitrogen, Summers 2000-2009. In Summer 2007, I developed a series of energy-related experiments and led the "Forensic Chemistry" day.

Served as Co-coordinator of "Fun with Forensic Chemistry Camp for Kids" Summer Program, where I attended a planning workshop at the Institute for Chemical Education at the University of Wisconsin-Madison, developed/adapted a number of hands-on activities for middle school students in the areas of fingerprinting, ballistics, blood analysis, fireworks analysis and fiber analyses, Summer 2005.

Co-led (with Faith Whitworth) hands-on activities for Shaker Library Summer Program; "Who Stole Mittens the Cat", where students age 5-7 used fingerprinting to identify a cat-napper, Summer 2009.

Given "Chemical Magic Shows" for Children during JCU Reunion Weekends (Summers 2004-2008); and helped make "Liquid Nitrogen Ice Cream" during Dolan Science Center Grand Opening (Fall 2003).

Qualified Data Collector, Level 3, Chemical Water Quality Assessment, Ohio EPA, 2006-2008

Served as Program co-Manager and as Quality Assurance Manager and Volunteer Trainer for the Euclid Creek Watershed Volunteer Monitoring Program, where I maintained and calibrated equipment used by volunteers for water monitoring and perform additional analyses on water samples collected by volunteers. 2005 – 2008.

Lead Hands-on Water Quality Test Activities with Middle School Children as Part of the Euclid Creek Water Festival, Sponsored by Cuyahoga Soil and Water Conservation District, October 2002.

Professional Affiliations

American Chemical Society (ACS), 1985 - present.
Council on Undergraduate Research (CUR), 1993 – present.
John Carroll University CUR Liaison, 2001-2009.
Member, The Mapping, Monitoring, and Technical Studies Committee of The Doan Brook Watershed Partnership, Spring 2004.
Member, The Euclid Creek Watershed Technical Committee, Fall 2004.
Member, Euclid Creek Volunteer Monitoring Subcommittee, Spring 2005-Spring 2009.
Member, National Science Teachers Association, 2001-present.
Member, Ohio Academy of Sciences, 2000-2001.
Member, American Diabetes Association, 2004-present.

Department and University Service

I serve on the following Department and University Committees:

JCU Committee on Research and Service, 2010 - present.
Chemistry Department Research Committee, 2010 – present.
Chemistry Department Computer Committee, 1996-present; Chair, 1997- 2007.
Chemistry Department Graduate Committee, 1997- 2007; Chair 1998 – 2005.
Chemistry Department Instrument Committee, 1997- present; Chair 2005 – 2009.
Chemistry Department Budget Committee, 2001-2002.
Chemistry Department Rank and Tenure Committee, 2000-present.
Information and Technology Planning Committee Rep., 1998 – present.
Distance Learning Committee, 1999 – present.
Honors Committee Member, 2001-2002.
University Ad Hoc Celebration of Scholarship Planning Committee, Spring 2002.
Dolan Science Center Artwork Ad Hoc Committee, Summer 2003.

In Spring 2010, co-led a spring break immersion experience with Dr. Catherine Miller to West Virginia. During this experience, the students and faculty learned about and observed the environmental impacts of natural gas, coal, and wind power on the local environments. We also participated in a service project involving water quality monitoring.

In Spring 2009, co-led a spring break immersion experience with Dr. Catherine Miller to Bethlehem Farms, WV. During this experience, the students and faculty participated in sustainable living in the Catholic tradition and participated in a variety of service activities in the neighboring communities.

In Spring 2008, co-led a spring break immersion experience with Dr. Catherine Miller to Mount Vernon, KY. During this experience, the students and faculty worked on service projects in collaboration with Appalachian Public in the Science Interest.

Help maintain computers in the: Carrabine Computer Room; General Chemistry Laboratory (laptops used in the collection of data); Instrument Room and Research Laboratories.

Am involved in the maintenance, routine trouble-shooting, installation and faculty/student training of the following instrumentation: Varian Gemini and Varian NMR System 300 MHz Nuclear Magnetic Resonance (NMR) Spectrometer; Hewlett-Packard Gas Chromatograph – Mass Spectrometer (GC/MS); Varian Saturn Gas Chromatograph – Mass Spectrometer (GC/MS); Perkin-Elmer System One FT-Infrared Spectrometer; Perkin-Elmer Graphite Furnace Atomic Absorption Spectrometer; Metrohm-Peak Ion Chromatograph.

Until 2004, I prepared the Chemistry Department's Brochure, a roughly 20 page detailed description of the JCU undergraduate program that was given to majors and prospective students.

Recognition of Professional and Service Activities

"Lucrezia Culicchia Award for Teaching Excellence", College of Arts and Sciences, John Carroll University, 2011.

"Educator of the Year", Cuyahoga Soil and Water Conservation District, September 2007.

"Mentor of the Year", Beaumont High School, May 2006.

Served on Heuer Award for Outstanding Undergraduate Science Education Selection Committee, Council of Independent Colleges, Washington, DC. Spring 2003.

Consumer Investigation: What's In Your Water? (NewsChannel5 Tests Bottled, Tap Water) NewsChannel5 – WEWS – Cleveland, OH, Analyzed several brands of bottled water and Cleveland tap water and provided results and did an on-air interview, Nov 2009.

"Dr. Nichols: Getting His Hands Dirty", Newsletter from The Center for Service and Social Action, John Carroll University, Vol. 2, Issue 1, Dec. 2008, pp. 1, 4.

A description of the research/service environmental projects of M.A. Nichols can be found in "John Carroll University: Economic Impact on Northeast Ohio", Taylor, J.; Austrian, Z.; Yamoah, A., available at: http://www.jcu.edu/economicstudy/JCU_impact_full_report.pdf, 2007, pages 50-54.

"Shaker to Spend $18,000 on Green Lake: JCU Prof Finds Ammonia Source, Questions Treatment", Sun Press Newspaper, Apr. 19, 2007, pp. 1, 12.

"Watershed Wellness Update", Shaker Life Magazine, Shaker Heights, OH, May/June 2006, pp. 34-37.

"Biological Agent Being Tested on Shaker Lakes for Aquatic Plant Control", Ohio Shorelines, Fall 2005, pp. 1, 7.

"Euclid Creek Volunteer Monitoring Underway", Euclid Creek Watershed Update, July/August, 2006, p. 2.

"Hot Show Prompts Camp to Add Some Killer Science: JCU's Forensics Program is a Hit with Young Fans of CSI", The Plain Dealer, July 3, 2005, Metro B4.

Director's Notes, Brook Notes: A Publication of the Doan Brook Watershed Partnership, Jan. 2005, p. 2.