william bowman

Ph.D. candidate, Materials Science & Engineering
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experience

2015 – present	**Visiting Ph.D. research assistant** Electrochemical Materials Group (J.L.M. Rupp), ETH Zürich
2012 – present	**Ph.D. research assistant** Crozier Group, Arizona State University
2012 – present	**Graduate research fellow** US National Science Foundation
2010 – 2012	**Undergraduate research assistant** Crozier Group, Arizona State University
2011	**Summer research fellow** US National Institute of Standards and Technology

education

2012 – present	**Ph.D. materials science & engineering** Arizona State University (Advisor: Peter Crozier)
2008 – 2012	**B.S.E. materials science & engineering** Arizona State University

skills

experimental techniques	scanning, transmission, & scanning-transmission electron microscopy; energy-dispersive x-ray spectroscopy; electron energy-loss spectroscopy; x-ray diffraction; electrochemical impedance spectroscopy
software	digitalmicrograph, imagej, inkscape, microscoft office, solidworks, git, rails, matlab
languages	english (native speaker), python, matlab, ruby, html, css, javascript

find me online

Group webpage	**crozier.faculty.asu.edu**	GitHub	**github.com/willjbowman**
ResearchGate	**researchgate.net/profile/Will_Bowman**	LinkedIn	**linkedin.com/in/bowmanwilliam**

publications

in preparation (2016)	W.J.B., M. Kelly, G.S. Rohrer, C.A. Hernandez, K. McGuinness & P.A. Crozier
in preparation (2016)	W.J.B., A. Darbal & P.A. Crozier
submitted (2016)	J. Sheth, D. Chen, J.J. Kim, W.J.B., P.A. Crozier, H.L. Tuller, S.T. Misture, S. Zdzieszynski, B.W. Sheldon & S.R. Bishop
under review (2016)	S. Schweiger, R. Pfenninger, W.J.B., U. Aschauer & J.L.M. Rupp
Ultramicroscopy **167** 5-10 (2016)	**Measuring band-gap states in individual nonstoichiometric oxide nanoparticles: The praseodymium-ceria case** W.J.B., K. March, C.A. Hernandez & P.A. Crozier
Solid State Ionics **272** 9-17 (2015)	**Electrical conductivity and grain boundary characterization of Gd-doped and Gd/Pr co-doped ceria electrolytes** W.J.B, J. Zhu, R. Sharma & P.A. Crozier

seminars & invited talks (1)

CIME seminar EPFL, Lausanne, Switzerland 2016	**Correlative Electron Microscopy across Length Scales to Elucidate Grain Boundary Transport in Non-Stoichiometric Oxides**

selected contributed talks (9)

* reviewed conference papers

Microscopy & Microanalysis
Portland, OR
2015

* **Grain Boundaries across Length Scales; Correlating SEM, Aberration-Corrected TEM Orientation Imaging and Nanospectroscopy**
W.J.B., Darbal, A.D., Kelly, M., Rohrer, G.S., Hernandez, C.H., McGuinness, K., Crozier, P. A.
* **Observation of Inter-Bandgap States in Doped Ceria via Monochromated EELS**
W.J.B., March, K., Aoki, T., Hernandez, C.A., Crozier, P.A.

Materials Research Soc.
San Francisco
2015

Application of low-loss ultra-high energy resolution EELS to doped CeO_2
W.J.B., Aoki, T., Rez, P., Crozier, P.A.

Microscopy & Microanalysis
Hartford, CT
2014

* **Nanocharacterization and electrical properties of grain boundaries in Gd/Pr doubly-doped ceria**
W.J.B., Zhu, J., Crozier, P.A.
* **Oxygen vacancies at grain boundaries in doubly-doped ceria determined using EELS**
W.J.B., Zhu, J., Hussaini, Z., Crozier, P.A.

International Microscopy Congress
Prague, CZ
2014

* **Oxygen Vacancies at Grain Boundaries in Doubly-Doped Ceria Determined using EELS**
W.J.B., Zhu, J., Hussaini, Z., Crozier, P.A.

Materials Research Soc.
San Francisco
2014

Monochromated electron energy loss spectroscopy of transition metal-modified grain boundaries in Gd-doped ceria electrolytes
W.J.B., Crozier, P.A.
Correlating transition metal-modified grain boundary conductivity with atomic level structure and composition in Gd-doped ceria electrolytes
W.J.B., Crozier, P.A.

Microscopy & Microanalysis
Indianapolis, IN
2013

* **Characterization of Structure and Grain Boundary Composition in Undoped and Doped Ceria Synthesized by Spray Drying for Solid Oxide Fuel Cells**
W.J.B., Crozier, P. A., Sharma, R.

selected posters (7)

* reviewed conference papers

Microscopy & Microanalysis
Portland, OR
2015

* **Quantifying and Correlating the Composition and Conductivity of Grain Boundaries in Ca-doped CeO_2 Electrolytes, an AC-STEM EELS Study**
W.J.B., Hernandez, C.A., McGuinness, K., Crozier, P.A.

Solid State Ionics 20
Keystone, CO
2015

Grain Boundaries across Length Scales; Orientation Imaging and Nanospectroscopy
W.J.B., Darbal, A., Kelly, M., Rohrer, G.S., March, K., Hernandez, C.A., McGuinness, K., Crozier, P.A.
Correlating Conductivity and Composition of $Ca_xCe_{1-x}O_{2-\delta}$ Grain Boundaries via Aberration-Corrected TEM
W.J.B., Hernandez, C.A., McGuinness, K., McCartney, M.R., Crozier, P.A.

Materials Research Soc.
San Francisco
2015

Combining STEM Orientational Imaging and EELS to Statistically Correlate Grain Boundary Orientation and Composition in Polycrystalline Doped CeO_2 Electrolytes
W.J.B., Darbal, A., Crozier, P.A.

GRC: Solid State Ceramics
So. Hadley, MA
2014

Modification of grain boundary conductivity in polycrystalline doped ceria
W.J.B., Darbal, A., Zhu, J., Crozier, P.A.

International Microscopy Congress
Prague, CZ
2014

* **Nanocharacterization and Electrical Properties of Grain Boundaries in Gd/Pr Doubly-Doped CeO_2**
W.J.B., Zhu, J., Crozier, P.A.

Arizona Imaging & Microscopy
Tucson, AZ
2013

Characterization of Structure and Grain Boundary Composition in Undoped and Doped Ceria Synthesized by Spray Drying for Solid Oxide Fuel Cells
W.J.B., Crozier, P. A.

awards & recognition

2015 – present **Swiss Government Excellence Scholarship**
9 month visit to ETH Zürich; Swiss Secretariat for Education, Research and Innovation

2012 – present **NSF Graduate Research Fellow**
3 years support for Ph.D. research activities; US National Science Foundation

2015 **NSF Graduate Research Opportunities Worldwide Award**
Funds for travel and research at ETH Zürich; US National Science Foundation

2015 **Best poster nominee**
Spring meeting; Materials Research Society

2014 **Travel grants for International Microscopy Congress, Prague, CZ**
Awarded by Microscopy Society of America and International Microscopy Congress

2014 **Presidential Scholar Award**
Microscopy Society of America

2014 **Outstanding Graduate Student Award for community outreach**
School for the Engineering of Matter, Transport & Energy, Arizona State University

2012 – 2013 **Doctoral Enrichment Fellowship**
1 year support for Ph.D. research activities; Graduate College, Arizona State University

2011 – 2012 **Undergraduate research funding and travel grants**
Fulton Undergraduate Research Initiative, Arizona State University

2011 **NIST Summer Research Fellow**
3 months support for research activities; National Institute of Standards and Technology

mentorship, service & miscellanea

2016 **75th Anniversary Committee Member, Microscopy Society of America**
Help address needs of early career professionals in field of microscopy and microanalysis

2014 – present **Seminar chairperson**
2016 Gordon Research Seminar: Solid State Studies in Ceramics

2013 – present **Undergraduate student mentor**
SHADES multicultural mentorship program, Arizona State University

2015 **Collection management website development**
Designed, built and deployed web application (fransdollcareandrepair.com)

2015 **Website redesign committee**
Microscopy Society of America

2013 – 2014 **Outreach Chairperson & founding member**
Electrochemical Society graduate student chapter, Arizona State University

2013 **U.S. National Science Foundation Research Collaborative Network participant**
Visited Ghana to develop international research collaboration with Ghanaian researchers