BIOGRAPHICAL SKETCH

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NAME: Amy L. Bondy

eRA COMMONS USER NAME (credential, e.g., agency login): ALBONDY

POSITION TITLE: Research Specialist Cryo-EM, Life Sciences Institute, University of Michigan

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Michigan-Dearborn, Dearborn, MI	B.S.	2012	Chemistry
University of Michigan, Ann Arbor, MI	Ph.D.	2018	Chemistry

A. Personal Statement

As a Research Specialist Associate at the UM LSI cryo-EM facility, I assist with management of the multi-user facility, train new users, and support data collection on the negative stain and cryo transmission electron microscopes (TEMs). The LSI cryo-EM facility currently houses a Thermo Fisher Scientific Titan Krios (300 kV), Talos Arctica (200 kV), Tecnai T12 (120 kV), and Morgagni (100 kV). This state-of-the-art facility primarily uses these instruments to elucidate protein structures and improve our current understanding of ion channels, protein assembly, and protein/membrane interactions. Using my previous training as a materials chemist using single particle microscopy methods and now transitioning into the sphere of structural biology and cryo-EM, I will work to ensure that data collection on the TEMs is performed to the highest scientific standard.

B. Positions

2018-pres. Research Specialist Associate in Cryo-EM, Life Sciences Institute, University of Michigan
2012-2017 Graduate Researcher, University of Michigan
2012-2017 Graduate Student Instructor, University of Michigan
2012 Laboratory Chemist-Intern, Pacific Industrial Development Corporation
2009-2012 Undergraduate Researcher, University of Michigan-Dearborn
2009-2012 Supplemental Instruction Leader, University of Michigan-Dearborn

Honors and Awards

2017 1st Place poster award at the 2017 Microscience and Microscopy Congress
2017 Henry Earle Riggs one-term dissertation writing fellowship
2015 Fellowship in science communication: portal to the public (series of comm. workshops at Detroit Zoo)
2014 Honorable mention NSF graduate research fellowship (top 25% of applicants)
2013 Graduate fellowship in chemical exposure science (NIOSH Center for Occup. Health & Safety Eng.)
2012 Honors scholar in chemistry, University of Michigan-Dearborn
2012 Chancellor's medallion (awarded to 5 students in graduating class), University of Michigan-Dearborn
2011 ACS division of analytical chemistry undergraduate award
2011 Difference Maker Award, University of Michigan-Dearborn

Other Experience and Professional Membership

2016-2017 Treasurer for Females Excelling More in Math Engineering and Science (FEMMES) org.
2015 Karle Symposium Organization Committee
2011-2012 President of Chemistry Club

2006-2018. Member of American Chemical Society (ACS)

C. Contributions to Science

1. Microscopic and spectroscopic chemical characterization of aerosol particles in the southeast US.

I was trained as a microscopist and spectroscopist, and both individually and through internal and external collaborations studied aerosol particles using these methods. Atmospheric aerosols are important to study because they influence climate and air quality regionally and globally. The size, chemical composition, and physical structure (e.g., well-mixed, core−shell, or partially engulfed) of individual particles is critical for determining their climate and health impacts. Therefore, my Ph.D. research involved the microscopic and spectroscopic analysis of ambient aerosol samples, primarily in a rural, forested region impacted by transported pollution, to better understand the composition and morphology of aerosol particles.

Particles from central Alabama were collected on substrates and studied using scanning electron microscopy (SEM), scanning transmission X-ray microscopy/near edge X-ray absorption spectroscopy (STXM/NEXAFS), and Raman spectroscopy to determine their properties. From this analysis, particles from a variety of sources were identified including primary biological (i.e. pollen and spores), mineral dust, sea spray aerosol (SSA), soot and fly ash from combustion sources, biomass burning aerosol (BBA), and secondary organic aerosol (SOA) which are primarily emitted from forested ecosystems. As future aerosol properties and impacts cannot be accurately predicted in models until emissions and evolution in the atmosphere are better understood, the chemical composition and structure of particles are needed to evaluate the effects of climate changes on present and future generations.

a. Allen, H.; Draper, D.; Ayres, B.; Ault, A.; **Bondy, A.**; Takahama, S.; Modini, R.; Ergin, G.; Baumann, K.; Edgerton, E.; Knote, C.; Laskin, A.; Fry, J. Influence of Crustal Dust and Sea Spray Supermicron Particle Concentrations and Acidity on Inorganic NO_3^- Aerosol During the 2013 Southern Oxidant and Aerosol Study. *Atmos. Chem. Phys.* **2015**, *15*, 13827-13865.
b. **Bondy, A.**; Wang, B.; Laskin, A.; Craig, R.; Nhliziyo, M.; Bertman, S.; Pratt, K.; Shepson, P.; Ault, A. Inland Sea Spray Aerosol Transport and Incomplete Chloride Depletion: Varying Degrees of Reactive Processing Observed during SOAS. *Environ. Sci. Technol.* **2017**, *51*, 9533-9542.
c. Craig, R.; **Bondy, A.**; Ault, A. Computer-Controlled Raman Microspectroscopy (CC-Raman): A Method for the Rapid Characterization of Individual Atmospheric Aerosol Particles. *Aerosol Sci. Technol.* **2017**, *51*, 1099-1112.
d. **Bondy, A.**; Craig, R.; Zhang, Z.; Gold, A.; Surratt, J.; Ault, A. Isoprene-Derived Organosulfates: Vibrational Mode Analysis by Raman Spectroscopy, Acidity-Dependent Spectral Modes, and Observation in Individual Atmospheric Particles. *J. Phys. Chem. A.* **2018**, *122*, 303-315.
e. **Bondy, A.**; Bonanno, D.; Moffet, R.; Wang, B.; Laskin, A.; Ault, A. Diverse Chemical Mixing State of Aerosol Particles in the Southeastern United States. *Atmos. Chem. Phys.* Accepted.

2. Development and application of new analytical methods to the characterization of aerosol particles.

In addition to using established characterization methods to analyze aerosol particles, an important part of my work as a graduate researcher involved developing and/or applying new analytical methods to chemically characterize particles. One project I pioneered applied atomic force microscopy coupled to infrared spectroscopy (AFM-IR) to the study of aerosol particles for the first time. This allowed the systematic investigation of the functional groups present in aerosol particles below the diffraction limit of light. The subdiffraction limit capability of AFM-IR has the potential to advance understanding of particle impacts on climate and health by improving analytical capabilities to study water uptake, heterogeneous reactivity, and viscosity.

a. **Bondy, A.**; Kirpes, R.; Merzel, R.; Pratt, K.; Banaszak Holl, M.; Ault, A. Atomic Force Microscopy-Infrared Spectroscopy Provides Simultaneous Chemical and Morphological Analysis of Aerosol Particles. *Anal. Chem.* **2017**, *89*, 8594-8598.

Complete List of Published Work in MyBibliography (17 total):
https://www.ncbi.nlm.nih.gov/sites/myncbi/1n3s7zl49h95KG/bibliography/56302514/public/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance

None