OAK RIDGE National Laboratory

PO Box 2008 MS6064
Oak Ridge, TN 37831
(865) 575-4965 | poplawskyjd@ornl.gov

Jonathan D. Poplawsky, Ph.D.

Senior Research Staff
Materials MicroÅnalysis Group
Center for Nanophase Materials Sciences
Oak Ridge National Laboratory
(865) 576-4965
Website: Google Scholar
PoplawskyJD@ornl.gov

Career Highlights

Research: 127 Peer-Reviewed Journal Articles, **1** U.S. Patent filed, **18** Invited Talks, h-index = 34.
Selected Awards: ORNL Early Career Researcher award in Science and Technology, DOE top 5 research highlight for 2018, ORNL Strategic Hire, National Research Council Fellowship, Graduate Student Teaching Assistant Award.
Funding: DOE EERE VTO, Intelligence Community, ORNL LDRD, DOE FE XMAT
Scientific/ORNL Service: MRS Symposia Organizer, APT&M Symposia Organizer, CNMS User Meeting APT Tutorial Workshop Organizer, PSD Science Fair Outreach Volunteer, CNMS Seminar Series Coordinator
Mentoring: 2 Postdocs and 2 Students Supervised

Education

Lehigh University, Bethlehem, PA	Physics	Ph.D., 2012
Lehigh University, Bethlehem, PA	Physics	M.S., 2010
The University of Scranton, Scranton	Physics	B.S., 2007

Research Experience:

- ~7 years experience in Atom Probe Tomography
- ~13 years experience in Electron Microscopy techniques including Cathodoluminescence (CL), Electron Beam Induced Current (EBIC), Focused Ion Beam (FIB), electron back scattered diffraction (EBSD), and Scanning Transmission Electron Microscopy (STEM).
- Expertise in the experimental analysis of localized elemental compositional changes occurring at grain boundaries, interfaces, and cluster sites for energy related materials via atom probe tomography, and linking materials' atomic scale structure and composition to bulk electronic, ionic, chemical, or mechanical properties.
- Energy storage materials, structural materials, catalysts, photovoltaics, light emitting diodes, and fuel cells.

Research and Professional Experience

2017-Present	Research Staff, Oak Ridge National Laboratory
2014-2017	(Strategic Hire) Research Associate, Oak Ridge National Laboratory
2012-2014	Post-doctoral Research Associate, University of Tennessee
2007-2012	Research Assistant, Lehigh University

Awards and Honors Received

2021	ORNL Outstanding Scholarly Output Award
2021	Outstanding CNMS Staff Member Award
2019	ORNL Early Career Researcher award in Science and Technology
2018	Published a DOE top 5 research highlight for 2018
2017	Most Notable CNMS User Project, ORNL CNMS
2014	Ceramographic Exhibit 2nd place award, SEM, American Ceramic Society
2012	National Research Council Fellowship, Navy Research Laboratory
2011	Best Student Presentation Award, MAS CL Topical Conference
2010-2011	Sherman Fairchild Fellowship in Semiconductor Studies**,** Lehigh University
2008	Graduate Student Teaching Assistant Award, Lehigh University
2007	Excellence in Physics Award, University of Scranton
2007	Sigma Pi Sigma Honors, University of Scranton
2003-2007	Loyola Scholarship, University of Scranton

Patents

2020 (filed)	Yang Y, Pint B, Poplawsky JD, and Tan L, "Ta-Containing Fe-Ni Based Superalloys with High Strength and Oxidation Resistance for High-temperature Applications," Docket No. 6321-508 (157379.08301).

Experimental Accomplishments

Pioneered atom probe research on zeolite materials
Clarified the interpretation of voids in atom probe tomography data
Manage and lead over 30 user proposals focused on atom probe tomography per year
Leading Aim 3:Coupled Electron-Ion Transport within the CNMS Electromechanics theme
Expert at conducting and correlating TEM, EBIC, APT, EBSD, and CL experimental results for solar materials
Fabricated Si-based TEM grids capable of correlative APT/TEM experiments
Designed a vacuum transfer system to transport air sensitive samples from the FIB to the atom probe
Designed the first simultaneous Cathodoluminescencene/Photoluminescence system (ref. 79)
Developed a STEM-EBIC holder for the Nion-200 at ORNL (ref. 54)

Funding

2018-Present	DOE Office of Fossil Energy eXtreme MATerials Program.
2018-Present	DOE Office of Energy Efficiency & Renewable Energy Office of Vehicle Technology Powertrain Materials Core Program.
2016-Present	U.S. DOE Office of Science User Facility, ORNL Center for Nanophase Materials Sciences, (Grant Numbers: KC0403040; FWP ERKCZ01).
2016-2018	ORNL LDRD, "Supercomputers to Superalloys." (LOIS ID: 8455)
2016-2018	ORNL LDRD, "Advanced Atom Probe Tomography for Nanoscience Applications." (LOIS ID: 8241)
2016-2018	ORNL LDRD, "DAPPER: Data Analysis Parallel Package Maker - A Lego Set for Big Data Scientists." (LOIS ID: 8449)
2015-2017	Intelligence Community: "Understanding Interfacial Structure and Stability in SiGe/Si/SiGe Heterostructures for Quantum Computing."
2014-2016	ORNL LDRD Strategic Hire Fellowship, "Advanced Atom Probe Tomography for Nanoscience Applications." (LOIS ID: 7509)

Journal Articles Published in Peer Reviewed Journals: [citation stats as of 10/11/2021: h-index = 36, citations = 5077, i10-index = 88 (google scholar)

133. van Vreeswijk, S. H., Monai, M., Oord, R., Schmidt, J. E., Vogt, E. T. C., **Poplawsky, J. D.** & Weckhuysen, B. M. Nano-scale insights regarding coke formation in zeolite SSZ-13 subject to the methanol-to-hydrocarbons reaction. *Catalysis Science & Technology*, (2022).
132. **Poplawsky, J. D.**, Pillai, R., Ren, Q.-Q., Breen, A. J., Gault, B. & Brady, M. P. Measuring oxygen solubility in Ni grains and boundaries after oxidation using atom probe tomography. *Scr. Mater.* **210**, 114411, (2022).
131. Costa, A. M. S., Oliveira, J. P., Escobar, J. D., Salvador, C. A. F., Monteiro, M. J., **Poplawsky, J. D.**, Nunes, C. A., Ramirez, A. J. & Tschiptschin, A. P. On the effect of elemental partitioning to secondary phases after solution and aging heat treatments in a Co-Ni-based superalloy. *Materials Letters* **309**, 131377, (2022).
130. Wang, S.-S., Huber, D., **Poplawsky, J. D.** & Frankel, G. S. Influence of artificial aging on corrosion of abraded Al-Zn-Mg-Cu alloys. *Corrosion Science* **191**, 109745, (2021).
129. Pan, Q., Zhang, L., Feng, R., Lu, Q., An, K., Chuang Andrew, C., **Poplawsky J.D.**, Liaw Peter, K. & Lu, L. Gradient cell–structured high-entropy alloy with exceptional strength and ductility. *Science* **374**, 984-989, (2021).
128. Bahl, S., Plotkowski, A., Sisco, K., Leonard, D. N., Allard, L. F., Michi, R. A., **Poplawsky, J. D.**, Dehoff, R. & Shyam, A. Elevated temperature ductility dip in an additively manufactured Al-Cu-Ce alloy. *Acta Mater.* **220**, 117285, (2021).
127. Sharma, N. K., Kannan, R., Li, L., Anderson, N., Rashid, M., Collins, L., **Poplawsky, J. D.** & Unocic, R. A Mechanism for Carbon Depletion at Bondline of High-Frequency Electric-Resistance-Welded X70 Pipeline Steel. *Metall. Mater. Trans. A* **52**, 3788-3798, (2021).
126. Feng, R., Feng, B., Gao, M. C., Zhang, C., Neuefeind, J. C., **Poplawsky, J. D.**, Ren, Y., An, K., Widom, M. & Liaw, P. K. Superior High-Temperature Strength in a Supersaturated Refractory High-Entropy Alloy. *Advanced Materials* **n/a**, 2102401, (2021).
125. Gwalani, B., Shukla, S., Leonard, D., **Poplawsky, J. D.**, Pierce, D. T., Kovarik, L., Muralidharan, G. & Devaraj, A. Understanding the microstructural stability in a γ′-strengthened Ni-Fe-Cr-Al-Ti alloy. *J. Alloys Compd.* **886**, 161207, (2021).
124. Kumar, S., Vijayan, S. R., Nandwana, P., **Poplawsky, J. D.**, Yan, C. & Babu, S. S. Role of thermo-mechanical gyrations on the α/β interface stability in a Ti6Al4V AM alloy. *Scr. Mater.* **204**, 114134, (2021).
123. Lee, C., Maresca, F., Feng, R., Chou, Y., Ungar, T., Widom, M., An, K., **Poplawsky, J. D.**, Chou, Y.-C., Liaw, P. K. & Curtin, W. A. Strength can be controlled by edge dislocations in refractory high-entropy alloys. *Nat. Commun.* **12**, 5474, (2021).
122. Lu, C., Li, M., Xiu, P., Wang, X., Velişa, G., Jiang, L., More, K. L., **Poplawsky, J. D.**, Chang, Y., Zhang, Y. & Wang, L. High radiation tolerance of an ultrastrong nanostructured NiCoCr alloy with stable dispersed nanooxides and fine grain structure. *J. Nucl. Mater.* **557**, 153316, (2021).
121. Y. Yang, T. Chen, L. Tan, **J.D. Poplawsky**, K. An, Y. Wang, G.D. Samolyuk, K. Littrell, A.R. Lupini, A. Borisevich, E.P. George, Bifunctional nanoprecipitates strengthen and ductilize a medium-entropy alloy, *Nature* **595**, 245-249, (2021).

120. Wang, S.-S., Huber, D., **Poplawsky, J. D.**, Colijn, H. & Frankel, G. S. The subsurface structure of abraded Al–Zn–Mg–Cu alloy. *Materialia* **16**, 101065, (2021).
119. Vivas, J., **Poplawsky, J. D.**, De-Castro, D., San-Martín, D. & Capdevila, C. Examining the creep strengthening nanoprecipitation in novel highly reinforced heat resistant steels. *Mater. Charact.* **174**, 110982, (2021).
118. Tan, L., **Poplawsky, J. D.** & Yang, Y. Effects of niobium and tantalum on the microstructure and strength of ferritic-martensitic steels. *Materials Science and Engineering: A* **807**, 140900, (2021).
117. Shower, P., **Poplawsky, J.**, Bahl, S. & Shyam, A. The role of Si in determining the stability of the θ′ precipitate in Al-Cu-Mn-Zr alloys. *J. Alloys Compd.* **862**, 158152, (2021).
116. Picard, Y. N., **Poplawsky, J. D**., Lee, S. & Abernathy, H. W. Nanoscale Analysis of LSM/YSZ Interfaces within Composite Cathodes for Commercial Solid Oxide Fuel Cells. *ECS Transactions* **103**, 1351-1362, (2021).
115. Gault, B. & **Poplawsky, J. D.** Correlating advanced microscopies reveals atomic-scale mechanisms limiting lithium-ion battery lifetime. *Nat. Commun.* **12**, 3740, (2021).
114. Feng, R., Zhang, C., Gao, M. C., Pei, Z., Zhang, F., Chen, Y., Ma, D., An, K., **Poplawsky, J. D.**, Ouyang, L., Ren, Y., Hawk, J. A., Widom, M. & Liaw, P. K. High-throughput design of high-performance lightweight high-entropy alloys. *Nat. Commun.* **12**, 4329, (2021).
113. Detrois, M., Pei, Z., Liu, T., **Poplawsky, J. D.**, Gao, M. C., Jablonski, P. D. & Hawk, J. A. The detrimental effect of elemental contaminants when using B additions to improve the creep properties of a Ni-based superalloy. *Scr. Mater.* **201**, 113971, (2021).
112. Chisholm, M. F., Shin, D., Duscher, G., Oxley, M. P., Allard, L. F., **Poplawsky, J. D.** & Shyam, A. Atomic structures of interfacial solute gateways to θ′ precipitates in Al-Cu alloys. *Acta Mater.* **212**, 116891, (2021).
111. Bahl, S., Xiong, L., Allard, L. F., Michi, R. A., **Poplawsky, J. D.**, Chuang, A. C., Singh, D., Watkins, T. R., Shin, D., Haynes, J. A. & Shyam, A. Aging behavior and strengthening mechanisms of coarsening resistant metastable θ' precipitates in an Al–Cu alloy. *Mater. Des.* **198**, 109378, (2021).
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109. Lee, C., Chou, Y., Kim, G., Gao, M. C., An, K., Brechtl, J., Zhang, C., Chen, W., **Poplawsky, J. D**., Song, G., Ren, Y., Chou, Y.-C. & Liaw, P. K. Lattice-Distortion-Enhanced Yield Strength in a Refractory High-Entropy Alloy. *Advanced Materials* **32**, 2004029, (2020).
108. Clarke, A. J., Klemm-Toole, J., Clarke, K. D., Coughlin, D. R., Pierce, D. T., Euser, V. K., **Poplawsky, J. D.**, Clausen, B., Brown, D., Almer, J., Gibbs, P. J., Alexander, D. J., Field, R. D., Williamson, D. L., Speer, J. G. & Krauss, G. Perspectives on Quenching and Tempering 4340 Steel. *Metall. Mater. Trans. A*, (2020).
107. Chen, W.-Y., **Poplawsky, J. D.**, Chen, Y., Guo, W. & Yeh, J.-W. Irradiation-induced segregation at dislocation loops in CoCrFeMnNi high entropy alloy. *Materialia* **14**, 100951, (2020).
106. Aydogan, E., Gigax, J. G., Parker, S. S., Eftink, B. P., Chancey, M., **Poplawsky, J.** & Maloy, S. A. Nitrogen effects on radiation response in 12Cr ferritic/martensitic alloys. *Scr. Mater.* **189**, 145-150, (2020).
105. Zhu, Y., **Poplawsky, J. D.**, Li, S., Unocic, R. R., Bland, L. G., Taylor, C. D., Locke, J. S., Marquis, E. A. & Frankel, G. S. Localized corrosion at nm-scale hardening precipitates in Al-Cu-Li alloys. *Acta Mater.* **189**, 204-213, (2020).

104. Yang, Y., Samolyuk, G. D., Chen, T., **Poplawsky, J. D.**, Lupini, A. R., Tan, L. & Ken, L. Coupling computational thermodynamics with density-function-theory based calculations to design L12 precipitates in FeNi based alloys. *JMADE* **191**, 108592, (2020).
103. Yang, T., Guo, W., **Poplawsky, J. D.**, Li, D., Wang, L., Li, Y., Hu, W., Crespillo, M. L., Yan, Z., Zhang, Y., Wang, Y. & Zinkle, S. J. Structural damage and phase stability of Al0.3CoCrFeNi high entropy alloy under high temperature ion irradiation. *Acta Mater.* **188**, 1-15, (2020).
102. Wang, X., Hatzoglou, C., Sneed, B., Fan, Z., Guo, W., Jin, K., Chen, D., Bei, H., Wang, Y., Weber, W. J., Zhang, Y., Gault, B., More, K. L., Vurpillot, F. & **Poplawsky, J. D.** Interpreting nanovoids in atom probe tomography data for accurate local compositional measurements. *Nat. Commun.* **11**, 1022, (2020).
101. **Poplawsky, J. D.**, Milligan, B. K., Allard, L. F., Shin, D., Shower, P., Chisholm, M. F. & Shyam, A. The synergistic role of Mn and Zr/Ti in producing θ′/L12 co-precipitates in Al-Cu alloys. *Acta Mater.* **194**, 577-586, (2020).
100. **Poplawsky, J. D.**, Dutta, P., Guthrey, H., Leonard, D., Guo, W., Kacharia, M., Rathi, M., Khatiwada, D., Favela, C., Sun, S., Zhang, C., Hubbard, S. & Selvamanickam, V. Directly Linking Low-Angle Grain Boundary Misorientation to Device Functionality for GaAs Grown on Flexible Metal Substrates. *ACS Appl. Mater. Interfaces*, acsami.9b22124, (2020).
99. Mitchell, B., Timmerman, D., Zhu, W., Lin, J. Y., Jiang, H. X., **Poplawsky, J.**, Ishii, R., Kawakami, Y., Dierolf, V., Tatebayashi, J., Ichikawa, S. & Fujiwara, Y. Direct detection of rare earth ion distributions in gallium nitride and its influence on growth morphology. *J. Appl. Phys.* **127**, 013102, (2020).
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97. Licata, O., Guha, U., **Poplawsky, J. D.**, Aich, N. & Mazumder, B. Probing Heterogeneity in Bovine Enamel Composition through Nanoscale Chemical Imaging using Atom Probe Tomography. *Archives of Oral Biology* **112**, 104682, (2020).
96. Lee, D., Gao, X., Sun, L., Jee, Y., **Poplawsky, J.**, Farmer, T. O., Fan, L., Guo, E.-J., Lu, Q., Heller, W. T., Choi, Y., Haskel, D., Fitzsimmons, M. R., Chisholm, M. F., Huang, K., Yildiz, B. & Lee, H. N. Colossal oxygen vacancy formation at a fluorite-bixbyite interface. *Nat. Commun.* **11**, 1-7, (2020).
95. Detrois, M., Pei, Z., Rozman, K. A., Gao, M. C., **Poplawsky, J. D.**, Jablonski, P. D. & Hawk, J. A. Partitioning of tramp elements Cu and Si in a Ni-based superalloy and their effect on creep properties. *Materialia* **13**, 100843, (2020).
94. De-Castro, D., Rementeria, R., Vivas, J., Sourmail, T., **Poplawsky, J. D.**, Urones-Garrote, E., Jimenez, J. A., Capdevila, C. & Caballero, F. G. Examining the multi-scale complexity and the crystallographic hierarchy of isothermally treated bainitic and martensitic structures. *Mater. Charact.* **160**, 110127-110112, (2020).
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91. Vaidya, A., Sarker, J., Zhang, Y., Lubecki, L., Wallace, J., **Poplawsky, J. D.**, Sasaki, K., Kuramata, A., Goyal, A., Gardella, J. A., Mazumder, B. & Singisetti, U. Structural, band and electrical

characterization of β-(Al 0.19Ga 0.81) 2O 3films grown by molecular beam epitaxy on Sn doped β-Ga 2O 3substrate. *J. Appl. Phys.* **126**, 095702, (2019).
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89. Kuo, C.-H., Shassere, B., **Poplawsky, J.**, Yamamoto, Y. & Babu, S. S. Validation of an alloy design strategy for stable Fe–Cr–Al–Nb-X ferritic alloys using electron microscopy and atom probe tomography. *Mater. Charact.* **158**, 109987, (2019).
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Elements in Zeolites with Correlated Atom Probe Tomography and Scanning Transmission X-Ray Microscopy. *ChemCatChem* **11,** 488–494 (2018).

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8. Lee, D.-G., Wakamatsu, R., Koizumi, A., Terai, Y., **Poplawsky, J. D.**, Dierolf, V. & Fujiwara, Y. Effect of thermal annealing on luminescence properties of Eu,Mg-codoped GaN grown by organometallic vapor phase epitaxy. *Appl. Phys. Lett.* **102,** 141904–5 (2013).
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5. Metcalfe, G. D., Readinger, E. D., Enck, R., Shen, H., Wraback, M., Woodward, N. T., **Poplawsky, J.** & Dierolf, V. Near-infrared photoluminescence properties of neodymium in in situ doped AlN grown using plasma-assisted molecular beam epitaxy. *Optical Materials Express* **1,** 78–84 (2011).

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3. Zhao, H., Liu, G., Zhang, J., **Poplawsky, J. D.**, Dierolf, V. & Tansu, N. Approaches for high internal quantum efficiency green InGaN light-emitting diodes with large overlap quantum wells. *Opt. Express* **19,** A991–A1007 (2011).
2. Zhao, H. P., Dierolf, V., Liu, G. Y., Huang, G. S., Li, X.-H., **Poplawsky, J. D.**, Arif, R. A., Tafon Penn, S. & Tansu, N. Design and characteristics of staggered InGaN quantum-well light-emitting diodes in the green spectral regime. *IET optoelectronics* **3,** 283–295 (2009).
1. Zhao, H., Liu, G., Li, X.-H., Huang, G. S., **Poplawsky, J. D.**, Penn, S. T., Dierolf, V. & Tansu, N. Growths of staggered InGaN quantum wells light-emitting diodes emitting at 520–525 nm employing graded growth-temperature profile. *Appl. Phys. Lett.* **95,** 061104–4 (2009).

Invited Seminars

8. "The Multiple Roles of Solute Additions in Maintaining the Strengthening Phase (θ′) in Al-Cu Alloys" Oak Ridge Chapter of ASM International, Oak Ridge, TN, September, 2020.
7. "Understanding Materials Using Atom Probe Tomography," The University of Tennessee, July 2019.
6. "3D Analysis at the Nanoscale via Atom Probe Tomography: Metals and Beyond," Washington University, November 2017.
5. "3D Analysis at the Nanoscale via Atom Probe Tomography: Metals and Beyond," PSD Seminar, ORNL, November 2017.
5. Atom Probe Tomography for Nanoscience Applications," CNMS user meeting, August 2016.
4. "Grain Boundary and Interfacial Structure-composition-property Relationships in CdTe-based Solar Cells," The University of Alabama, October 2016.
3. "Grain Boundary and Interfacial Structure-composition-property Relationships in CdTe-based Solar Cells," Lehigh University, May 2016.
2. "STEM and APT for Understanding Qubit Structure and Chemistry at the Sub-nm-level," Beyond Exascale: Qubits for Quantum Computing Workshop, 2015.
1. "Direct Imaging of Cl and Cu Electronic Property Changes in Polycrystalline CdTe Solar Cells," The University of Toledo, October 2013.

Invited Conference Presentations

12. "Precipitate Strengthening and Stabilization Mechanisms in Cast and Additively Manufactured Al-Cu-Mn-Zr Alloys," TMS2022, Virtual, February 2021.
11. "Understanding Radiation Resistance in High Entropy Alloys Through Atom Probe Tomography," TMS2021, Virtual, March 2021.
10. "High temperature Microstructural stability Mechanisms Revealed by Microscopy in Al-Cu-Mn-Zr Alloys," TMS2020, San Diego, CA, February 2020.
9. "Interpreting APT Data Containing He-bubbles in Irradiated Single-phase Concentrated Solid-solution Alloys (SP-CSAs)," TMS2020, San Diego, CA, February 2020.
8. "Nanoscale Characterization of Zeolites using Atom Probe Tomography," ACS 2019, Orlando, FL, April 2019.
7. "Correlating He Bubble Segregation in APT Data to Radiation Tolerance for Single-phase Concentrated Solid-solution Alloys (SP-CSAs)," TMS 2019, San Antonio, TX, March 2019.
6. "Understanding Irradiation Induced Defects in Multicomponent Alloys," Atom Probe Tomography and Microscopy, NIST Gaithersburg, MD, June 2018.

5. "Radiation Effects in High Entropy Alloys Revealed by Atom Probe Tomography," TMS 2018, Phoenix, AZ, March 2018.
4. "An Atom Probe Perspective on High Entropy Alloys," International Conference on Plasticity, Damage, and Fracture, San Juan, Puerto Rico, January 2018.
3. "Nano to Mesoscale CdTe Solar Cell Structure-composition-property Relationships Revealed by Microscopy and Electron Beam Induced Current Techniques," Fall MRS 2016, Boston, MA, November 28 – December 2, 2016.
2. "Atom Probe Tomography for Nanoscience Applications," CNMS user week, Deep Data in Materials Characterization Workshop, Oak Ridge, TN, August 2016.
1. "A Method to Quantify Si/SiGe Interface Profiles Via Atom Probe Tomography," Atom Probe Tomography and Microscopy, Gyeongju, Korea, June 2016.

Contributed Conference Presentations

14. "Atom Probe Tomography Reveals Nickel's Oxygen Solubility in Grains and Grain Boundaries after Oxidation," TMS2022, Virtual, February 2021.
13. "The Synergistic Role of Mn and Zr/Ti in Producing θ'/$L1_2$ Co-precipitates in Al-Cu Alloys," TMS2021, Virtual, March 2021.
12. "Interpreting Voids in Atom Probe Tomography Data for Accurate Compositional Measurements," Atom Probe Tomography and Microscopy, November 2020.
11. "The Synergistic Role of Mn and Zr/Ti in Producing θ'/L12 Co-precipitates in Al-Cu Alloys," Atom Probe Tomography and Microscopy, November 2020.
12. "Interpreting Voids in Atom Probe Tomography Data via Experiment and Theory," Microscopy and Microanalysis, August 2019.
11. "Microscopy Reveals the Role of Boundaries in Single-crystalline-like GaAs Solar Cells Grown on Flexible Metal Substrates," Materials Research Society, December 2018.
10. "Nanoscale Chemical Imaging of Coking Mechanisms in a Zeolite ZSM-5 Crystal by Atom Probe Tomography," Microscopy and Microanalysis, August 2017.
9. "Structural and Compositional Dependence of the $CdTe_xSe_{1-x}$ Alloy Layer Photoactivity in CdTe-based Solar Cells," Materials Research Society. April 2017.
8. "Atom Probe Tomography of Interfacial Segregation in CdTe-based Solar Cells," Microscopy and Microanalysis, July 2016.
7. "CdSe1-xTex Phase Segregation in CdSe/CdTe Based Solar Cells," Microscopy and Microanalysis, August 2015.
6. "Atom Probe Tomography Analysis of Grain Boundaries and the CdS/CdTe Interface for CdTe based Solar Cells," Materials Research Society, March 2015.
5. "Direct Imaging of Cl and Cu Induced Electronic Property Changes in CdTe Solar Cells," MRS Spring Meeting, April 21-25, 2014.
4. "Identifying the Charge Separation Efficiencies of Grain Boundaries in CdTe Thin-film Solar Cells Using In-situ SEM and STEM Electronic Probing Techniques," MRS Fall Meeting, December, 2013.
3. "Identifying the Electronic Properties of Grain Boundaries in CdTe Thin- film Solar Cells Using EBSD and EBIC Techniques," Microscopy and Microanalysis, August 2013.
2. "A Combined Excitation Experiment and the Emission Nature of Eu in GaN," American Physical Society, February 2012.
1. "Combined Excitation Experiment and the Emission Nature of Eu in GaN," European MRS, September 2011.

Tutorials and Workshops Led

2. "Live Lab Demo and Tutorial of Atom Probe Tomography and Scanning Transmission Electron Microscopy," CNMS User Meeting, ORNL, August 2017.
1. "Electron Beam Induced Current and Cathodoluminescence," AREMS, November 2013.

Professional Activities: (International Conference and Workshop Organizer)

2022 "Expanding the Limits of Atom Probe Tomography," Microscopy and Microanalysis, David Diercks, Ann Chiaramonti Debay, and Francois Vurpillot (co-organizers), August 2022.
2020 "Advancements in Atom Probe Tomography for Materials Characterization," Materials Research Society, Baishakhi Mazumder, Jaebok Seol, Mukesh Bakav (co-organizers), December 2020.
2018 "Semiconductor and Devices," Atom Probe Tomography and Microscopy, Baishakhi Mazumder (co-organizer), June 2018.
2017 "Live Lab Demo and Tutorial of Atom Probe Tomography and Scanning Transmission Electron Microscopy," Baishakhi Mazumder, Wei Guo (co-organizers), CNMS User Meeting, August 2017.

ORNL Service and Committee Membership

2021	ORNL Gives Fundraising Coordinator
2017-present	CNMS Seminar Series Coordinator
2018-2020	Scanning Electron Microscopy Outreach Coordinator
2016-present	PSD Science Fair Trailer Volunteer
2017	PSD Communications Action Committee

Professional Society Membership: International Field Emission Society (IFES), Materials Research Society (MRS), Microscopy Society of America (MSA), The Minerals, Metals, and Materials Society (TMS), and Microanalysis Society (MAS).

Graduate and Post-doctoral Advisors

Ph.D. Advisor: Dr. Volkmar Dierolf (Lehigh University, Bethlehem, PA, USA)
Postdoctoral Advisor: Dr. Stephen J. Pennycook (ORNL, University of Tennessee)

Post-doctoral Researchers Advised

2. Dr. Qingqiang Ren (Oak Ridge National Laboratory, 2020-present)
1. Dr. Wei Guo (Oak Ridge National Laboratory, 2015-2018)

Students Advised

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