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Ph.D. Student (3rd year)
Materials Science and Engineering
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Education

2016 Arizona State University, Materials Science and Engineering Ph.D.
2012 Arizona State University, Materials Science and Engineering

Experience

2012 – Present: Ph.D. Research Assistant, Crozier Research Group, Arizona State University
2010 – 2012: Undergraduate Researcher, Crozier Research Group, Arizona State University
2011: Summer Undergraduate Research Fellow, National Institute of Standards and Technology
2010 – 2011: Undergraduate Researcher, Holbert Research Group, Arizona State University

Related Publications, Proceedings and Presentations (Bowman, W.J.)

- Bowman, W.J., Darbal, A.D., Crozier, P.A. Correlating grain boundary misorientation, composition and electronic structure of Gd/Pr co-doped ceria in the scanning transmission electron microscope. *Microscopy and Microanalysis* **In preparation** (2015).
- Bowman, W.J., Darbal, A.D., Kelly, M, Rohrer, G.S., Crozier, P.A. Relationship between grain boundary conductivity and character determined by stereological EBSD. *Journal of the American Ceramic Society* **In preparation** (2015).
- Bowman, W.J., Hernandez, C., McGuinness, K. Crozier, P.A. Grain boundary conductivity and composition in Ca-doped ceria. *Solid State Ionics* **Submitted** (2014).
- Bowman, W.J., Zhu, J., Sharma, R., Crozier, P.A. Electrical conductivity and grain boundary characterization of Gd-doped and Gd/Pr co-doped ceria electrolytes. *Solid State Ionics* **In Press** (2014).
- Bowman, W.J., Darbal, A.D., Zhu, J., Crozier, P.A., Nanocharacterization and electrical properties of grain boundaries in Gd/Pr doubly-doped ceria. *Microscopy and Microanalysis* **Proceedings** (2014).
- Bowman, W.J., Darbal, A.D., Aoki, T., Zhu, J., Hussaini, Z., Crozier, P.A. Oxygen Vacancies at Grain Boundaries in Doubly-Doped Ceria Determined using EELS. *Microscopy and Microanalysis* **Proceedings** (2014).
- Bowman, W.J., Darbal, A.D., Zhu, J., Crozier, P.A., Modification of grain boundary conductivity in polycrystalline doped ceria. *Gordon Research Conferences: Studies in Solid State Ceramics* **Contributed poster** (2014).
- Bowman, W.J., Crozier, P.A. Correlating transition metal-modified grain boundary conductivity with atomic level structure and composition in Gd-doped ceria electrolytes. *Materials Research Society Spring Meeting* **Contributed talk** (2014).

- Bowman, W.J., Aoki, T., Crozier, P.A. Monochromated electron energy loss spectroscopy of transition metal-modified grain boundaries in Gd-doped ceria electrolytes. *Materials Research Society Spring Meeting* **Contributed talk** (2014).
- Bowman, W.J., Sharma, R., Crozier, P. A. Characterization of Structure and Grain Boundary Composition in Undoped and Doped Ceria Synthesized by Spray Drying for Solid Oxide Fuel Cells. *Microscopy and Microanalysis* **Proceedings** (2013).
- Bowman, W.J., Crozier, P. A. TEM Characterization of Grain Boundaries And Defects In Un-doped And Doped Ceria For Solid Oxide Fuel Cells. *Microscopy and Microanalysis* **Proceedings** (2012).
- Bowman, W.J., Talin, A.A., Sharma, R., Sharma, V., Crozier, P.A. Correlating Nanostructure and Ion Conductivity in Gd and Pr Doped and Co-Doped Ceria for Solid Oxide Fuel Cell Electrolytes Synthesized by Spray-Drying. *Materials Research Society Spring Meeting* **Contributed talk** (2012).

Synergistic Activities

- Recipient of Arizona State University (ASU) Fulton Undergraduate Research Initiative research funding awards and travel grants (2011 – 2012). Recipient of National Institute of Standards and Technology's Summer Undergraduate Research Fellowship (2011). Recipient of National Science Foundation Graduate Research Fellowship (2012). Recipient of ASU Graduate College's Doctoral Enrichment Fellowship (2012 – 2013). Recipient of ASU Outstanding Graduate Student Award for Community Outreach (2014). Recipient of the Microscopy Society of America's Presidential Scholar Award for the Microscopy and Microanalysis Conference (2014). Recipient of US Microscopy Society of America and International Microscopy Congress student travel grants to International Microscopy Congress – Prague, CZ (2014).
- Travelled to Ghana to develop international research collaboration with Ghanaian researchers under an NSF Research Collaborative Network grant (2013)
- Outreach Chair for Electrochemical Society ASU Graduate Student Chapter (2013 – 2014)
- ASU SHADES program multicultural mentor for Physics undergraduate students (2013 – Present)

Ph.D. Thesis Advisor: Peter A. Crozier (Arizona State University)

Past and Current Collaborators: Toshihiro Aoki (ASU), Sean Bishop (Massachusetts Institute of Technology), Di Chen (Massachusetts Institute of Technology), Amith Darbal (AppFive LLC), Tridip Das (Michigan State University), Zahra Hussaini (ASU), Madeleine Kelly (Carnegie Mellon University), Jason Nicholas (Michigan State University), Greg Rohrer (Carnegie Mellon University), Renu Sharma (NIST Gaithersburg), Vaneet Sharma (ASU), Brian Sheldon (Brown University), Jay Sheth (Brown Universityh), A. Alec Talin (NIST Gaithersburg), Jiangtao Zhu (ASU)

Undergraduate Research Mentees: Cruz Hernandez (ASU), Kimberly McGuinness (ASU), Christy Sennavongsa (ASU)