

**Hui (Claire) Xiong, Ph.D.**

Associate Professor

Telephone: 412 398 4573

E-mail: [clairexiong@boisestate.edu](mailto:clairexiong@boisestate.edu)Web: <https://www.boisestate.edu/coen-eeml/>

Micron School of Materials Science and Engineering

Boise State University

1910 University Drive

Boise, ID 83725-2090

**1. Professional Preparation****1.1. Education**

Argonne National Laboratory (ANL)	Mater. Sci. & Eng.	Postdoc	2009-2012
Harvard University	Mater. Sci. & Eng.	Postdoc	2008
University of Pittsburgh	Anal. Chem. / Electrochem.	Ph.D.	2007
East China Univ. of Science and Technology	Inorganic Chemistry	M.S.	2000
East China Univ. of Science and Technology	Applied Chemistry	B.E.	1998

**1.2. Appointments**

2018 – Present	Associate Professor	Mater. Sci. & Eng., Boise State Univ., Boise, ID
2019 – 2022	Associate Director, Graduate Program	Mater. Sci. & Eng., Boise State, Boise, ID
2012 – 2018	Assistant Professor	Mater. Sci. & Eng., Boise State Univ., Boise, ID
2009 – 2012	Postdoctoral Fellow	Center for Nanoscale Mater., ANL, Lemont, IL
2008 – 2009	Postdoctoral Fellow	SEAS, Harvard University, Cambridge, MA
2003 – 2007	Graduate Research Assistant	Chemistry, Univ. of Pittsburgh, Pittsburgh, PA
2002	Graduate Research Assistant	Mater. Sci. & Eng., Univ. of Washington, Seattle, WA
2001	Graduate Research Assistant	Chemistry, Univ. of Missouri-Rolla, Rolla, MO
1998 – 2000	Graduate Research Assistant	Chemistry, ECUST, Shanghai, China

**2. Honors and Awards**

2020	CAES Fellow	Center for Advanced Energy Studies
2020	Outstanding Community Partner Award	Girl Scouts of Silver Sage Council
2017 – 2019	Scialog Fellow	Research Corporation for Science Advancement
2018	Scialog: Advanced Energy Storage Team Award	RCSA/Sloan Foundation
2017	Journal of Materials Chemistry A Emerging Investigators	JMCA
2015	CAREER award	National Science Foundation
2013	Young Faculty Travel Award	Battery Division, the Electrochemical Society
2005 – 2007	Andrew Mellon Predoctoral Fellowship	University of Pittsburgh
2005	Graduate Student Travel Award	Society for Electroanalytical Chemistry (SEAC)

**3. Research and Scholarly Activities****3.1. Peer-Reviewed Publications (*H-index* 23, >3310 citations, \*corresponding author, graduate student, undergraduate student†, RET‡, high school student¶)**

From Boise State University (after tenure):

1. X. Zhou, L. Stan, D. Hou, Y. Jin, H. Xiong, L. Zhu, and Y. Liu, “Operando study of mechanical integrity of high-volume expansion Li-ion battery anode materials coated by Al<sub>2</sub>O<sub>3</sub>”, *Nanotechnology* 34 (2023), 235705.
2. C. Ma\*, J. Jiang, Y. Fan, X. Li, Z.-F. Ma, H. Ben, and H. Xiong\* “Elucidating the Synergic Effect in Nanoscale MoS<sub>2</sub>/TiO<sub>2</sub> Heterointerface for Na-ion Storage”, *Advanced Science*, (2022), 2204837. doi.org/10.1002/advs.202204837

3. C. Koroni, T. Olsen, J. Wharry\* & H. Xiong\*, “Irradiation-Induced Amorphous-to-Crystalline Phase Transformations in Ceramic Materials” (Invited Perspective), *Materials*, 15 (2022), 5924.
4. C. Wang, A.C. Thenuwara, J. Luo, P.P. Shetty, M.T. McDowell, H. Zhu, S. Posada-Pérez, H. Xiong\*, G. Hautier\* & W. Li\* “Extending the low-temperature operation of sodium metal batteries combining linear and cyclic ether-based electrolyte solutions”, *Nature Communications*, 13 (2022), 4934.
5. P. Barnes, Y. Zuo, K. Dixon, † D. Hou, S. Lee, Z. Ma, J. G. Connell, H. Zhou, C. Deng, K. A. Smith, E. Gabriel, O. O. Maryon, † P. H. Davis, H. Zhu, Y. Du, J. Qi, Z. Zhu, C. Chen, Z. Zhu, Y. Zhou, A. E. Weltner, † D. Schwartz, P. J. Simmonds, S. P. Ong,\* and H. Xiong\* “Electrochemically-Induced Amorphous to Rock Salt Phase Transformation in Niobium Oxide Electrodes for Li-Ion Batteries”, *Nature Materials*, 21 (2022), 795–803.
6. E. Gabriel, D. Hou, E. Lee & H. Xiong\* “Multiphase Layered Transition Metal Oxide Positive Electrodes for Sodium Ion Batteries” (Invited Review), *Energy Science & Engineering*, 10 (2022), 1672–1705.
7. D. Hou, E. Gabriel, K. Graff, T. Li, Y. Ren, Z. Wang, † Y. Liu & H. Xiong\* “Thermal Dynamics of P2- $\text{Na}_{0.67}\text{Ni}_{0.33}\text{Mn}_{0.67}\text{O}_2$  Cathode Materials for Sodium Ion Batteries Studied by In Situ Analysis”, *Journal of Materials Research*, 37 (2022), 1156–1163.
8. C. Yang, T. Olsen, L. M. Lau, K. A. Smith, K. Hattar, A. Sen, Y. Wu, D. Hou, B. Narayanan, M. Long, J. Wharry\* & H. Xiong\* “In Situ Ion Irradiation of Amorphous  $\text{TiO}_2$  Nanotubes”, *Journal of Materials Research*, 37 (2022), 1144–1155.
9. K. Liu, Y. Xie, Z. Yang, H.K. Kim, T.L. Dzwiniel, J. Yang, H. Xiong, C. Liao “Design of a Single-Ion Conducting Polymer Electrolyte for Sodium-Ion Batteries”, *Journal of the Electrochemical Society*, 168 (2021), 160543.
10. D. Hou, D. Xia, E. Gabriel, J. Russell, K. Graff, Y. Ren, C.-J. Sun, F. Lin,\* , Y. Liu,\* and H. Xiong\* “Spatial and Temporal Analysis of Sodium Ion Batteries” (Invited Review, Cover), *ACS Energy Letter*, 6 (2021), 4023–4054.
11. H. Zhu, J. Russell, Z. Fang, P. Barnes, L. Li, C. Efav, A. Muenzer, † J. May, K. Hamal, I. F. Cheng, P. Davis, E. Dufek, and H. Xiong\* “A Comparison of Solid Electrolyte Interphase Formation and Evolution on Highly Oriented Pyrolytic and Disordered Graphite Negative Electrodes in Lithium-ion Batteries”, *Small*, (2021), 2105292.
12. Y. Xie, E. Gabriel, L. Fan, I. Hwang, X. Li, H. Zhu, Y. Ren, C. Sun, J. Pipkin, † M. Dustin, † M. Li, Z. Chen\*, E. Lee\* & H. Xiong\* “Role of Lithium Doping in P2- $\text{Na}_{0.67}\text{Ni}_{0.33}\text{Mn}_{0.67}\text{O}_2$  for Sodium-Ion Batteries.” *Chemistry of Materials*, 33 (2021), 4445–4455.
13. C. R. Ma, Y. Hou, K. Jiang, L. Zhao, T. Olsen, Y. Fan, J. Jiang, Z. Xu, Z.-F. Ma, D. Legut, H. Xiong, X.-Z. Yuan “In situ cross-linking construction of 3D mesoporous bimetallic phosphide-in-carbon superstructure with atomic interface toward enhanced sodium ion storage performance”, *Chemical Engineering Journal*, 413 (2021), 127449.
14. C. J. Deng, E. Gabriel, P. Skinner, † S. Lee, P. Barnes, C. R. Ma, J. Gim, M. L. Lau, † E. Lee, and H. Xiong\* “Origins of Irreversibility in Layered  $\text{NaNi}_x\text{Fe}_y\text{Mn}_z\text{O}_2$  Cathode Materials for Sodium Ion Batteries”, *ACS Applied Materials & Interfaces*, 12 (2020), 51397–51408.
15. C. R. Ma, Z. Xu, J. Jiang, Z.-F. Ma, T. Olsen, H. Xiong\*, S. Wang\* and X.-Z. Yuan\* “Tailored nanoscale interface in a hierarchical carbon nanotube supported  $\text{MoS}_2@ \text{MoO}_2\text{-C}$  electrode toward high performance sodium ion storage”, *Journal of Materials Chemistry A*, 8 (2020) 11011–11018.

16. C. J. Deng, M. L. Lau, † C. R. Ma, P. Skinner, † Y. Z. Liu, W. Xu, H. Zhou, X. Zhang, D. Wu, Y.D. Yin, Y. Ren, J. Perez, † D. Jaramillo, ‡ P. Barnes, D. Hou, M. Dahl, B. Williford, † M. Dahl, C. Zheng and H. Xiong\* "A mechanistic study of mesoporous TiO<sub>2</sub> nanoparticle negative electrode materials with varying crystallinity for lithium ion batteries", *Journal of Materials Chemistry A*, 8 (2020) 3333-3343.
17. T. Pandhi, C. Cornwell, K. Fujimoto, P. Barnes, J. Cox, H. Xiong, P.H. Davis, H. Subbaraman, J.E. Koehne, D. Estrada "Fully inkjet-printed multilayered graphene-based flexible electrodes for repeatable electrochemical response", *RSC Advances*, 10(2020), 38205-38219.
18. C. M. Efaw, J. L. Vandegrift, M. Reynolds, B. J. Jaques, H. Hu, H. Xiong, and M. F. Hurley "Characterization of zirconium oxides part II: New insights on the growth of zirconia revealed through complementary high-resolution mapping techniques", *Corrosion Science*, 167, (2020), 108491.
19. C. R. Ma, H. Yang, Z. Xu, Z. Fu, Y. Xie, H. Zhang, M. Hong, Z.-F. Ma, H. Xiong\* and X.-Z. Yuan\* "Insights into High Capacity and Ultrastable Carbonaceous Anodes for Potassium-Ion Storage via Hierarchical Heterostructure", *Journal of Materials Chemistry A*, 8 (2020) 2836-2842.
20. P. Barnes, K. Smith, R. Parrish, † C. Jones, † P. Skinner, † E. Storch, ‖ Q. White, ‖ C. J. Deng, D. Karsann, † M. L. Lau, † J. J. Dumais, E. Dufek, and H. Xiong\* "A non-aqueous sodium hexafluorophosphate-based electrolyte degradation study: formation and mitigation of hydrofluoric acid", *Journal of Power Sources*, 447 (2020), 227363.
21. C. M. Efaw, J. L. Vandegrift, M. Reynolds, S. McMurdie, † B. J. Jaques, H. Hu, H. Xiong, and M. F. Hurley "Characterization of zirconium oxides part I: Raman mapping and spectral feature analysis", *Nuclear Materials and Energy*, 21, (2019), 100707.
22. C. J. Deng, C. R. Ma, M. L. Lau, † P. Skinner, † Y. Z. Liu, W. Xu, H. Zhou, Y. Ren, Y. D. Yin, B. Williford, † M. Dahl, and H. Xiong\* "Amorphous and crystalline TiO<sub>2</sub> nanoparticle negative electrodes for sodium-ion batteries", *Electrochimica Acta*, 321 (2019) 134723.
23. K. A. Smith, A. I. Savva, K. Y. S. Mao, Y. Q. Wang, D. A. Tenne, D. Chen, Y. Z. Liu, P. Barnes, C. J. Deng, D. P. Butt, J. P. Wharry, and H. Xiong\* "Effect of proton irradiation on anatase TiO<sub>2</sub> nanotube anodes for lithium-ion batteries", *Journal of Materials Science*, 54 (2019) 13221-13235.
24. C. R. Ma, X. Li, C. J. Deng, Y. Y. Hu, S. Lee, X. Z. Liao, Y. S. He, Z. F. Ma, and H. Xiong\* "Coaxial Carbon Nanotube Supported TiO<sub>2</sub>@MoO<sub>2</sub>@Carbon Core-Shell Anode for Ultrafast and High-Capacity Sodium Ion Storage", *ACS Nano*, 13 (2019) 671-680.
25. K. A. Smith, A. I. Savva, Y. Q. Wu, D. A. Tenne, D. P. Butt, H. Xiong\*, and J. P. Wharry "Effects of intermediate energy heavy-ion irradiation on the microstructure of rutile TiO<sub>2</sub> single crystal", *Journal of the American Ceramic Society*, 101 (2018) 4357-4366.
26. I. Savva, K. A. Smith, M. Lawson, S. R. Croft, † A. E. Weltner, † C. D. Jones, † H. Bull, † P. J. Simmonds, L. Li, and H. Xiong\* "Defect generation in TiO<sub>2</sub> nanotube anodes via heat treatment in various atmospheres for lithium-ion batteries", *Physical Chemistry Chemical Physics*, 20 (2018) 22537-22546.
27. R. Ma, Z. G. Fu, C. J. Deng, X. Z. Liao, Y. S. He, Z. F. Ma, and H. Xiong\* "Carbon-coated FeP nanoparticles anchored on carbon nanotube networks as an anode for long-life sodium-ion storage", *Chemical Communications*, 54 (2018) 11348-11351.
28. R. Ma, C. J. Deng, X. Z. Liao, Y. S. He, Z. F. Ma, and H. Xiong\* "Nitrogen and Phosphorus Codoped Porous Carbon Framework as Anode Material for High Rate Lithium-Ion Batteries", *ACS Applied Materials & Interfaces*, 10 (2018) 36969-36975.

29. R. Ma, C. J. Deng, X. Z. Liao, Y. S. He, Z. F. Ma, and H. Xiong\* "Urchin-like MoP Nanocrystals Embedded in N-Doped Carbon as High Rate Lithium Ion Battery Anode", *ACS Applied Energy Materials*, 1 (2018) 7140-7145.
30. C. J. Deng, P. Skinner, † Y. Z. Liu, M. L. Sun, W. Tong, C. R. Ma, M. L. Lau, † R. Hunt, † P. Barnes, J. Xu, and H. Xiong\* "Li-Substituted Layered Spinel Cathode Material for Sodium Ion Batteries", *Chemistry of Materials*, 30 (2018) 8145-8154.
31. P. Barnes, A. Savva, K. Dixon, † H. Bull, † L. Rill, † D. Karsann, † S. Croft, † J. Schimpf, † and H. Xiong\* "Electropolishing valve metals with a sulfuric acid-methanol electrolyte at low temperature", *Surface & Coatings Technology*, 347 (2018) 150-156.

#### From Boise State University (before tenure):

32. K. A. Smith, A. I. Savva, C. J. Deng, J. P. Wharry, S. Hwang, D. Su, Y. Q. Wang, J. Gong, T. Xu, D. P. Butt, and H. Xiong\* "Effects of proton irradiation on structural and electrochemical charge storage properties of TiO<sub>2</sub> nanotube electrodes for lithium-ion batteries", *Journal of Materials Chemistry A*, 5 (2017) 11815-11824.
33. C. J. Deng, M. L. Lau, † H. M. Barkholtz, H. P. Xu, R. Parrish, † M. Xu, T. Xu, Y. Z. Liu, H. Wang, J. G. Connell, K. A. Smith, and H. Xiong\* "Amorphous boron nanorod as an anode material for lithium-ion batteries at room temperature", *Nanoscale*, 9 (2017) 10757-10763.
34. K. Smith, R. Parrish, † W. Wei, Y. Z. Liu, T. Li, Y. H. Hu, and H. Xiong\* "Disordered 3D Multi-layer Graphene Anode Material from CO<sub>2</sub> for Sodium-Ion Batteries", *ChemSuschem*, 9 (2016) 1397-1402.
35. M. Shakourian-Fard, G. Kamath, K. Smith, H. Xiong, and S. K. R. S. Sankaranarayanan "Trends in Na-Ion Solvation with Alkyl-Carbonate Electrolytes for Sodium-Ion Batteries: Insights from First-Principles Calculations", *Journal of Physical Chemistry C*, 119 (2015) 22747-22759.
36. J. Zhang, C. Rowland, Y. Z. Liu, H. Xiong, S. Kwon, E. Sheychenko, R. D. Schaller, V. B. Prakapenka, S. Tkachev, and T. Rajh "Evolution of Self-Assembled ZnTe Magic-Sized Nanoclusters", *Journal of the American Chemical Society*, 137 (2015) 742-749.
37. G. Kamath, R. W. Cutler, S. A. Deshmukh, M. Shakourian-Fard, R. Parrish, † J. Huether, D. P. Butt, H. Xiong,\* and S. K. R. S. Sankaranarayanan\* "In Silico Based Rank-Order Determination and Experiments on Nonaqueous Electrolytes for Sodium Ion Battery Applications", *Journal of Physical Chemistry C*, 118 (2014) 13406-13416.
38. H. Xiong, H. Yildirim, P. Podsiadlo, J. Zhang, V. B. Prakapenka, J. P. Greeley, E. V. Shevchenko, K. K. Zhuravlev, S. Tkachev, S. K. R. S. Sankaranarayanan, and T. Rajh "Compositional Tuning of Structural Stability of Lithiated Cubic Titania via a Vacancy-Filling Mechanism under High Pressure", *Physical Review Letters*, 110 (2013) 078304-078308.

#### Prior to Boise State University:

39. H. Xiong, H. Yildirim, E. V. Shevchenko, V. B. Prakapenka, B. Koo, M. D. Slater, M. Balasubramanian, S. K. R. S. Sankaranarayanan, J. P. Greeley, S. Tepavcevic, N. M. Dimitrijevic, P. Podsiadlo, C. S. Johnson, and T. Rajh "Self-Improving Anode for Lithium-Ion Batteries Based on Amorphous to Cubic Phase Transition in TiO<sub>2</sub> Nanotubes", *Journal of Physical Chemistry C*, 116 (2012) 3181-3187.

40. M. Urgan-Demirtas, P. L. Benda, P. S. Gillenwater, M. C. Negri, H. Xiong, and S. W. Snyder "Achieving very low mercury levels in refinery wastewater by membrane filtration", *Journal of Hazardous Materials*, 215 (2012) 98-107.
41. S. Tepavcevic, H. Xiong, V. R. Stamenkovic, X. B. Zuo, M. Balasubramanian, V. B. Prakapenka, C. S. Johnson, and T. Rajh "Nanostructured Bilayered Vanadium Oxide Electrodes for Rechargeable Sodium-Ion Batteries", *Acs Nano*, 6 (2012) 530-538.
42. B. Koo, H. Xiong, M. D. Slater, V. B. Prakapenka, M. Baasubramanian, P. Podsiadlo, C. S. Johnson, T. Rajh, and E. V. Shevchenko "Hollow Iron Oxide Nanoparticles for Application in Lithium Ion Batteries", *Nano Letters*, 12 (2012) 2429-2435.
43. J. T. Bahns, S. K. R. S. Sankaranarayanan, N. C. Giebink, H. Xiong, and S. K. Gray "Optically Directed Mesoscale Assembly and Patterning of Electrically Conductive Organic-Inorganic Hybrid Structures", *Advanced Materials*, 24 (2012) Op242-Op246.
44. H. Xiong, M. D. Slater, M. Balasubramanian, C. S. Johnson, and T. Rajh "Amorphous TiO<sub>2</sub> Nanotube Anode for Rechargeable Sodium Ion Batteries", *Journal of Physical Chemistry Letters*, 2 (2011) 2560-2565.
45. J. Kim, H. Xiong, M. Hofmann, J. Kong, and S. Amemiya "Scanning Electrochemical Microscopy of Individual Single-Walled Carbon Nanotubes", *Analytical Chemistry*, 82 (2010) 1605-1607.
46. H. Xiong, J. Kim, E. Kim, and S. Amemiya "Scanning electrochemical microscopy of one-dimensional nanostructure: Effects of nanostructure dimensions on the tip feedback current under unbiased conditions", *Journal of Electroanalytical Chemistry*, 629 (2009) 78-86.
47. H. Xiong, B. K. Lai, A. C. Johnson, and S. Ramanathan "Low-temperature electrochemical characterization of dense ultra-thin lanthanum strontium cobalt ferrite (La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3</sub>) cathodes synthesized by RF-sputtering on nanoporous alumina-supported Y-doped zirconia membranes", *Journal of Power Sources*, 193 (2009) 589-592.
48. B. K. Lai, H. Xiong, M. Tsuchiya, A. C. Johnson, and S. Ramanathan "Microstructure and Microfabrication Considerations for Self-Supported On-Chip Ultra-Thin Micro-Solid Oxide Fuel Cell Membranes", *Fuel Cells*, 9 (2009) 699-710.
49. B. K. Lai, A. C. Johnson, H. Xiong, and S. Ramanathan "Ultra-thin nanocrystalline lanthanum strontium cobalt ferrite (La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3</sub>-delta) films synthesis by RF-sputtering and temperature-dependent conductivity studies", *Journal of Power Sources*, 186 (2009) 115-122.
50. C. Johnson, B. K. Lai, H. Xiong, and S. Ramanathan "An experimental investigation into micro-fabricated solid oxide fuel cells with ultra-thin La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3</sub> cathodes and yttria-doped zirconia electrolyte films", *Journal of Power Sources*, 186 (2009) 252-260.
51. E. Kim, H. Xiong, C. C. Striemer, D. Z. Fang, P. M. Fauchet, J. L. McGrath, and S. Amemiya "A structure-permeability relationship of ultrathin nanoporous silicon membrane: A comparison with the nuclear envelope", *Journal of the American Chemical Society*, 130 (2008) 4230-4231.
52. H. Xiong, J. D. Guo, and S. Amemiya "Probing heterogeneous electron transfer at an unbiased conductor by scanning electrochemical microscopy in the feedback mode", *Analytical Chemistry*, 79 (2007) 2735-2744.
53. H. Xiong, D. A. Gross, J. D. Guo, and S. Amemiya "Local feedback mode of scanning electrochemical microscopy for electrochemical characterization of one-dimensional nanostructure: Theory and experiment with nanoband electrode as model substrate", *Analytical Chemistry*, 78 (2006) 1946-1957.

54. S. Amemiya, J. D. Guo, H. Xiong, and D. A. Gross "Biological applications of scanning electrochemical microscopy: chemical imaging of single living cells and beyond", *Analytical and Bioanalytical Chemistry*, 386 (2006) 458-471.
55. G. Q. Zhong, H. Xiong, and Y. Q. Jia "Synthesis, crystal structure, relative content of the Mn<sup>4+</sup> ion, tolerance factor and catalytic property of La<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub> (x=0.0-1.0)", *Materials Chemistry and Physics*, 91 (2005) 10-16.
56. H. Xiong, J. D. Guo, K. Kurihara, and S. Amemiya "Fabrication and characterization of conical microelectrode probes templated by selectively etched optical fibers for scanning electrochemical microscopy", *Electrochemistry Communications*, 6 (2004) 615-620.
57. Y. Lu, H. Xiong, X. Jiang, Y. Xia, M. Prentiss and G.M. Whitesides "Asymmetric Dimers Can Be Formed by Dewetting Half-Shells of Gold Deposited on the Surfaces of Spherical Oxide Colloids", *Journal of the American Chemical Society*, 125 (2003) 12724-12725.
58. Y. W. Song, Y. Ma, H. Xiong, Y. Q. Jia, M. L. Liu, and M. Z. Jin "Synthesis, crystal structure, Mossbauer spectra and dielectric property of La<sub>1-x</sub>Sr<sub>x</sub>Fe<sub>1-x</sub>Ti<sub>x</sub>O<sub>3</sub> (x=0, 0.1, 0.3, 0.5, 0.7, 1)", *Materials Chemistry and Physics*, 78 (2003) 660-665.
59. X. L. Li, Y. W. Song, H. Xiong, Y. Q. Jia, N. Matsushita, and Y. Xuan "Synthesis, crystal structure and magnetic property of Sm(2-x)Co(x)Ti(2-x)Nb(x)O<sub>7</sub> (x=0, 0.2, 0.4)", *Materials Chemistry and Physics*, 77 (2003) 625-631.
60. G. J. Zhang, Y. W. Song, H. Xiong, J. Y. Zheng, and Y. Q. Jia "Synthesis and crystal structure of La<sub>0.9</sub>Ca<sub>0.1</sub>Cr<sub>1-x</sub>Ni<sub>x</sub>O<sub>3</sub> (x=0.0-1.0) and electric conductivity of La<sub>0.9</sub>Ca<sub>0.1</sub>Cr<sub>0.5</sub>Ni<sub>0.5</sub>O<sub>3</sub>", *Materials Chemistry and Physics*, 73 (2002) 101-105.
61. X. L. Li, Y. Ma, H. Xiong, Y. Q. Jia, X. H. Zhao, S. K. Ruan, and J. Du "Synthesis and magnetic properties of new pyrochlore compounds Sm<sub>1.6</sub>M<sub>0.4</sub>Ti<sub>1.6</sub>Nb<sub>0.4</sub>O<sub>7</sub> (M = Cu, Ni)", *Physica Status Solidi a-Applied Research*, 194 (2002) 331-337.
62. G. J. Zhang, H. Xiong, J. Y. Zheng, Y. Q. Jia, Y. Xuan, and N. Mizutani "Relative content of the Cr<sup>4+</sup> ion and electrical conductivity of La<sub>0.75</sub>Ca<sub>0.25</sub>Cr<sub>0.75</sub>Fe<sub>0.25</sub>O<sub>3</sub>", *Materials Chemistry and Physics*, 71 (2001) 84-89.
63. H. Xiong, G. J. Zhang, J. Y. Zheng, and Y. Q. Jia "Synthesis, crystal structure and electric conductivity of La<sub>0.9</sub>Ca<sub>0.1</sub>Cr<sub>0.5</sub>B<sub>0.5</sub>O<sub>3</sub> (B = Mn, Fe, Ni)", *Materials Letters*, 51 (2001) 61-67.
64. X. H. Zhao, S. K. Ruan, J. Du, M. L. Liu, M. Z. Jin, X. L. Li, H. Xiong, Y. W. Song, and Y. Q. Jia "Synthesis, crystal structure, Mossbauer spectrum, and magnetic susceptibility of new pyrochlore compound CaNdFe<sub>1/2</sub>Nb<sub>3/2</sub>O<sub>7</sub>", *Journal of Solid State Chemistry*, 154 (2000) 483-487.
65. G. J. Zhang, J. G. Yang, H. Xiong, Y. Q. Jia, M. L. Liu, and M. Z. Jin "Mossbauer spectra of Fe-57 in La<sub>0.75</sub>M<sub>0.25</sub>Cr<sub>0.75</sub>Fe<sub>0.25</sub>O<sub>3</sub> (M = Ca, Sr, Ba)", *Physica Status Solidi B-Basic Research*, 221 (2000) 751-757.

### 3.2. Invited Talks

#### From Boise State University (after tenure):

1. 243rd ECS Meeting, Boston, MA, May 2023
2. CNM/APS User Meeting, Lemont, IL, May 2023
3. In-situ/operando techniques applied to materials in energy storage, Pittcon 2023, Philadelphia, PA, March 2023
4. Department of Chemistry, University of Oregon, January 2023
5. EMA2023, S4 Complex Oxide Thin Films and Heterostructures - From Synthesis to Strain/Interface-engineered Emergent Properties, Orlando, FL, January 2023
6. SF05: Harnessing Functional Defects for Energy and Electronic Frontiers, 2022 MRS Fall Meeting, November 2022

7. "Emerging Materials and Processes for Electrochemical Energy Storage", 2022 ACS Western Regional Meeting, Las Vegas, NV, October 20-22, 2022
8. "Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments III" symposium, The Materials Science & Technology (MS&T) 2022, October 2022
9. "Synthesis, Characterization, Modeling and Applications of Functional Porous Materials" symposium, The Materials Science & Technology (MS&T) 2022, October 2022
10. ACS Fall 2022, Chicago, IL, August 2022
11. 27<sup>th</sup> AACGE Western Section Conference on Crystal Growth & Epitaxy, June 2022
12. Department of Chemistry (virtual), Aarhus University, Denmark, June 2022
13. 2022 APS/CNM User Meeting (virtual), May 2022
14. Materials-2022 (virtual), April 2022
15. ACS Spring 2022, March 20-24, 2022
16. School of Molecular Sciences Seminar, Arizona State University, January 2022
17. Department of Chemistry Seminar (virtual), Zhengzhou University, December 2021
18. 240<sup>th</sup> ECS Meeting (virtual), October 2021
19. The Center for Integrated Nanotechnologies (CINT) annual user meeting, October 2021
20. Department of Chemical Engineering seminar (virtual), University of Utah, September 2021
21. MS&T2020 (virtual), October 2020
22. PRiME 2020 (virtual), the Electrochemical Society, October 2020
23. CAES Codebreaker Seminar, August 2020
24. NIST, Gaithersburg, MD, February 2020
25. Department of Materials Science and Engineering, University of Utah, February 2020
26. Department of Chemistry, Florida State University, Tallahassee, January 2020
27. Electronic Materials and Applications 2020, Orlando, January 2020
28. International Conference on Sodium Batteries, Naperville, November 2019
29. Department of Materials Science and Engineering, University of Washington, Seattle, October 2019
30. Materials Science & Technology conference, Portland, October 2019
31. ICMAT2019, Singapore, June 2019
32. Annual CNM/APS User Meeting, Argonne National Laboratory, May 2019
33. Department of Materials Science and Engineering, Wichita State University, April 2019
34. ICEES, Shaoxing, China, March 2019
35. TMS 2019, San Antonio, March 2019
36. MS&T18 Meeting, Columbus, October 2018
37. AiMES meeting, Cancun, Mexico, October 2018
38. ACS Presidential Symposium, the 256<sup>th</sup> ACS National Meeting, Boston, August 2018

**From Boise State University (before tenure):**

39. Department of Materials Science and Engineering, University of Florida, March 2018
40. IUPAC NMS-XIII Conference, Nanjing, China, October 2017
41. Department of Chemistry Seminar, University of Pittsburgh, October 2017
42. CAES Materials Initiative Working Meeting, Boise, August 2017
43. Seminar at the College of Energy, Nanjing Tech University, Nanjing, China, July 2017
44. Department of Chemical Engineering Seminar, Shanghai Jiaotong University, Shanghai, China, June 2017
45. Seminar at State Key Laboratory of Metal Matrix Composites, Shanghai Jiaotong University, June 2017
46. Seminar at the College of Environmental and Energy Engineering, Beijing University of Technology, Beijing, China, June 2017
47. Seminar at the School of Material Science and Technology, China University of Geosciences (Beijing), Beijing, China, June 2017
48. Chemistry Department Seminar, University of California-Riverside, Riverside, March 2017
49. TMS 2017 annual meeting, San Diego, March 2017
50. XXV International Materials Research Congress, Cancun, Mexico, August 2016
51. Chemistry Department Seminar, Zhejiang University, Hangzhou, China, June 2016
52. ACS 251<sup>st</sup> Meeting, San Diego, March 2016

53. Aerospace Day, Boise State University, Boise, February 2016
54. Chemistry Department Seminar, Drexel University, Philadelphia, January 2015
55. Chemical Engineering Department Seminar, University of New Hampshire, October 2015
56. 2nd International Sodium Battery Conference, Phoenix, October 2015
57. Energy Processes & Materials Division Seminar, PNNL, Richland, September 2015
58. Chemistry Department Seminar, University of North Carolina-Charlotte, Charlotte, September 2015
59. 2015 TMS Annual Meeting, Orlando, March 2015
60. 2015 Idaho Academy of Science Annual Conference, Boise, March 2015
61. Chemistry Department Seminar, Boise State University, Boise, February 2015
62. Physics Department Seminar, University of Idaho, Moscow, January 2015
63. Chemistry Department Seminar, Ohio State University, Columbus, October 2014
64. Photovoltaic and Electrochemical Systems Branch seminar, NASA Glenn Research Center, Cleveland, October 2014
65. CAES 2014 Energy Storage and Ion Conducting Materials and Modeling Workshop, Boise, September 2014
66. PNWAVS, Richland, September 2014
67. Chemistry Department Seminar, Nanjing University, Nanjing, China, June 2014
68. DOE Triennial Review Meeting, Argonne National Laboratory, Lemont, August 2013
69. ACS 245th Meeting, New Orleans, April 2013
70. Chemistry Department Seminar, Sichuan University, Chengdu, China, December 2012
71. Chemistry Department Seminar, Northern Illinois University, DeKalb, February 2012

### 3.3. Book Chapters

H. Xiong “*Introduction to the Battery Section*” in **Encyclopedia of Energy Storage**, Elsevier, April 2022

J. P. Wharry, H. Xiong, T. Olsen, C. Yang “*Radiation Effects in Battery Materials*” in **Encyclopedia of Energy Storage**, Elsevier, Elsevier, April 2022

H. Xiong\*; E. Dufek, K. Gering. “*Batteries – Materials for Lithium-ion Batteries*” in **Comprehensive Energy Systems**, Elsevier, 2018

B.K. Lai, A. C. Johnson, H. Xiong, C. Ko, S. Ramanathan. “*Exploratory studies on silicon- based oxide fuel cell power sources incorporating ultra-thin nanostructured platinum and cerium oxide films as anode components*”, **Future Trends in Microelectronics: Unmapped Roads**, Wiley-IEEE Press, (Ed. A Zaslavsky, J. Xu and S. Luryi) 2009

### 3.4. Patents and Invention Disclosures

H. Xiong, P. Barnes, S. P. Ong, Y. Zuo “Synthesis of novel functional metal oxide electrode materials through electrochemical cycling”, Patent Application, 19975.113US01, May 2022

H. Xiong, C. J. Deng, J. Xu. “Li-substituted Layered Spinel Cathode Materials for Sodium Ion Batteries”, US Patent 11,165,064 (Awarded November 2021)

C. J. Johnson, H. Xiong, T. Rajh, E. Schevchenko, S. Tepavcevic. “High Capacity Electrode Materials for Batteries and Process for Their Manufacture” US patent 9,935,314 (Awarded April 2018)

### 3.5. Other Publications and Presentations

#### 3.5.1. Submitted Peer Reviewed Publications and Peer-Reviewed Conference Proceedings

#### 3.5.2. Conference Oral and Poster Presentations

Over 80 conference presentations



### 3.6. Continuing Professional Development

Description	Date	Hours
ASSERT Fellow	2022	60
2018 NSF Career Development Workshop in Ceramics	October 13, 2018	12
2017 NSF Career Development Workshop in Ceramics	May 20-21, 2017	15
NSF Career Development Workshop	September 3-5, 2014	16
CAES Career Workshop	August 7, 2014	3
NSF Grant Conference	June 22-24, 2014	16
Elevate Your Writing	October 25, 2013	2
Techniques for Writing Successful Proposals - Proposal Development	May 21, 2013	1
Research Networking Event	April 19, 2013	1

### 3.7. Graduate and Postdoctoral Advisors

Prof. Shigeru Amemiya (Ph.D. advisor, University of Pittsburgh)

Prof. Shriram Ramanathan (Postdoctoral advisor, Harvard University, currently at Purdue University)

Dr. Tijana Rajh (Postdoctoral advisor, Argonne National Laboratory, currently at Arizona State University)

Dr. Yupo Lin (Postdoctoral advisor, Argonne National Laboratory)

### 3.8. Collaborators (External)

Name:	Organizational Affiliation
Butt, Darryl	University of Utah
Chan, Candace	Arizona State University
Chen, Zonghai	Argonne National Lab
Co, Anne	Ohio State University
Connell, Justin	Argonne National Lab
Du, Yingge	Pacific Northwest National Lab
Dufek, Eric	Idaho National Lab
Gering, Kevin	Idaho National Lab
Hattar, Khalid	Sandia National Lab
He, Lingfeng	Idaho National Lab
Hu, Hongqiang	Idaho National Lab
Hu, Yan-Yan	Florida State University
Hu, YunHang	Michigan Technological University
Jiang, Junhua	Idaho National Lab
Lee, Eungie	Argonne National Lab
Lee, Sungsik	Argonne National Lab
Li, Weiyang	Dartmouth College
Lin, Feng	Virginia Tech
Liu, Yuzi	Argonne National Lab
Narayanan, Badri	University of Louisville
Ong, Shyue Ping	UCSD
Sankaranarayanan, Subramanian	Argonne National Lab
Tong, Wei	Lawrence Berkeley national laboratory

Wharry, Janelle	Purdue University
Wang, Yongqiang	Los Alamos National Lab
Wu, Di	Washington State University
Wu, Yaqiao	Center for Advanced Energy Studies
Xu, Wenqian	Argonne National Lab
Xu, Jing	Quantumscape
Yin, Yadong	University of California -Riverside
Zhou, Hua	Argonne National Lab
Zhu, Zihua	Pacific Northwest National Lab

### 3.9. Collaborators (Internal)

Name:	Organizational Affiliation
Paul Davis	MSE
Elton Graugnard	MSE
Mike Hurley	MSE
Brian Jaques	MSE
Lan Li	MSE
Min Long	CSE
Paul Simmonds	Physics/MSE
Dmitri Tenne	Physics
Sasha Wang	Mathematics
Yaqiao Wu	MSE

### 3.10. Mentoring

#### 3.10.1. Postdoctoral Students, Research Staff, and Visiting Scholars Supervised

Yifan Dong	Postdoc, 2023 - present
Dewen Hou	Postdoc, 2019 - present
Haoyu Zhou	Postdoc, 2018 – 2021
Yingying Xie	Postdoc, 2019 – 2020
Qianyu Zhang	Visiting Professor (Dongguang University of Technology), 2019
Wenpo Li	Visiting Professor (Chongqing University), 2018 summer
Chunrong Ma	Visiting Graduate Student (Shanghai Jiaotong University), 2017
Michael Dahl	Visiting Graduate Student (University of California-Riverside), 2015

#### 3.10.2. Doctoral Students Advised

Cyrus Koroni	Pursuing Ph.D. in MSE, current since 2021
Kincaid Graff	Pursuing Ph.D. in MSE, current since 2021
Joshua Russel	Pursuing Ph.D. in MSE, current since 2020
Tristan Olsen	Pursuing Ph.D. in MSE, current since 2019
Eric Gabriel	Pursuing Ph.D. in MSE, current since 2018
Pete Barnes	Ph.D. in MSE, awarded February 2021
Changjian Deng	Ph.D. in MSE awarded December 2018
Kassiopeia Smith	Ph.D. in MSE awarded June 2018
Matthew Swenson	Ph.D. in MSE awarded May 2017 (co-advised: main advisor is Janelle Wharry)

#### 3.10.3. Masters Students Advised

Michael Reynolds	M.S. in MSE awarded July 2021 (co-advised: main advisor is Mike Hurley)
Andreas Savva	M.S. in MSE awarded May 2018
Kayla Yano	M.S. in MSE awarded May 2017 (co-advised: main advisor is Janelle Wharry)
Richard Cutler	M.S. in MSE awarded June 2015
Lance Patten	Pursuing Ph.D. in MSE, 2014 – 2015 (co-advised: main advisor is Janelle Wharry)

Joshua Huether M.Eng. in MSE awarded December 2013

### 3.10.4. Undergraduate Students Who Were Advised in a Research Capacity

Riley Schrock	Engineering plus major at Boise State, current since 2023
Rawan Bawazir	MSE major at Boise State, current since 2022
Katelyn Shadley (REU)	University of Idaho, summer 2022
Dylan Cox (REU)	Oregon State University, summer 2022
Kyle Reche (REU)	Northwest Nazarene University, summer 2022
Luke Landsberg	MSE major at Boise State, current since 2022
Sarah Pooley (LSAMP)	MSE major at Boise State, current since 2021
Allison Muenzer	MSE major at Boise State, current since 2021
Dylan Melander	MSE major at Boise State, current since 2021
Angel Corondo (LSAMP)	MSE major at Boise State, current since 2021
Stephanie McCallum (REU)	Washington State U., summer 2021
Dustin Nguyen (LSAMP, McNair, Veteran, Hispanic)	MSE major at Boise State, current since 2020
Kincaid Graff	B.S. in MSE at Boise State, 2020-2021
Max Cook	B.S. in MSE at Boise State, 2020-2021
Jorge Perez (CAMP, LSAMP, Hispanic)	Physics major at Boise State, 2019 - 2021
Julie Pipkin	MSE major at Boise State, 2019 - 2021
Kiev Dixon	B.S. in MSE at Boise State, 2017-2021
Chris Jones	B.S. in MSE at Boise State, 2017-2019
Paige Skinner	B.S. in MSE at Boise State, 2017-2019
Malia Dustin (REU)	Dixie University, Summer 2019
Laura Rill	B.S. in MSE at Boise State, 2017-2018
Andy Lau	B.S. in MBE at Boise State, 2015-2018
Sterling Croft	B.S. in MSE at Boise State, 2017-2018
Sam Frisone (REU)	North Carolina State University, Summer 2018
Devin Krasowski (REU)	College of Idaho, Summer 2017
Riley Hunt	B.S. in MSE at Boise State, 2014-2017
Devan Karsann	C.S. in MSE at Boise State, 2015-2017
Bethany Williford	B.S. in MSE at Boise State, 2014-2016
John Lewis (REU)	Trinity University, Summer 2016
Aisley St Clair (REU)	Wellesley College, Summer 2016
Ricardo Torsi	B.S. in MSE at Boise State, 2016
Amaris Rodriguez (REU, Hispanic)	Francis U., Summer 2015
Andreas Savva (REU)	NJIT, Summer 2015
Riley Parrish	B.S. in MSE at Boise State, 2013 – 2015
Jayson Mok	B.S. in ECE at Boise State, 2013 – 2015
Michael Reinisch (REU)	U. Arkansas, Summer 2014
Aaron Forde	UW-Stout, Summer 2014
Cullen Hapner	B.S. in MSE at Boise State, 2014
Carl Barcroft	B.S. in ECE at Boise State, 2013

### 3.10.5. High Students Who Were Advised in a Research Capacity

Galib Grbic (SEED)	Renaissance High School, summer 2022
Will Wang	Boise High School, since summer 2021
Blayze Bernal (SEED)	Nampa High School, Summer 2019
Quinn White	Boise High School, Summer 2018
Eric Storch (SEED)	Rocky Mountain High School, Summer 2018
Bethany Williford	Idaho Virtual Academy, 2013-2014

### 3.10.6. High School Teachers Who Were Advised in a Research Capacity

Diana Jaramillo (RET, Hispanic)	Vallivue High School, Summer 2019
Hailey Bull (RET)	Vallivue High School, Summer 2017

## 3.10.7. Awards Received by Students

Tristan Olsen	2023-2024 Office of Science Graduate Student Research (SCGSR) award, DOE
Cyrus Koroni	2022-2023 Graduate Student Fellowship, ISGC, NASA
Eric Gabriel	2022-2023 Office of Science Graduate Student Research (SCGSR) award, DOE
Pete Barnes	2021-2022 Boise State University Distinguished Doctoral Scholarship Award; Graduate Student Research Award, MSMSE, 2021; Service Award, MSMSE, 2018
Allison Muenzer	Fall 2022 HERC Fellowship; Top Boise State Junior, Idaho Society of Professional Engineers, 2022
Kassiopeia Smith	Graduate Student of the Year, MSMSE, 2018; Second Place (Student Oral Presentation Award), Electronic Materials and Applications (EMA) meeting, 2018; Honorable Mention (Poster Award), PNWAVS, 2018; The Electrochemical Society travel grant, Battery Division, 2017; Honorable Mention (Poster Award), CINT/Sandia User Meeting, 2017.
Changjian Deng	Graduate Student Research Award, MSMSE, 2019
Paige Skinner	Undergraduate Student of the Year, MSMSE, 2019; Outstanding Junior Level Engineering Student Award from the Idaho Society of Professional Engineers, 2018; Tau Beta Pi Engineering Honor Society Scholarship, 2018
Riley Hunt	Top Ten Scholars Award, Boise State, 2017
Matthew Swenson	Distinguished Achievement Award, MSMSE, Boise State, 2017
Riley Parrish	First-place in undergraduate student poster competition at 2014 Idaho Academy of Science Annual Conference; First-place in undergraduate student poster competition at 2014 Symposium of the Pacific Northwest Chapter of the AVS in conjunction with PREMIER meeting

## 4. Teaching

## 4.1. Courses Taught

## 4.1.1. Courses Taught at Boise State

Course #	Title	Term	Credits	Enrollment
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2023	4	10
<b>MSE597</b>	Materials for Energy Sustainability	Fall 2022	3	6
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2022	4	21
<b>MSE308</b>	Thermodynamics of Materials	Fall 2021	3	28
<b>MSE601</b>	Graduate Student Orientation	Fall 2021	1	15
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2021	4	10
<b>MSE308</b>	Thermodynamics of Materials	Fall 2020	3	30
<b>MSE601</b>	Graduate Student Orientation	Fall 2020	1	11
<b>MSE308</b>	Thermodynamics of Materials	Fall 2019	3	36
<b>MSE246</b>	Materials for Society (implemented service learning project with Girl Scouts of Silver Sage)	Spring 2019	3	41
<b>MSE540</b>	Advanced Processing/Electrochemical Processing	Fall 2018	3	4
<b>MSE498/598</b>	Mater. Sci. & Eng. Seminar	Fall 2018	1	9
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2018	4	20
<b>MSE498/598</b>	Mater. Sci. & Eng. Seminar	Spring 2018	1	12
<b>MSE497/597</b>	Materials for Energy Sustainability (implemented service learning project with Girl Scouts of Silver Sage)	Fall 2017	3	5

<b>MSE498/598</b>	Mater. Sci. & Eng. Seminar	Fall 2017	1	13
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2017	4	12
<b>MSE540</b>	Advanced Processing/Electrochemical Processing	Fall 2016	3	7
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2016	4	13
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2015	4	9
<b>MSE497/597</b>	Materials for Energy Sustainability	Fall 2014	3	10
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2014	4	13
<b>MSE540</b>	Advanced Processing/Electrochemical Processing	Fall 2013	3	6
<b>MSE618</b>	Phase Transformations and Kinetics	Spring 2013	4	21

## 4.1.2. Other Teaching Experiences

<b>Semester</b>	<b>Course Name</b>	<b>Enrollment</b>	<b>Contribution</b>
<b>Fall 2013</b>	MSE 608: Solid State Thermodynamics	21	Presented one guest lecture on electrochemistry and pourbaix diagram
<b>Fall 2013</b>	ENGR 120 / 130	100	Presented an MSE overview lecture
<b>Fall 2012</b>	MSE 308: Thermodynamics of Materials	14	Presented one guest lecture on electrochemistry

## 4.2. Professional Development

<b>Date</b>	<b>Workshop Title</b>	<b># Hours</b>
<b>2020</b>	REMOTE: The Connected Faculty Summit (Arizona State University)	12
<b>2018 - 19</b>	WIDER PERSIST: MSMSE Teaching Circle	Monthly throughout the semesters
<b>Mar 29, 2017</b>	Moving Beyond the Monotony: Creating Engaging and Effective Discussion Boards	1
<b>Oct 18, 2016</b>	Active Learning @ Lunch - Making It Real: Using Case-Based Teaching to Engage Students in Their Learning	1
<b>Apr 22, 2016</b>	Active Learning @ Lunch: The Nuts and Bolts of Flipping the Engineering Classroom	1.3
<b>May 13 -14, 2015</b>	Summer Mobile Learning Institute	2 days
<b>Jan 30, 2015</b>	Asking questions about student learning: how do I know what I am doing is making a difference?	1
<b>Nov 20, 2014</b>	Giving grades: a discussion about our grading philosophies	1
<b>Oct 3, 2014</b>	Assessing student learning: tools to determine what your students really know before it's too late	1.5
<b>Sep 24, 2014</b>	Creating Effective Test Questions (Part 2): Essay -Type	1.25
<b>Apr 1, 2014</b>	Community Engagement and NSF Broader Impacts	1
<b>Feb 28, 2014</b>	Mathematica for Education and Research	1
<b>Feb 7, 2014</b>	Investigating Student Learning: Using classroom assessment projects to inform your teaching	1.5
<b>Fall 2015</b>	STEM Education Research Scholars Group	Biweekly throughout the semester
<b>Sep 18, 2013</b>	Difference Matters: Strategies for Inclusive Teaching	1.5

<b>Feb 11, 2013</b>	Faculty Connections - Good Advice about Tenure and Promotion	1.5
<b>Jan 30, 2013</b>	Active Learning @ Lunch-Jumping Feet First into Team-Based Learning: Lessons Learned and Plans for the Future	1
<b>Jan 10, 2013</b>	Introduction to Effective Course Design	3.5

## 5. Service

### 5.1. Service to the Micron School of Materials Science and Engineering (Include service to the Ph.D. Program.)

2019-2022	Associate Director, Graduate Program
2022-present	Mentor: CAES REU program - Advanced Manufacturing for a Sustainable Energy Future
2014-present	Mentor: MSMSE NSF REU/RET program – Materials for Energy and Sustainability
2018-present	Tenure Progress Review Committee
2013-present	Ph.D. dissertation committees
2013-present	M.S. thesis committees
2012-present	Library department representative, Albertson Library
2013-present	Department seminar speaker host
2021-2022	Search committee chair – MSMSE Director
2017-2018	MSMSE seminar organizer
2013-2017	Committee for the graduate comprehensive exam: preparing and grading both written and oral exam problems
2013-2017	CAES Research Capability Coordinator – Energy Storage
2014-2016	Admissions and Recruiting Committee of the MSE PhD program
2013-2014	Curriculum and Comprehensive Exam planning committee of the MSE PhD program
2013-2014	Graduate Assistants planning committee of the MSE PhD program
2013-2014	Faculty advisor for senior design project
2012-2013	Search Committee for 1 faculty in MSE-Physics joint hire (committee member)

### 5.2. Service to the College of Engineering

2019-present	COEN Graduate Study Committee
2015-2016	Faculty Search Committee in Chemistry Department (committee member)
2016	Evening with a Faculty in the Engineering and Innovation College
2013-2014	TOEFL subcommittee

### 5.3. Service to the University

2022	Group Lead, USICA Working Group 9: Advanced energy, batteries, and industrial efficiency
2022	Mentor: Center for Advanced Energy Studies REU program on Advanced Manufacturing for a Sustainable Energy Future
2020-present	Mentor: LSAMP scholar
2018-present	Mentor: ACS SEED scholar
2020-2021	Mentor: McNair scholar
2018-2021	Mentor: SAGE scholar
2019-2021	Mentor: CAMP scholar
2016-2021	Panelist at the CAREER seminars
2019	McNair Scholars Brown Bag
2013-2017	Research Capability Coordinator, Center for Advanced Energy Studies

### 5.4. Service to the Profession

## 5.4.1. Editorial and Professional Society

- **Chair**, the Electronics Division at the American Ceramic Society, 2021-present
- **Associate Editor** – *Clean Energy* (Oxford University Press), 2022 - present
- **Book Section Editor** of “Encyclopedia of Energy Storage” by Elsevier, 2022
- **Editorial Board** - *Energy Science and Engineering* (Wiley), 2022 – present
- **Advisory Board** - Royal Society of Chemistry’s *Journal of the Materials Chemistry A & Materials Advances*
- **Guest Editor** – Special Issue “Women in Battery Science and Technology” for *Frontiers In Batteries and Electrochemistry*; Special Issue "Materials for Multivalent Batteries" for *Molecules*, MDPI
- Featured in the “Women Scientists at the Forefront of Energy Research” Virtual Issue series (Part 4) at *ACS Energy Letters*
- Committee member – ACerS W. David Kingery Award committee, 2021 - present
- **Chair-Elect** for the Electronics Division at the American Ceramic Society, 2020-21
- Selected for Volunteer Spotlight, a program through which recognizes a member who demonstrates outstanding service to The American Ceramic Society through volunteerism, ACerS, March, 2021
- **Topical Advisory Panel** - *Molecules*, MDPI
- **Vice-Chair** for the Electronics Division at the American Ceramic Society, 2019-20
- **Secretary** for the Electronics Division at the American Ceramic Society, 2018-19
- Panelist, 2018 NSF Career Development Workshop in Ceramics, Columbus, October 13, 2018
- **Secretary-Elect** for the Electronics Division at the American Ceramic Society, 2017-18

## 5.4.2. Meeting and Symposium Organizer

- Symposium co-organizer of MRS Fall 2022 Meeting, 2022
- **Lead-Organizer** of the Symposium “Functional Defects in Electroceramic Materials”, MS&T 2021
- Symposium co-organizer of MRS Spring 2021 Meeting, virtual, 2021
- Symposium co-organizer of ACS Spring 2021 Meeting, virtual, 2021
- **Organizing meeting chair** of the EMA 2021 International Conference, Orlando
- **Meeting co-chair** of the EMA 2020 International Conference, Orlando
- **Lead-Organizer** of the Symposium “Functional Defects in Electroceramic Materials”, MS&T 2020
- Co-Organizer of the Symposium “Beyond Lithium Ion Batteries” at the 236<sup>th</sup> ECS Meeting, October 13-17, Atlanta, 2019
- Co-Organizer of the Symposium “Large-Scale Energy Storage” at the 233<sup>rd</sup> ECS Meeting, Seattle, 2018
- **Lead Organizer** of the Symposium “Ion conducting Ceramics” at the Electronic Materials and Applications Meeting, Orlando, 2016 – 2018
- Co-Organizer of “2017 NSF Career Development Workshop in Ceramics”, 2017
- Co-Organizer of the Symposium “Batteries and Supercapacitors” at the 251<sup>st</sup> ACS National Meeting & Exposition, San Diego, 2016
- Co-Organizer of “2015 CAES Materials, Modeling, Simulation and Visualization Workshop”, CAES, 2015
- **Lead-Organizer** of the Symposium "Symposium G: Next Generation Electrochemical Energy Storage and Conversion Systems” at the Spring MRS Meeting, San Francisco, 2015
- Co-Organizer of “2014 CAES Energy Storage and Ion Conducting Materials and Modeling workshop”, CAES, 2014
- **Lead-Organizer** of the Symposium “Batteries and Fuel Cell Technologies” at the 248<sup>th</sup> ACS National Meeting & Exposition, San Francisco, 2014
- Co-Organizer of the Symposium “Hydrogen Energy” at the 246<sup>th</sup> ACS National Meeting & Exposition, Indianapolis, 2013

## 5.4.3. Reviewer

- **Panel reviewer** for National Science Foundation and Department of Energy
- **Regular ad hoc reviewer** for ACS PRF and NSF

- **Regular Reviewer** for *Nature Communications*, *Advanced Materials*, *Advanced Functional Materials*, *Advanced Energy Materials*, *ACS Nano*, *Chemical Review*, *Chemical Society Reviews*, *Angewandte Chemie International Edition*, *Chemistry of Materials*, *Materials Today*, *Nano Energy*, *Cell Reports Physical Science*, *Energy & Environmental Science*, *Small Methods*, *Small*, *ACS Applied Materials & Interfaces*, *Chemistry - A European Journal*, *Journal of The Electrochemical Society*, *Journal of Power Sources*, *Nanoscale*, *Journal of Physical Chemistry*, *Journal of Materials Chemistry A*, *Journal of the American Ceramic Society*, *Batteries & Supercapacitors*, *Radiation Physics and Chemistry*, etc.

### 5.5. Service to the Community

- Developed a STEM patch program and hosted two “Energy for Sustainability” workshops to the girl scouts at the Girl Scouts of the Silver Sage, 2017-present
- Hosted a “Sustainable Energy and Materials” program at the annual Engineering & Science Festival, Boise State, 2014 – present
- Hands-on workshop on Energy Storage to the Idaho Science and Aerospace Scholars (ISAS), 2014 – 2018
- Provided hands-on STEM demos for STEAM Day at Vallivue Middle School, Caldwell, 2018
- Hands-on activities on energy and materials in e-GIRL camp, 2014 – present
- Created a science blog to interact with students in a high Hispanic population school – Vallivue High School (high Hispanic population), 2015
- Provided a STEM program at Morseley Boys and Girls club, 2015
- Hosting high school students for summer and year-long internships

### Highlights at Boise State University

- Mentored 38 undergraduate research students, 40% of whom were women or Hispanic students
- Expanded my research portfolio and received awards of >\$5M (>\$2M to my lab, including award from DOE BES core program) in the last 5 years
- Since last promotion at Boise State: **30** peer-reviewed publications (25 as corresponding, 5 collaborative; ~6 publications/yr) including publication at *Nature Materials* (corresponding), **3** invited book chapters, **1** US patent, and 1 US patent application
- Served as an officer for the Electronics Division at the American Ceramic Society and is the present chair of the division, helped the increase of the membership of EDiv
- Developed new STEM programs for Mathematics department and local girl scouts community