

EDUCATION

- Ph.D. Earth & Atmospheric Sciences, Georgia Institute of Technology (2009)
Major: Geochemistry; Minor: Chemistry
Advisor: Dr. Martial Taillefert
- M.S. Chemical Oceanography, Texas A&M University (2003)
Advisor: Dr. John W. Morse
- B.S. Chemistry, Arkansas State University (2000)
Advisor: Dr. Jon Russ
- B.B.A. Managerial Finance, University of Mississippi (1990)

PROFESSIONAL EXPERIENCE

University of Central Florida, Orlando, Florida (August 2015-present)

Assistant Professor, Department of Chemistry

- Established environmental biogeochemistry research laboratory focused on:
 - Fate and transport of contaminants in the environment in order to develop new and innovative methods for sustainable bioremediation in soils, sediments, groundwater, and surface waters
 - Microbial degradation/remediation of contaminants such as heavy metals, hydrocarbons, pesticides, excess nutrients, and pharmaceuticals/personal care products
 - Microorganisms that benefit plants within the root zone through enhanced phosphate solubilization, protection against weeds, diseases, and pests, and increased nutrient and water stress tolerance
- Classes taught: CHM 2040 Chemistry Fundamentals 1A (Fall 2015, Spring 2016)

University of Alabama, Tuscaloosa, Alabama (July 2014-August 2015)

Temporary Graduate Faculty, Department of Biological Sciences

- Mentor of graduate students in research and preparation of dissertations and scientific papers
- Committee member for two doctoral students' dissertation committees
- Classes taught: BSC 496/596 Bioremediation (Spring 2015)

University of Alabama, Tuscaloosa, Alabama (July 2010-August 2015)

Postdoctoral Research Fellow, Department of Biological Sciences; Mentor: Dr. Patricia A. Sobczyk

- Planned, executed, and coordinated research projects in microbial ecology pertaining to:
 - Bioremediation of heavy metals and radionuclides in soils and groundwater
 - Microbial phosphorus metabolism for applications in heavy metal bioremediation and agricultural sustainability
 - Bioremediation of hydrocarbons using kenaf biosorptive materials
 - High-density microarray analyses of microbial communities associated with petroleum contaminated marine environments and subsurface soil contaminated with metals and radionuclides
 - Metagenomic analyses of petroleum-contaminated marine microbial communities using next generation high-throughput sequencing techniques
- Wrote and submitted:
 - Publications for peer-reviewed journals
 - Grant proposals for industry and government funding
 - Annual technical reports for multiple funded projects
- Led field work for sample collection associated with the *Deepwater Horizon* oil spill and Superfund site metal contamination

- Responsible for Environmental, Health, and Safety compliance in use and inventory of laboratory chemicals of interest (COI) and radioactive materials
- Provided training in standard operating procedures and analytical instrumentation for all laboratory members
- Mentor of undergraduate and graduate students in scientific research and analytical data analysis

University of Oklahoma, Norman, Oklahoma (2009-2010)

Postdoctoral Research Fellow, Department of Botany & Microbiology; Mentor: Dr. Lee R. Krumholz

- Conducted research on novel microorganisms in anaerobic, hydrocarbon- and sulfur-enriched soil
- Responsible for laboratory management and maintenance of chemical and radioactive inventory

Georgia Institute of Technology, Atlanta, Georgia (2003-2009)

Graduate Research Assistant, School of Earth & Atmospheric Sciences; Mentor: Dr. Martial Taillefert

- Conducted biogeochemical research on the bioremediation of uranium at contaminated waste sites
- Analyzed the molecular structure of heavy metals by synchrotron x-ray absorption spectroscopy (EXAFS, XANES) and synchrotron x-ray diffraction (XRD)
- Wrote user proposals and awarded beam time at the Stanford Synchrotron Radiation Lightsource (SSRL) DOE user facility
- Responsible for maintenance of laboratory analytical instrumentation and chemical inventories, including compliance reporting for radioactive materials and waste
- Trained undergraduate and graduate students in basic laboratory techniques and analytical instrumentation
- Co-coordinator of the School of Earth & Atmospheric Sciences Graduate Student Symposium (2006)
- Teaching assistant in Earth Processes Laboratory class (2004)

Texas A&M University, College Station, Texas (2001-2003)

Graduate Research Assistant, Department of Oceanography; Mentor: Dr. John W. Morse

- Conducted field and laboratory geochemical research on carbon cycling in deep Gulf of Mexico sediments
- Science crew member on three oceanographic research cruises in the Gulf of Mexico
- Responsible for at-sea sample collection and extraction of deep-sea sediments for chemical, isotopic, and geological analyses

Arkansas State University, Jonesboro, Arkansas (1999-2001)

Undergraduate Research Assistant, Department of Chemistry; Mentor: Dr. Jon Russ

- Conducted field and laboratory research for paleoenvironmental studies using isotope analysis
- Analyzed environmental samples by high performance liquid chromatography (HPLC)
- Teaching assistant in General Chemistry and Organic Chemistry Laboratory classes

RESEARCH INTERESTS

- Bioremediation - Combining geochemical, biological, hydrogeological, and engineering solutions to soil, sediment, groundwater, and surface water remediation
- Geomicrobiology
- Aqueous biogeochemistry (freshwater and marine)
- Fate and transport of metals and organic/inorganic chemical species in aqueous and sediment environments
- Biomineralization
- Microbial ecology

PROFESSIONAL ACTIVITIES

- Chaired symposium session entitled “Confluence of Government, Industry and Academic Research Activities” at the 16th National Conference and Global Forum on Science, Policy and the Environment - The Food-Energy-Water Nexus Conference, January 2016, Washington, DC
- National Science Foundation I-Corps Program Principal Investigator - University of Central Florida 2016 Cohort
- Member of Organizing Committee for the NanoBio Summit 2014 held at the University of Alabama on October 23-24, 2014. Responsible for all event site/food/hotel coordination, website development (nanobio2014.ua.edu), financial reporting, abstract/registration submissions, A/V support, and on-site coordination
- Team member of MicroGreen Technologies (2011-2014), winner of 2012 Alabama Launchpad Business Plan Competition Proof of Concept Award (\$30,000) - use of plant-beneficial microbes to enhance phosphate delivery to plant roots
- Institute for Genome Sciences, University of Maryland School of Medicine Genomics Workshop (2012)
- Peer reviewer (2010-present):
 - NSF-Geobiology & Low-Temperature Geochemistry (Ad hoc reviewer)
 - NSF-Environmental Chemical Science (Ad hoc reviewer)
 - FEMS Microbiology Ecology Journal
 - Deep Sea Research II Journal
 - PLoS ONE journal
 - Journal of Applied Microbiology
 - Environmental Science & Technology Journal
 - Oceanologia Journal
 - Environmental Science & Technology Journal
- Stanford Synchrotron Radiation Lightsource, School on Synchrotron X-ray Absorption Spectroscopy Techniques in Environmental and Material Sciences: Theory and Application (2008)
- Co-coordinator of the Graduate Student Symposium, School of Earth & Atmospheric Sciences, Georgia Institute of Technology (2006)

FELLOWSHIPS AND AWARDS

- Team member of MicroGreen Technologies, winner of Alabama Launchpad Business Plan Competition Proof of Concept Award; \$30,000 (2012)
- Alabama DOE EPSCoR Travel Support to attend Genomics Workshop at the Institute for Genome Sciences, University of Maryland School of Medicine (2012)
- Student Travel Fellowship, 3rd Annual DOE-ERSP PI Meeting, Lansdowne, VA (2008)
- Student Travel Fellowship, 2nd Annual DOE-ERSP PI Meeting, Lansdowne, VA (2007)
- Sustainable Coastal Margins Program Graduate Fellowship, Texas A&M University (2001-2003)
- Arkansas Scientific Liaison Office Undergraduate Research Fellowship, Arkansas State University (1999)

FIELD EXPERIENCE

- Water and sediment collections from City of Orlando Stormwater Division Lake Silver (2016)
- Soil and groundwater collections from EPA Superfund Site, Vincent, Alabama (2013)
- Lead scientist in fieldwork at an Alabama coastal salt marsh contaminated by the *Deepwater Horizon* oil spill (2010-2015)
- R/V *Savannah*, Atlantic coast research cruise (2003)
- R/V *Gyre*, Deep Gulf of Mexico Benthos Program (DGoMB) spring cruise (2003)
- R/V *Gyre*, Deep Gulf of Mexico Benthos Program (DGoMB) summer cruise (2002)
- R/V *Gyre*, Deep Gulf of Mexico Benthos Program (DGoMB) summer cruise (2001)

TEACHING AND MENTORING EXPERIENCE

- Taught CHM 2040 Chemistry Fundamentals IA (Fall 2015, Spring 2016) Department of Chemistry, University of Central Florida
- Mentor and advisor to three graduate students and 11 undergraduate students - UCF; 2015-2016
- Taught BSC 496/596 Bioremediation (Spring 2015); Department of Biological Sciences, University of Alabama
- Mentor and dissertation committee member to two doctoral students - University of Alabama; 2014-2015
- Mentor to four graduate students and ten undergraduate students in basic laboratory procedures, experimental design and protocols, analytical instrumentation, data and statistical analyses, and scientific writing and presentation - University of Alabama; 2010-2015
- Mentor to graduate student in research related to the biomineralization of uranium. Trained undergraduate and graduate students in basic laboratory techniques and analytical instrumentation - Georgia Institute of Technology; 2006-2009
- Supervised National Science Foundation Research Experience for Undergraduates (REU) student - Georgia Institute of Technology; 2006
- Teaching assistant in Earth Processes Laboratory - Georgia Institute of Technology; 2004
- Teaching assistant in General Chemistry Laboratory, Organic Chemistry I Laboratory, and Organic Chemistry II Laboratory - Arkansas State University; 2000-2001

SERVICE

- UCF Chemistry Department Graduate Curriculum Committee
- Participated in Career Day (Path Finders - Orlando Cares Program) at Odyssey Middle School (October 28, 2015)
- Participated in The Garden Project (Orlando Cares Program) at Ivey Lane Community Center April 5, 2016

PROFESSIONAL AFFILIATIONS

- American Chemical Society (ACS)
- American Geophysical Union (AGU)
- American Society for Microbiology (ASM)

PUBLICATIONS

1. Martinez RJ, **MJ Beazley**, and PA Sobecky (2014) Phosphate-mediated remediation of metals and radionuclides. *Advances in Ecology* Volume 2014, Article ID 786929
2. Martinez RJ, C Wu, **MJ Beazley**, GL Andersen, ME Conrad, TC Hazen, M Taillefert, and PA Sobecky (2014) Microbial community responses to organophosphate substrate additions in contaminated subsurface soils. *PLoS ONE* **9** (6): e100383
3. Salome KR, SJ Green, **MJ Beazley**, SM Webb, JE Kostka, and M Taillefert (2013) The role of anaerobic respiration in the immobilization of uranium through biomineralization of phosphate minerals. *Geochimica et Cosmochimica Acta* **106** 344-363
4. Mortazavi B, A Horel, **MJ Beazley**, and PA Sobecky (2013) Intrinsic rates of petroleum hydrocarbon biodegradation in Gulf of Mexico intertidal sandy sediments and its enhancement by organic substrates. *Journal of Hazardous Materials* **244-245** 537-544
5. Mortazavi B, A Horel, JS Anders, A Mirjafari, **MJ Beazley**, and PA Sobecky (2013) Enhancing the biodegradation of oil in sandy sediments with choline: A naturally methylated nitrogen compound. *Environmental Pollution* **182** 53-62

6. **Beazley MJ**, RJ Martinez, S Rajan, J Powell, YM Piceno, LM Tom, GL Andersen, TC Hazen, JD Van Nostrand, J Zhou, B Mortazavi, and PA Sobecky (2012) Microbial community analysis of a coastal salt marsh affected by the *Deepwater Horizon* oil spill. *PLoS ONE* **7**(7): e41305
7. Madden AS, AL Swindle, **MJ Beazley**, JW Moon, B Ravel, and TJ Phelps (2012) Long-term solid-phase fate of co-precipitated U(VI)-Fe(III) following biological iron reduction by *Thermoanaerobacter*. *American Mineralogist* **97** 1641-1652
8. **Beazley MJ**, SM Webb, RJ Martinez, PA Sobecky, and M Taillefert (2011) The effect of pH and natural microbial phosphatase activity on the speciation of uranium in subsurface soils. *Geochimica et Cosmochimica Acta* **75** (19) 5648-5663
9. **Beazley MJ**, RJ Martinez, PA Sobecky, SM Webb, and M Taillefert (2009) Nonreductive biomineralization of uranium(VI) phosphate via microbial phosphatase activity in anaerobic conditions. *Geomicrobiology Journal* **26**, 431-441
10. **Beazley MJ**, RJ Martinez, SM Webb, PA Sobecky, and M Taillefert (2007) Uranium biomineralization as a result of bacterial phosphatase activity: Insights from bacterial isolates from a contaminated subsurface. *Environmental Science & Technology* **41**, 5701-5707
11. Martinez RJ, **MJ Beazley**, M Taillefert, AK Arakaki, J Skolnick, and PA Sobecky (2007) Aerobic uranium(VI) bioprecipitation by metal-resistant bacteria isolated from radionuclide- and metal-contaminated subsurface soils. *Environmental Microbiology* **9** (12) 3122-3133
12. Morse JW and **MJ Beazley** (2008) Organic matter in deep water sediments of the Northern Gulf of Mexico and its relationship to the distribution of benthic organisms. *Deep Sea Research II: Topical Studies in Oceanography* **55** (24-26) 2563-2571
13. **Beazley MJ**, RD Rickman, DK Ingram, TW Boutton, and J Russ (2002) Natural abundances of carbon isotopes (^{14}C , ^{13}C) in lichens and calcium oxalate pruina: Implications for archaeological and paleoenvironmental studies. *Radiocarbon* **44** (3), 675-683

** Downloads of publications available at <https://www.dropbox.com/sh/xmd6c6l38m3n485/k4-pn0Ew1f>

SELECT MEETING ABSTRACTS (representative of 30+ total)

1. **Beazley MJ** (May 2016) Microbial influences on contaminant biogeochemistry and remediation. **Invited** Oral presentation: 2016 American Chemical Society Florida Section Annual Meeting. Palm Harbor, Florida
2. Sobecky PA, M Taillefert, RJ Martinez, and **MJ Beazley** (November 2014) Natural attenuation promoted by microbial phosphorus cycling. Oral presentation: 2014 Contaminated Site Management: Sustainable Remediation & Management of Soil, Sediment, and Water Conference. San Diego, California
3. Flournoy NY, **MJ Beazley**, PA Sobecky (September 2014) Microbial community analysis of *Deepwater Horizon* tar balls. Oral presentation: American Society for Microbiology, Florida Branch Meeting, Jacksonville, Florida
4. **Beazley MJ** (2013) *In situ* seasonal and annual changes in microbial communities of a Gulf of Mexico coastal salt marsh affected by the *Deepwater Horizon* oil spill. Oral presentation: Gulf of Mexico Oil Spill & Ecosystem Science Conference. New Orleans, Louisiana
5. **Beazley MJ** (2011) Microbial community analysis of an Alabama coastal salt marsh impacted by the *Deepwater Horizon* oil spill. Annual Fall Meeting, American Geophysical Union, San Francisco, California
6. **Beazley MJ** (2011) Microbial community responses in a coastal Alabama marsh to the *Deepwater Horizon* oil spill. Oral presentation: 8th International Symposium of Subsurface Microbiology Conference, Garmisch-Partenkirchen, Germany
7. **Beazley MJ** (2011) The effect of pH and natural microbial phosphatase activity on the biomineralization of uranium in contaminated subsurface soils. Poster presentation: 111th General Meeting, American Society for Microbiology, New Orleans, Louisiana

8. Martinez RJ, **MJ Beazley**, C Wu, TC Hazen, GL Andersen, M Taillefert, and PA Sobecky (2011) Microbial Phosphatase Activity Involved in Subsurface Uranium Sequestration. Poster presentation: 2011 U.S. DOE SBR Annual PI Meeting, Washington, DC
9. Martinez RJ, **MJ Beazley**, C Wu, TC Hazen, GL Andersen, SM Webb, M Taillefert, and PA Sobecky (2010) Uranium Biomineralization by Natural Microbial Phosphatase Activities in the Subsurface. Poster presentation: 2010 U.S. DOE ERSP Annual PI Meeting, Washington, DC
10. Salome KR, **MJ Beazley**, S Green, RJ Martinez, J Kostka, PA Sobecky, and M Taillefert (2010) Competition Between U(VI) Bioreduction and Biomineralization in a Contaminated Sediment. Poster presentation: 2010 U.S. DOE ERSP Annual PI Meeting, Washington, DC
11. Martinez RJ, **MJ Beazley**, KR Salome, C Wu, TC Hazen, GL Andersen, SM Webb, M Taillefert, and PA Sobecky (2009) Uranium Immobilization by the Activities of Microbial Phosphatases. Poster presentation: 2009 U.S. DOE ERSP Annual PI Meeting, Lansdowne, Virginia
12. **Beazley MJ**, RJ Martinez, PA Sobecky, SM Webb, and M Taillefert (2008) Biomineralization of uranium phosphate from contaminated waste sites. Poster presentation: 2008 U.S. DOE ERSP Annual PI Meeting, Lansdowne, Virginia
13. Martinez RJ, **MJ Beazley**, C Wu, TC Hazen, GL Andersen, SM Webb, M Taillefert, and PA Sobecky (2008) Promoting uranium immobilization by the activities of microbial phosphatases. Poster presentation: 2008 U.S. DOE ERSP Annual PI Meeting, Lansdowne, Virginia
14. **Beazley MJ**, RJ Martinez, PA Sobecky, SM Webb, and M Taillefert (2007) Role of speciation on U(VI) biomineralization in acidic and aerobic conditions. Poster presentation: 2007 U.S. DOE ERSP Annual PI Meeting, Lansdowne, Virginia
15. Sobecky PA, RJ Martinez, **MJ Beazley**, SM Webb, and M Taillefert (2007) Promoting uranium immobilization by the activities of microbial phosphatases. Poster presentation: 2007 U.S. DOE ERSP PI Meeting, Lansdowne, Virginia
16. **Beazley MJ**, RJ Martinez, SM Webb, PA Sobecky, and M Taillefert (2007) Bioremediation of uranium in aerobic environments via bacterial phosphatase activity. Oral presentation: American Chemical Society National Meeting, Chicago, Illinois
17. **Beazley MJ**, RJ Martinez, PA Sobecky, and M Taillefert (2006) Uranium biomineralization as a result of bacterial phosphatase activity. Oral presentation: American Chemical Society National Meeting, Atlanta, Georgia
18. Sobecky PA, RJ Martinez, **MJ Beazley**, and M Taillefert (2006) Promoting uranium immobilization by the activities of microbial phosphatases. Poster presentation: 2006 U.S. DOE ERSP PI Meeting, Warrenton, Virginia
19. Sobecky PA, RJ Martinez, **MJ Beazley**, and M Taillefert (2005) Promoting uranium immobilization by the activities of microbial phosphatases. Poster presentation: 2005 U.S. DOE NABIR PI Meeting, Warrenton, Virginia
20. **Beazley MJ** and JW Morse (2003) Relationship between organic carbon and sediment surface area in the Gulf of Mexico. Oral presentation: The Oceanography Society – Oceanology International Americas Ocean Conference, New Orleans, Louisiana
21. **Beazley MJ**, KS Sell, AB Hebert, and JW Morse (2002) Biogeochemistry of the deep Gulf of Mexico. Poster presentation: 6th International Symposium on the Geochemistry of the Earth's Surface (GES-6), Honolulu, Hawaii
22. **Beazley MJ**, MR McCallum, S Moore, and J Russ (2000) The source of a calcium oxalate rock coating on limestone and its implications. Poster presentation: Annual Fall Meeting, American Geophysical Union, San Francisco, California

EXTRAMURAL FUNDING ACTIVITIES

Grants Funded/Pending:

- City of Orlando Stormwater Division – (04/01/2016-03/31/17) \$ 32,625 (Funded)
Lake Silver Proposed Research Project – Phosphorus Cycling in a Central Florida Lake
- NSF I-Corps: Thor ORE – (1/15/2016 – 7/15/2016) \$ 2,550 (Funded)
Participant to I-Corps Site Program
- Orange County Environmental Protection Division – (6/2016 – 9/2016) \$ 8,100 (Pending)
Orange County Environmental Water Study
- National Science Foundation – (08/2016-07/2019) \$ 403,504 (Pending)
MRI: Acquisition of a Liquid Chromatography – Quadrupole Orbitrap Mass Spectrometer for Research and Education in Chemical and Biological Analysis
- US Environmental Protection Agency – (08/2016-08/2017) \$ 74,523 (Declined)
Developing Community Partners to Investigate Urban Runoff in Central Florida

Synchrotron Beam Time Proposals (User facility awards):

- National Synchrotron Light Source (NSLS) - Beam time proposal
"Structural characterization of biogenic uranium phosphate minerals" (2012-2014)
- Stanford Synchrotron Radiation Lightsource (SSRL) - Beam time proposal
"Biomineralization of uranium phosphate from contaminated waste sites" (2007-2009)
Awarded beam time for three scheduling periods (BL 2-1, BL 2-3, and BL 10-2)

Research Grant Projects Participated as Senior Personnel:

- University of Alabama, Office for Technology Transfer Internal Grant (2014)
Microbial degradation of hydrocarbons by kenaf biosorptive materials
- Agricen Sciences, Inc. - formerly Advanced Microbial Solutions, LLC (2013)
Isolation of agricultural soil microbes with phosphorus solubilization pathways
- Economic Development Partnership of Alabama Foundation Non-profit Agency (2012)
"Microbial enhanced phosphate release from soil"
- Department of Energy - SFA subcontract from Brookhaven National Laboratory (2010-2012)
"Bioimaging of Microbial Biomineralization Activities"
- BP-Alabama Marine Environmental Science Consortium (2010-2011)
"Microbial responses to hydrocarbon and dispersant - lab- and field-based studies"
- National Science Foundation (2010-2013)
RAPID: "Accelerating biodegradation of hydrocarbons from the *Deepwater Horizon* oil spill in the Gulf of Mexico with naturally occurring marine substrates"
- Department of Energy Subsurface Biogeochemical Program (2010-2013)
"Uranium biomineralization by natural microbial phosphatase activities in the subsurface"
- Department of Energy ERSP/formerly NABIR Program (2005-2009)
"Promoting uranium immobilization by the activities of microbial phosphatases"

ANALYTICAL INSTRUMENTATION EXPERIENCE

- Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
- Synchrotron X-ray Absorption Spectroscopy (XANES and EXAFS)
- Synchrotron X-ray Diffraction (XRD)
- High Performance Liquid Chromatography (HPLC)
- Ion Chromatography (IC)
- Scanning Electron Microscopy (SEM)
- X-ray Photoelectron Spectroscopy (XPS)
- Gas Chromatography/Mass Spectrometry (GC/MS)
- Capillary Electrophoresis (CE)
- Voltammetry with Au/Hg microelectrodes
- Spectrophotometry
- Coulometry
- Brunauer-Emmett-Teller (BET) surface area analysis
- Atomic Absorption Spectroscopy (AA)
- Polymerase Chain Reaction (PCR)
- Real Time PCR (qPCR)