Kelsey Bridget Hatzell

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Hatzell Lab Website

Education

2012–2015 **Drexel University**, *PhD in Material Science and Engineering*.

2010–2012 **The Pennsylvania State University**, *M.S. in Mechanical Engineering*.

2005–2009 **Swarthmore College**, *B.A. in Economics*.

2005–2009 **Swarthmore College**, *B.S. in Engineering*.

Professional Appointments

07/2021–Present **Assistant Professor of Mechanical and Aerospace Engineering**.
Assistant Professor in Andlinger Center for Energy and the Environment.
Associated Faculty in Chemistry.
Associated Faculty in Chemical and Biological Engineering.
Associated Faculty in Princeton Materials Institute,
Princeton University, Princeton, NJ.

01/2017–06/2021 **Assistant Professor of Mechanical Engineering**.
Assistant Professor in Chemical Engineering (secondary),
Vanderbilt University, Nashville, TN.

06/2015 – 12/2016 **ITRI-Rosenfeld Postdoctoral Fellowship**,
Lawrence Berkeley National Lab, Berkeley, CA.
In-situ monitoring of structural transformations in polymer dispersions during slot-die printing

06/2012 – 06/2015 **National Science Foundation Graduate Research Fellow**,
Drexel University, Philadelphia, Pa., Advisor: Prof. Yury Gogotsi.
Biphasic and conducting flowable electrodes for scalable energy storage and desalination applications.

08/2010 – 06/2012 **Graduate Research Assistant**,
The Pennslvania State University, State College, Pa..
Optimal control of Lithium Ion Batteries for Electric Vehicle Applications.

Awards and Recognition

2023 **Alfred Rheinstein Faculty Award**, *School of Engineering and Applied Sciences*.

2023 **Office of Naval Research Young Investigator Program Awardee**.

2022 **Commendation for Outstanding Teaching, Princeton Engineering**.

2022 **NASA Early Career Faculty Award**.

2021 **POLiS Award of Excellence**, *Germany Consortium for Beyond Li-ion batteries*.

2021 **Commendation for Outstanding Teaching, Princeton Engineering**.

2020 **Sloan Research Fellowship**, *Sloan Foundation*, Chemistry.

2020 **Flowers Family Faculty Fellow**, *Endowed Junior Faculty*.

2020-2023 **SCIALOG Fellow in Negative Emission Science**, *Research Corp. for Scientific Advancment/Sloan Foundation*.

2019 **NSF CAREER Award**, *National Science Foundation*.

2019 **Materials Research Society Nelson 'Buck' Robinson Science and Technology Award**.

2019 **BASF/Volkswagen Science Award for Electrochemistry.**, Wolfsburg, Germany, Finalist. November 2019 Competition

2019 **Toyota-Electrochemical Society Young Investigator Award**.

2019 **NAE EU-US Frontiers of Engineering Symposium**, *National Academy of Engineering*, Stockholm, Sweden.

2018-2021 **SCIALOG Fellow in Energy Storage**, *Research Corp. for Science Advancement*.

2017 **Ralph E. Powe Junior Faculty Enhancement Award Winner**, *Oak Ridge Associated Universities*.

2015-2017 **ITRI-Rosenfeld Postdoctoral Fellowship**, *Berkeley, CA*.

2015 **Outstanding Dissertation Award in Physical Sciences**, *Drexel University*.

2012-2015 **NSF Graduate Research Fellowship**.

2014 **Materials Research Society Graduate Student Award**, *Silver Award*.

2014 **Arthur Nowick Award**, *Materials Research Society*, For showing promise as a teacher and mentor.

2012-2015 **Drexel University Provost Award**.

2012 **NSF Joint US-Africa Materials Initiative Fellowship**, *Addis Ababa, Ethiopia*, .

2005-2009 **Starr Foundation Fellowship** , *Philadelphia, Pennsylvania*, .

Summary of Research, Teaching, and Service Activity

Publication and Scholarship

- Google Scholar Index: Citations >4350, H-index 34, i-10 Index 49
- **61** total published articles over entire career
- **44** published transactions, journal articles and commentaries during 'independent' career
- **37** peer-reviewed journal articles published during 'independent' career
- **35 corresponding author** publications during 'independent' career
- **17** peer-reviewed journal articles as a PhD and Post-doc
- **3** peer-reviewed transactions published during 'independent' career
- **4** non-peer-reviewed invited commentaries (Nature, Nature Energy, Joule, Matter) published during 'independent' career
- $\sim$**80** invited seminars
- $\geq$**20** active user proposal at Department of Energy Synchrotron Sites (Advanced Photon Source and Advanced Light Source). Completed > **1000 hours** of x-ray experiments - which has resulted in over 30+ publications in preparation, submitted, or published.

Research Funding and Press

- Total Group Funding: $\sim$ **$8M**; Total Project Funding: $\sim$$40M (Total individual and team grants),
- Research from our group featured in the Advanced Light Source brochure
- Research from our group highlighted by the Advanced Photon Source
- Links below to published articles on work highlighted by synchrotron sites:

2018 Paper
2020 Paper
2021 Paper
2022 Paper

Summary of Research Related Publications

Scholarly Productivity Indexes as of 06/15/2023:

Google Scholar: Citations: >4350, H-index 34, i-10 Index 49

Graduate/Post Doc Advisee Undergraduate Student Advisee[#] HS Student Advisee[*]

K.B.H. Corresponding Author[+]

Invited Published Editorials, Previews, and Comments

64. **K.B. Hatzell[+] and M. Yusuf** Lithium filaments wedge open cracks in solid-state batteries, *Nature*, (2023), 618 (7964), 247-248

63. **K.B. Hatzell[+].** Opportunities for Halide Solid Electrolytes in Solid State Batteries, *Matter*, Cell Press, (2022), 5 (8), 2533-2535.

62. **K.B. Hatzell[+].** Make ion-solvent interactions weaker, *Nature Energy*, (2021), 6 (3), 223-224.

61. **K.B. Hatzell[+]**. Not All Lithium Filaments Are the Same in Solid-State Batteries, *Joule*, (2020), 4 (4) 719-721

Peer-Reviewed Publications

In Preparation

60. **L. Lin** and **K.B. Hatzell[+]**. Fast sintering approaches for solid electrolyte materials (to be submitted August 2023)

59. R. Carter, **K.B. Hatzell** T. Kingston, C. Love, and C. Pint Challenges and opportunities with thermal gradients in batteries (to be submitted August 2023)

58. **Y. Zheng**, **K.B. Hatzell[+]**, and Jesse Jenkins. Pathways toward industrial decarbonization of heat (to be submitted August 202)

Under Review

57. **Y. Zhu**, **A. Booth** and **K.B. Hatzell[+]**. Counterion effects on moisture-swing direct air capture.

Published

2023

56. **Y. Zheng** and **K.B. Hatzell[+]**. Ultra-sparse View X-ray Computed Tomography for 4-D Imaging. *ACS Applied Materials and Interfaces* (2023) 15, 29, 35024–35033

Comments: Work was funded by DOE Solar Energy Technology office and was completed by Princeton MAE graduate student advised by K.B.H.

55. **W. Zaman**, L. Zhao, Q. J. Wang, S. Harris, and **K.B. Hatzell[+]**. Pressure and temperature effects in high capacity lithium metal stripping (*ACS Applied Materials and Interfaces)* doi.org/10.1021/acsami.3c05886

Comments: Contribution from NSF Career and new ONR grant. W. Zaman led and completed this work at Princeton University in collaboration with a theorist from Northwestern and insights from a collaborator at the Berkeley Lab.

54. **Y. Zheng**, R. Carceras, M.C. Hatzell and **K.B. Hatzell**$^{+}$. Challenges and Roadmap toward Decarbonization of Solar-Thermal Desalination. (Accepted, in press *ACS Environmental Science and Technology Engineering)*

Comments: Product of a DOE Seto Grant where Y.Z. was a lead.

2022

53. **M. Dixit**, B.S Vishnugopi, **W. Zaman**, P. Kenesei, J.S. Park, J. Almer, P. Mukherjee, **K.B. Hatzell**$^{+}$. Polymorphism of Garnet Solid Electrolytes and Its Implications on Grain Level Chemo-Mechanics, *Nature Materials*, (2022), 21(11), 1298-1305.

Comments: Product of K.B. Hatzell's career award at the National Science Foundation. Hatzell led, managed, secured beamtime for all experiments. J.S. Park, P. Kenesei, and J. Almer manage the instrumentation at the beamline and managed equipment associated with the high energy diffraction microscopy set-up. Hatzell group created *operando* cell for beamline, conducted all electrochemistry, and x-ray experiments. P. Mukherjee and B.S. Vishnugopi conducted meso-scale modeling to support this work. Mukherjee and Hatzell have 3 collaborative proposals that support collaborations between theory and experiments.

52. L. Zhao, Q. Jane Wang, **K.B. Hatzell**, **W. Zaman**, T.V. Martin, and Z. Wang. Laplace-Fourier transform solution to the electrochemical kinetics of a symmetric lithium cell affected by interface conformity, *Journal of Power Sources*, (2022), 531, 231305.

Comments: Collaboration with contact mechanics modeling group at Northwestern led by Prof. Jane Wang. Our group (e.g. Wahid Zaman) led experimental work on this paper.

51. **W. Zaman**, and **K.B. Hatzell**$^{+}$. Processing and manufacturing of next generation lithium-based all solid-state batteries, *Current Opinion in Solid State and Materials Science* , (2022), 26(4), 101003.

Comments: Paper is part of an invited collection on challenges with next generation solid state batteries.

50. B.S Vishnugopi, **M.B. Dixit**, F. Hao, B. Shyam, J. B. Cook, **K.B. Hatzell**, and P.P Mukherjee. Mesoscale Interrogation Reveals Mechanistic Origins of Lithium Filaments along Grain Boundaries in Inorganic Solid Electrolytes, *Advanced Energy Materials*, (2022), 12(3), 2102825.

Comments: Collaborative paper with Purdue University. Purdue is the corresponding author. K.B.H. and M.B.D. ran imaging experiments at the Advanced Photon Source. Three-dimensional images were combined with modeling study to understand the physics of mass-transport at solid-solid interfaces. This work is the first publication from our 2021 NSF Award.

49. **Y. Ren**, **N. Hortance**, and **K.B. Hatzell**$^{+}$ Mitigating chemo-mechanical failure in Li-S solid state batteries with compliant cathodes. *Journal of Electrochemical Society* (2022) 169 060503.

Comments: Y. R. and K.B.H. wrote this manuscript. K.B.H. is the sole corresponding author. Y.R. and N. H. conducted experiments and were advised solely by K.B.H.

2021

48. J. Popovic, D. Brandell, S. Ohno, **K.B. Hatzell**, J. Zheng, and Y.Y. Hu.*Polymer-based hybrid battery electrolytes: theoretical insights, recent advances and challenges*, *Journal of Materials Chemistry A*, (2021), 9 (10), 6050-6069.

Comments: International collaboration led by J. Popovic at Max Planck Institute for Solid State Research. My role was as a non-corresponding author and I contributed to the section on advanced characterization.

47. **M.B. Dixit**, J.S. Park, P. Kenesei, J. Almer, and **K.B. Hatzell**$^{+}$. Status and prospect of *in situ* and *operando* characterization of solid-state batteries. *Energy & Environmental Science*, (2021), 14(9), 4672-4711.

Comments: K.B.H. is the sole corresponding author of this work. K.B.H. and M.B.D. wrote and edited this manuscript. Additional authors are from the Advanced Photon Source and helped advise sections on next generation synchrotron sources.

46. **W. Zaman**, R. Matsumoto, M.W. Thompson, Y.H. Liu, Y. Bootwala, **M.B. Dixit**, S. Nemask, E. Crumlin, M.C. Hatzell, P. Cummings, **K.B. Hatzell**$^{+}$. *In situ* investigation of water on MXene Interfaces, *Proceeding in the National Academy of Sciences*, (2021), 118 (49) e2108325118

Comments: K.B.H. designed, managed, and wrote and securred beamline experiments. K.B.H. is the corresponding author on this work. W.Z., M.B.D, M.C.H. and K.B.H. ran experiment at the Advanced light source. S.N. and E.C. manage the beamline and helped with analysis and interpretation of results. K.B.H. and W.Z. conducted all experimental analysis and wrote paper. Y.H.L. and Y. Bootwala ran DRIFTS experiments. M.W.T., R. M., and P. Cumming performed modeling.

45. **Y. Ren**, and **K.B. Hatzell**$^{+}$ Elasticity-oriented design of solid-state batteries: challenges and perspectives, *Journal of Materials Chemistry A*, (2021), 9, 13804-13821

Comments: Y. R. and K.B.H. wrote this manuscript. K.B.H. is the sole corresponding author.

44. **Y. Zheng**, R. C. Gonzalez,**K.B. Hatzell**$^{+}$, and M.C. Hatzell and Y. Zheng. Hybridization and metrics for evaluating solar-desalination systems (2021), *Joule*, 8, 1971-1986

Comments: Y. Z., R.C., K.B.H, and M.C.H. wrote this paper and conducted the analyses. K.B.H. and M.C.H. are the co-corresponding author. Collaboration created as a result of lab shut-down during the COVID-19 pandemic.

43. **K.B. Hatzell**$^{+}$, and **Y. Zheng**. Prospects on large-scale manufacturing of solid state batteries. (2021), *MRS Energy and Sustainability*, 8, 33–39

Comments: Y. Z. and K.B.H conducted the analyses. K.B.H. wrote the paper. K.B.H. is the corresponding author.

42. **Y. Ren**, **N. Hortance**, J. McBride and **K.B. Hatzell**$^{+}$ Sodium–Sulfur Batteries Enabled by a Protected Inorganic/Organic Hybrid Solid Electrolyte. (2020), *ACS Energy Letters*, 6, 345-353.

Comments: Y. R. conducted the research. N.H. and J.M. performed imaging experiments. K.B.H. managed the research and advised the researchers. K.B.H. is the sole corresponding author.

41. **Y. Zheng**, R. C. Gonzalez, M.C. Hatzell and **K.B. Hatzell**$^{+}$. Concentrating solar thermal desalination: performance limitation analysis and possible pathways for improvement, (*Applied Thermal Engineering* , (2021), 184, 5, 116292.

Comments: Y. Z. and R.C. conducted the analyses. K.B.H advised the research and is corresponding author.

2020

40. **M. Dixit**, A. Verma, **W. Zaman**, X. Zhong$^{\#}$, P. Kenesei, Jun Sang Park, Jonathan Almer, Partha Mukherjee, and **K.B. Hatzell**$^{+}$. *Synchrotron imaging of pore formation in Li metal solid-state batteries aided by machine learning*, *ACS Applied Energy Materials*, (2020), 3 (10), 9354-9542

Comments: K.B.H. advised the research, wrote all synchrotron user proposals, and secured funding. M.B., W.Z., and X.Z. were advised by K.B.H. and conducted the experiments and analyses. P.M. and A. V. conducted all meso-scale modeling for this work. P. K., J.S.P. and J.A. are synchrotron scientists and they manage the beamline. All experiments were conducted by M.B. and W.Z.

39. R. Carceras Gonzalez, **Y. Zheng**, **K.B. Hatzell**, and M.C. Hatzell. *Optimizing a Cogeneration sCO2 CSP–MED Plant Using Neural Networks.*, (2020) *ACS ES&T Engineering*, 1 (3), 393-403.

Comments: R.C.G and Y.Z. conducted the analyses. K.B.H. advised Y.Z. on analyses and assisted in paper writing. This paper is not a corresponding author paper.

38. **M. Dixit**, N. Singh, J. P. Horwath, P. Shevchenko, M. Jones, E. Stach, T. Arthur, and **K.B. Hatzell**$^{+}$. In Situ Investigation of Chemomechanical Effects in Thiophosphate Solid Electrolytes, *Matter*, (2020), 3(6), 2138-2159

Comments: K.B.H. advised the research, wrote all synchrotron user proposals, and secured funding. M.B. was advised by K.B.H. and conducted the experiments and analyses. E.S., J.P.H. and N. Singh conducted all *in situ* TEM work. T.A. and M.J. prepared samples for the synchrotron. P.S. is a synchrotron scientists and manages the beamline and instrumentation. All synchrotron experiments were conducted by M.B., N.S. and K.B.H.

37. C. Fernandez, **N. Hortance**, Y.H. Liu, **K.B. Hatzell**$^{+}$, M.C. Hatzell. Opportunities for Low and Intermediate Temperature Electrochemical Ammonia Production (*Journal of Material Chemistry A*), (2020), 8, 15591-15606

Comments: C.F. and N.H. are co-first author on this paper. N.H. was advised by K.B.H. Analyses was conducted collaboratively. This paper and analyses was completed when labs shut down at the start of the pandemic in 2020.

36. M. Palmer, A.Westover, S. Kalnaus, **M.B. Dixit**, **K.B. Hatzell**,N.Dudney, X.Chen. A three-dimensional interconnected composite as polymer/ceramic thin film electrolyte *Energy Storage Materials*, (2020), 26, 242-249

Comments: K.B.H. and M.B. ran x-ray imaging experiments at Argonne National Lab. Samples prepartion and electrochemistry was conducted by M.P., A.W., S.K., X.C. and N.D. This is not a corresponding author paper.

35. **K.B. Hatzell**$^{+}$, X.C. Chen, C.L. Cobb, N.P. Dasgupta, **M.B. Dixit**, L.E. Marbella, M.T. McDowell, P.P. Mukherjee, A. Verma, V. Viswanathan, A.S. Westover, and W.G. Zeier. Challenges in Lithium Metal Anodes for Solid-State Batteries *ACS Energy Letters* (2020) 5, 3, 922–934

Comments: K.B.H. led and managed the production of the community perspective paper.

2019

34. **M.B. Dixit**, **W. Zaman**, **N.Hortance**, **B. Harkey**, S. Vujic*, N. Balke, W.Y. Tsai, X. Chen, **K.B. Hatzell**$^{+}$. Nanoscale mapping of extrinsic interfaces in hybrid solid electrolytes, *Joule* (2020) 4 (1), 207-221

Comments: This study was completed in my research lab as a collaborative project among graduate, post-docs and a high school student. A graduate student and I were visiting researchers at Oak Ridge National Lab and we worked with a co-author on this paper X. Chen on some experiments at Oak Ridge during the summer of 2018. I provided 100% oversight for this project from conception to manuscript preparation.

33. **Y. Zheng**, and **K.B. Hatzell**$^{+}$. Technoeconomic analysis of solar-thermal desalination. *Desalination* (2019) 474, 11416.

Comments: This paper was 100% completed in K.B.H.'s lab. The lead author is a graduate student and was advised by K.B.H.

32. **F. Shen**, **M. Dixit**, **W. Zaman**, **N. Hortance**, and **K.B. Hatzell**$^{+}$. Composite Electrode Ink Formulation for All Solid State Batteries *Journal of Electrochemical Society* 66.14 (2019): A3182-A3188.

Comments: This paper was 100% completed in K.B.H.'s lab. The lead author is a post doc and weas advised by K.B.H.

31. **W. Zaman**, **N.Hortance**, **M.B. Dixit**, V. De Andrande, and **K.B. Hatzell**$^{+}$. Percolation and ion transport in hybrid solid electrolytes for Li-metal batteries, *Journal of Material Chemistry A*, (2019) (2019) 2019,7, 23914-23921

Comments: This paper was completed in K.B.H.'s lab in collaboration with the Advanced Photon Source. K.B.H. concieved the idea, secured beamtime for imaging experiment, and managed paper writing and student advising.

30. M. Karzar-Jeddi, H. Luo, P.T. Cummings, and **K.B. Hatzell**. Computational Modeling of Particle Hydrodynamics and Charging Process for the Flowable Electrodes of Carbon Slurry, *Journal of Electrochemical Society* (2019) 166(12), A2643-A2653

Comments: This paper was a collaborative paper and a result of an NSF grant. Hatzell advised the post doc on experimental details in this theory paper.

29. **M. Dixit**, D. Moreno, M.C. Hatzell and **K.B. Hatzell**$^{+}$. Charge percolation in flowable electrodes for capacitive deionization, *ACS Materials Letters* (2019), 1,1 71-76.

Comments: This study was the product of a NSF funded collaborative project and was collaboratively completed between Georgia Tech and Vanderbilt University. This work examines electrical conductivity in flowable electrodes using advanced synchrotron techniques in tandem with desalination experiments. K.B.H. managed the student, secured beamtime, and managed manuscript preparation.

2018

28. D. Moreno, Y. Bootwala, W.Y. Tsai, N. Balke, **F. Shen**, **K.B. Hatzell**, M.C. Hatzell. In-situ dilatometry of phosphate anion adsorptions mechanisms *ES&T Letters* (2018) 5.12: 745-749.

Comments: This study was the product of a NSF funded collaborative project and was a resulting product from a user proposal at the **Center for Nanophase Material Science** at Oak Ridge National Lab. This work seeks to gain molecular insight into the electrochemistry at solid|liquid interfaces for water desalination applications. The aim of the study is to understand how ion charge affect the chemo-mechanics of desorption. My group contributed 50% of the work in this publication.

27. B.Comer, Y.H. Liu, **M.B. Dixit**, **K.B. Hatzell** Y. Yifan, E. Crumlin, M.C. Hatzell, A.J. Medford. The Role of Adventitious Carbon on Photocatalytic Nitrogen Fixation by Titania, *Journal of American Chemical Society* (2018), 140(45), 15157-15160

Comments: This study was a result of a user proposal at the **Advanced Light Source** at the Berkeley Lab. Our group was involved with the *in-situ Ambient Pressure X-ray Photoelectron Spectroscopy* work and contributed 20% of this paper

.

26. **M. Dixit**, M. Regala$^{\#}$, **F. Shen**, X. Xiao, and **K.B. Hatzell**$^{+}$. Tortuosity Effects in Garnet Type Solid Electrolytes, (2018) *ACS Applied Materials and Interfaces* 11.2 (2018): 2022-2030.

Comments: This study was the product of a user proposal at the **Advanced Photon Source** at Argonne National lab and the Vanderbilt Undergraduate Summer Research Program (VUSRP). The second author is a Vanderbilt Mechanical Engineering Undergraduate. This work seeks to quantitatively describe tortuosity in ceramic ion conductors for battery applications. My group contributed 100% of the work in this publication.

25. A. Rice, E.A. Dolgopolova, B.J. Yarbrough, G.A. Leith, C.R. Martin, K.S. Stephenson, R. A. Heugh, D. A. Chen, S.G. Karakalos M. D. Smith, **K.B. Hatzell**, P. J. Pellechia, S. Garashchuk, N.B. Shustova. Stack the Bowls: Tailoring Electronic Structure of Corannulene-Integrated Crystalline Materials. *Angewandte Chemie International Edition* (2018).

Comments: This study was the product of a conversation and consultation regarding electrochemistry analysis. I was involved with a measurement and contributed to the paper 10%.

24. **M.Dixit**, **B. Harkey**, **F. Shen**, **K.B. Hatzell**$^{+}$, Catalyst Layer Ink Interactions That Affect Coatability, *Journal of Electrochemical Society*, (2018) 165 (5) F264-F271.

Comments: This study was a contribution from a NSF funded research proposal. The work looks at how colloidal properties can be tuned for effective coating applications for energy applications. The work was design and completed in my lab and I was involved with 100% of the idea generation, advising, and data interpretation.

Comments: This study was a contribution from a NSF funded research proposal. The work looks at how colloidal properties can be tuned for effective coating applications for energy applications. The work was design and completed 100% in my lab and I was involved with 100% of the idea generation, advising, and data interpretation.

23. M.C. Hatzell, **K.B. Hatzell**$^{+}$. Blue Refrigeration: Capacitive De-ionization for Brackish Water Treatment., *Journal of Electrochemical Energy Conversion and Storage*, (2018) 15.1 011009.

Comments: This study was the product of a NSF research grant and also was a contribution to the **American Society of Mechanical Engineering** Young Investigator edition. K.B.H. co-wrote this paper (50% contribution on this paper).

22. **F. Shen**, **M.B Dixit**, X.Xiao, **K.B. Hatzell**$^{+}$. The Effect of Pore Connectivity on Li Dendrite Propagation Within LLZO Electrolytes Observed with Synchrotron X-ray Tomography, *ACS Energy Letters*, (2018) 3 (4), pp 1056-1061

Comments: K.B.H. conceived the idea, securred the beamtime, and managed with 100% of the analysis and paper writing. This a product of a user proposal at the **Advanced Photon Source** at Argonne National Lab. This paper was the most read paper in month of March 2018 and was featured on phys.org and techconnect.

21. **K.B. Hatzell**$^{+}$, ***M.B. Dixit***, S. Berlinger, A.Z. Weber, Understanding inks for porous-electrode formation, *Journal of Material Chemistry A*, (2017) A5 (39), 20527-20533,

Comments: The perspective was completed, managed, and written by K.B.H.

2012-2017 Before Independent Career

20. **K.B. Hatzell**, J. Eller, S. Morelly, M. Tang, N.J. Alvarez, and Y. Gogotsi. Direct observation of active material arrangement in a flowable electrode using x-ray tomography. (2017) *Faraday's Discussion.*

19. **K.B. Hatzell**, M. Boota, and Y. Gogotsi. Materials for suspension (semi-solid) electrodes for energy and water technologies. *Chemical Society Reviews* 44 (23) 8664−8687. (2015)

18. C.E. Ren, **K.B. Hatzell**, M. Alhabeb, Z. Ling, K. A. Mahmoud, and Y. Gogotsi. Charge-and-Size-selective Ion Sieving Through $Ti_3C_2T_x$. *The Journal of Physical Chemistry Letters* 6 (20) 4026-4031. (2015)

17. M. Boota, **K.B. Hatzell**, M. Alhabeb, E.C. Kumbur and Y. Gogotsi. Graphene containing flowable electrodes for capacitive energy storage. *Carbon*, 92, 142-149.(2015)

16. **K.B. Hatzell**, M. Boota, E.C. Kumbur and Y. Gogotsi. Flowable conducting particle networks in redox active electrolytes for grid energy storage. *Journal of The Electrochemical Society*, 162(5), A5007-A5012. (2015)

15. **K.B. Hatzell**, M.C. Hatzell, K.M. Cook. M. Boota, G. Housel, A. McBride, E.C. Kumbur and Y. Gogotsi. Effect of oxidation of carbon material on suspension electrodes for flow electrode capacitive deionization.*Environmental science & technology*, 49(5), 3040-3047. (2015)
14. M. Boota, **K.B. Hatzell**, E.C. Kumbur and Y. Gogotsi. Towards High Energy Density Pseudocapacitive Flowable Electrodes by the Incorporation of Hydroquinone. *ChemSusChem*, 8(5), 835−843. (2015)
13. M.C. Hatzell, **K.B. Hatzell**, B. Logan. Using flow electrodes in multiple reactors in series for continuous energy generation from capacitive mixing. *Environmental Science & Technology Letters*, 1(12), 474−478. (2014)
12. **K.B. Hatzell**, L. Fan, M. Beidaghi, M. Boota, E.K. Pomerantseva, E.C. Kumbur, and Y. Gogotsi. Composite manganese oxide percolating networks as a suspension electrode for an asymmetric flow capacitor. *ACS applied materials & interfaces*, 6(11), 8886-8893. (2014
11. **K.B. Hatzell**, E. Iwama, A. Ferris, K. Urita, T. Tzedakis, Y. Gogotsi, and P. Simon. Capacitive deionization concept based on suspension electrodes without ion exchange membranes. *Electrochemistry Communications*, 43, 18-21. (2014)
10. C. Zhang, **K.B. Hatzell**, M. Boota, B. Dyatkin, M. Beidaghi, D. Long, and Y. Gogotsi. Highly porous carbon spheres for electrochemical capacitors and capacitive flowable suspension electrodes. *Carbon*, 77, 155-164. (2014)
9. M. Boota, **K.B. Hatzell**, M. Beidaghi, E.C. Kumbur, and Y. Gogotsi. Activated carbon spheres as a flowable electrode in electrochemical flow capacitors. *Journal of The Electrochemical Society*, 161(6), A1078-A1083. (2014)
8. C.R. Dennison, M. Beidgahi, **K.B. Hatzell**, E.C. Kumbur, and Y. Gogotsi. Effects of flow cell design on charge percolation and storage in the carbon slurry electrodes of electrochemical flow capacitors. *Journal of Power Sources*, 247, 489-496

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7. **K.B. Hatzell**, M. Beidaghi, J.Campos, E.C. Kumbur, and Y. Gogotsi. A high performance pseudocapacitive suspension electrode for the electrochemical flowcapacitor. *Electrochimica Acta*, 111, 888-897. (2013)
6. J. Campos, M. Beidaghi, **K.B. Hatzell**, B.Musci, V. Presser, E.C. Kumbur, and Y. Gogotsi. Investigation of carbon materials for use as a flowable electrode in electrochemical flow capacitors. *Electrochimica Acta*, 98, 123-130 (2012)
5. **K.B. Hatzell**, M.C. Hatzell, M.Y. Pack, J.G. Hatzell, S. Patel, T.L. Sulewski, A. Freeman, and K. Mehta. Overview of the First Year of an Innovative Science Education and Entrepreneurship Venture.. *American Society for Engineering Education*, (2012)
4. **K.B. Hatzell**, A. Sharma, and H.K. Fathy. A survey of long-term health modeling, estimation, and control of Lithium-ion batteries: Challenges and opportunities. *American Control Conference*, 584-591 (2012).

Peer-Reviewed Conference Proceedings

3. **Y. Zheng** and **K.B. Hatzell**$^{+}$. Thermal-Economic Optimization of Moving Packed Bed Particle-to-SCO2 Heat Exchanger Using Particle Swarm Optimization,) *American Society of Mechanical Engineers* (2021), 84881, V001T02A010.

   Comments: Y.Z. conducted the analyses and was advised by K.B.H. K.B.H. is the sole corresponding author. Y.Z. won best presentation at the ASME conference for this work.

2. **Y. Zheng**, R. Gonzalez, M.C. Hatzell and **K.B. Hatzell**$^{+}$. Theoretical analysis of solar thermal desalination performance limitation, *Proceedings of the 2020 Conference on Nuclear Engineering Joint with ASME 2020 Power Conference* (2020) 83747, V001T10A008.

   Comments: Y.Z. conducted the analyses and was advised by K.B.H. Y.Z. collaborated with M.C.H. and R.C.G. on analyses and this was a result from a collaborative NSF grant. K.B.H. is the sole corresponding author.

1. **M.B. Dixit**, **K.B. Hatzell**$^{+}$. Understanding Binary Interactions and Aging Effects in Catalyst Layer Inks for Controlled Manufacturing.*ECS Transactions*, (2017) 80(8), 301-307.

   Comments: M.B. conducted the experiments and was advised by K.B.H. K.B.H. is the sole corresponding author.

Invited and Keynote Talks

2023

82. Hatzell, K.B. Advanced cathode architectures for solid state batteries (*Materials Research Society Fall Meeting 2023*). Boston, Ma, Dec. 2, 2023. (In person)

81. Hatzell, K.B. Chemo-mechanics in Batteries (*Drexel University*). Philadelphia, Pa, Nov. 15, 2023. (In person)

80. Hatzell, K.B. Chemo-mechanics in Batteries (*Rutgers University*). New Brunswick, NJ, Oct 4, 2023. (In person)

79. Hatzell, K.B. Chemo-mechanics in Batteries (*Berkeley Lab, Advanced Light Source*). Berkeley, CA, Sept. 15, 2023. (In person)

78. Hatzell, K.B. Challenges and opportunities with all solid state batteries (*Plug Volt 2023*). Plymouth, MI, July 18, 2023. (In person)

77. Hatzell, K.B. Molecular scale insight into membrane separation processes for water and gas separations (*Joint US-Africa Material Institute 2023*). Nairobi, Kenya, June 20-23, 2023. (In person)

76. Hatzell, K.B. Chemo-mechanics in Batteries (*NASA Jet Propulsion Laboratory (JPL)*). Pasadena, CA, June 15, 2023. (In person)

75. Hatzell, K.B. Operando tools for understanding chemo-mechanics in batteries (*ECS Spring 2023*). Boston, Ma, May 30, 2023. (In person)

74. Hatzell, K.B. Operando tools for understanding chemo-mechanics in batteries (*MRS Spring 2023*). San Francisco, Ca, April 12, 2023. (In person)

73. Hatzell, K.B. Next Generation Anodes for Solid State Batteries (*MRS Spring 2023*). San Francisco, Ca, April 10, 2023. (In person)

72. Hatzell, K.B. Solid State Batteries -Direct Observation of Charging Dynamics in Composite Soild State Cathodes (*ACS Spring 2023*). Indianapolis, In, March 26, 2023. (In person)

71. Hatzell, K.B. Solid State Batteries - Challenges and Opportunities for Advanced X-ray Imaging Tools (*Virginia Tech, Chemistry Department Symposium*). Blacksburg, VA, March 3, 2023. (In person)

70. Hatzell, K.B. Heterogenity in solid state batteries (*University of Maryland, Material Science and Engineering*). , College Park, Md January 23, 2023. (In person)

69. Hatzell, K.B. Advanced characterization tools for understanding solid state batteries (*Ford*). January 17, 2023. (Virtual)

2022

68. Hatzell, K.B. Lithium creep during dynamic stripping in all solid state batteries. (*MRS Conference*). Boston, MA, Dec. 1, 2022. (In person)

67. Hatzell, K.B. Solid State Batteries: A Tale of Two Interfaces. (*NanoGe - Materials for Energy and Sustainability*). Barcelona, Spain, Oct. 27, 2022. (In person)

66. Hatzell, K.B. Chemo-mechanics in all solid state batteries *Exxon Mobil*, Oct. 3, 2022. (Annandale, NJ)

65. Hatzell, K.B. Solid state batteries and decarbonization of transportation and the electricity grid. *Max-Planck-Institut für Eisenforschung*, Sep. 19, 2022. (Virtual)

64. Hatzell, K.B. Shedding light on chemo-mechanics in polycrystalline solid electrolytes. *International NAnoscience Student CONference (INASCON)*, Technische Universität München (TUM) & the Max Planck Institute (MPI). Munich, Germany, August 30, 2022. (In person)

63. Hatzell, K.B. Chemo-mechanic effects on electrode kinetics in solid state batteries. *American Chemical Society*, Chicago, IL, Aug. 21, 2022.(In person)

62. Hatzell, K.B. Unraveling the role of polymorphism in solid electrolytes on stochastic failure. *Solid State Ionics*, Boston, MA, July 19, 2022.(In person)

61. Hatzell, K.B. Next generation battery chemistries for electronic, transportation and grid applications. *Universal Display Corporation*, Seminar Series, Ewing, New Jersey, June 15, 2022.(In person)

60. Hatzell, K.B. Synchrotron Science and Solid state batteries. *MARM 2022*, Advances in Battery Technology for the 21st Century, Trenton, New Jersey, June 2, 2022.(In person)

59. Hatzell, K.B. Real and Reciprocal Space Characterization of Electrochemistry in Solid State Batteries. *Electrochemical Society Meeting*, Vancouver, Canada, May 28, 2022. (In person)

58. Hatzell, K.B. Lithium and beyond lithium solid state batteries for EV and Grid Applications *Materials Research Society Meeting Spring 2022*, Honolulu, Hawaii, May 25, 2022.(Virtual)

57. Hatzell, K.B. Synchrotron Science and Solid state batteries. *European Synchrotron Radiation Facility*, International Operando Battery Days, Grenoble, France, May 16, 2022. (In person)

56. Hatzell, K.B. Next generation batteries: challenges from the interface to the manufacturing scale *PPG Industries*, Colloquium, May 4, 2022. (Virtual)

55. Hatzell, K.B. Advanced characterization of energy dense solid state batteries. Webinar for Wiley Journal - Battery Energy, March 22, 2022. (Virtual)

54. Hatzell, K.B. Advanced characterization of energy dense solid state batteries. Ohio University, March 15, 2022.(Virtual)

53. Hatzell, K.B. Chemo-mechanics in All Solid State Batteries. Editorial offices of the American Physical Society, March 10, 2022.(Virtal)

52. Hatzell, K.B. Advanced characterization of energy dense solid state batteries. Brown University, March 8, 2022. (In person)

51. Hatzell, K.B. Chemo-mechanics in all solid state batteries. Lithium Metal Anodes and their Application in Batteries organized by University of Giessen/Münster Electrochemical Energy Technology (MEET), Online, February 9, 2022 **(Keynote)**

2021

50. Hatzell, K.B. Advanced characterization and diagnostics tools for all solid state batteries. Columbia Battery Early Career Seminar, Dec 10, 2021. (Virtual)

49. Hatzell, K.B. Understanding solid-liquid and solid-solid interfaces for advanced separations and energy storage systems. Materials Research Society Meeting, Women In MRS symposium Dec 1, 2021. (In Person)

48. Hatzell, K.B. Dynamic operation of lithium metal solid state batteries, Materials Research Society Meeting, Solid State Battery Symposium (2021), Nov. 30, 2021 (In Person)

47. Hatzell, K.B. Chemo-mechanics in all solid state batteries. 3rd Garnet Conference, Online, October 25, 2021

46. Hatzell, K.B. Chemo-mechanics in all solid state batteries. Northeastern Chemical Engineering Symposium, Online, October 13, 2021

45. Hatzell, K.B. Advanced characterization and diagnostics tools for ll solid state batteries. PlugVolt Battery Seminar, October 5, 2021. (In person)

44. Hatzell, K.B. Synchrotron characterization of all solid state batteries, Advanced Materials for Better Tomorrow: Impacting Energy, Health, and Environment, July 13, 2021. (Virtual, India)

43. Hatzell, K.B. Synchrotron characterization of all solid state batteries, Cluster of Excellence POLiS (Germany Battery Consortium) , June 24, 2021. (Virtual)

42. Hatzell, K.B. Interfaces in energy and water. AMEWS Annual Meeting, June 22, 2021.

41. Hatzell, K.B. Synchrotron characterization of all solid state batteries, Bunsen Seminar on Solid State Batteries June 13, 2021. **Keynote** (Virtual)

40. Hatzell, K.B. Synchrotron characterization of all solid state batteries, Stanford Synchrotron Radiation Lightsource, June 9, 2021. (Online)

39. Hatzell, K.B. Challenges and Opportunities for Li metal solid state batteries. ECS Webinar, Online, May 5, 2021

38. Hatzell, K.B. Challenges and Opportunities for Li metal solid state batteries. Materials Research Society Meeting, Seattle, WA, Online (2021)

37. Hatzell, K.B. Interfaces and Interphase in solid state batteries. A*STAR Research Institutes, Singapore, Online (2021)

36. Hatzell, K.B. Synchrotron characterization of energy dense anodes for all solid state battery. International Battery Seminar, Online, Feb, 22, 2021

35. Hatzell, K.B. Synchrotron characterization of energy dense anodes for all solid state battery. Purdue University, Online, Feb, 15, 2021

34. Hatzell, K.B. Diagnostic tools for solid state batteries. International Ceramic Society, Online, Feb, 1, 2021

33. Hatzell, K.B. Engineering solid state batteries for transport and kinetics MRS Spring 2021, Online

32. Hatzell, K.B. Challenges and Opportunities for Li metal solid state batteries, Toyota Research Institute, Online January 27, 2021

2020

31. Hatzell, K.B. In situ characterization of void formation in solid state batteries with combined learning techniques. Electrochemical Society Meeting. Honolulu, HI (2020) Online

30. Hatzell, K.B. Chemo-mechanics in all solid state batteries . University of Münster . Münster, Germany (2020) Online

29. Hatzell, K.B. Chemo-mechanics in all solid state batteries . Max Planck Institute for Solid State Research. Suttgart, Germany (2020) Online

28. Hatzell, K.B. Interfaces and Interphase in solid state batteries . University of Michigan. Ann Arbor, Michigan (2020)

27. Hatzell, K.B. Interfaces and Interphase in solid state batteries . Northwestern University.Evanston , Il (2020)

26. Hatzell, K.B. Interfaces and Interphase in solid state batteries . Gordon Research Conference on Batteries.Ventura , Ca (2020)

25. Hatzell, K.B. Interfaces and Interphase in solid state batteries . University of Minnesota. Minneapolis , MN (2020)

24. Hatzell, K.B. Interfaces and Interphases in solid state batteries. NSF CBET Meeting on Next Generation Energy Storage Systems (2020) (Online)

23. Hatzell, K.B. Opportunities and challenges with synchrotron characterization of solid state batteries. TMS Meeting. San Diego , Ca (2020)

2019

22. Hatzell, K.B. Hybrid solid electrolytes for next generation batteries. Oak Ridge National Lab, Chemical Science Division. Oak Ridge, TN (2019)

21. Hatzell, K.B. Materials for solid state energy storage applications. MRS Meeting. Lexington,KY (2019)

20. Hatzell, K.B. Electric field separations for water treatment and resource recovery. Carbon Meeting. Lexington,KY (2019)

19. Hatzell, K.B. Opportunities and challenges with synchrotron characterization of solid state batteries. AVS Society Meeting. Columbus , OH (2019)

18. Hatzell, K.B. Electric field separations for water treatment and resource recovery. AICHE Meeting. Orlando, Fl (2019)

17. Hatzell, K.B. Electric field separations for water treatment and resource recovery. ACS. Orlando, Fl (2019)

16. Hatzell, K.B. Opportunities and challenges with synchrotron characterization of solid state batteries. Electrochemical Society. Atlanta, GA (2019)

2018

15. Hatzell, K.B. X-ray tools for understanding soft and colloidal materials. Army Research Lab. Aberdeen, Md (2018)

14. Hatzell, K.B. Dynamic characterization techniques to understand non-equilibrium electrochemical processes at buried interfaces. Energy Frontier Research Center -Fluid Interface Reactions, Structures and Transport, Oak Ridge, TN (2018)

13. Hatzell, K.B. X-ray scattering tools to monitor structural evolution in collodial materials. Chemical Engineering Department Seminar at Vanderbilt. Nashville, TN (2018)

12. Hatzell, K.B. Physics and chemistry challenges with solid state batteries. Joint US-Africa Materials Institute. Kampala, Uganda (2018)

11. Hatzell, K.B. Colloidal Processing of multicomponent inks for energy conversion applications. Electrochemical Society. Cancun, MX (2018)

2017

10. Hatzell, K.B. Colloidal inks for energy applications. Vanderbilt Institute for Nanoscience and Engineering NanoDay. Nashville, TN (2017)

9. Hatzell, K.B. Manufacturing of colloidal inks for energy applications. National Renewable Energy Lab. Golden, Co (2017)

8. Hatzell, K.B. Manufacturing of colloidal inks for energy applications. Julich Research Center, Julich, Germany. (2017)

7. Hatzell, K.B. Direct Observation of Active Material in a Flowable Electrode. Faradays Discussion on the Chemical Physics of Electroactive Materials. Cambridge, UK. (2017)

2016

6. Hatzell, K.B., Conducting flowable electrodes for water and energy technologies. University of Michigan, Ann Arbor, MI. (2016)

2015

5. Hatzell, K.B., Conducting flowable electrodes for water and energy technologies. Swarthmore College, Swarthmore, PA. (2015)

4. Hatzell, K.B. Conducting flowable electrodes for water and energy technologies. Lawrence Berkeley National Lab. Berkeley, Ca (2015).

3. Hatzell, K.B, Conducting flowable electrodes for water and energy technologies. Argonne National Lab, Lemont, Il. (2015)

2014

2. Hatzell, K.B. Capacitive deionization based on flowable electrodes. Interfaces in Water and Enviromental Science Conference. Leeuwarden, The Netherlands (2014)

2013

1. Hatzell,K.B. Capactive techniques for large scale infrastructure challenges: the Water-Energy Nexus. Villanova College of Engineering Invited Speaker Series. Villanova, PA. (2013)

Talks and Posters

45. **D. Puthusseri**, and **K.B. Hatzell**. In situ Energy dispersive x-ray diffraction on composite solid state cathodes (Gordon Conference on Ceramics). 2022 (Poster)

44. **X. Chen**, and **K.B. Hatzell**. Silicon anodes for all solid state batteries (Gordon Conference on Batteries). 2022 (Poster).

43. **W. Zaman**, and **K.B. Hatzell**. All solid-state Li metal batteries for next-generation energy storage systems. Tokyo, Japan (Online). Dec. 14, 2021.

42. **Zheng, Y.** and **K.B. Hatzell**. Thermal-Economic Optimization of Moving Packed Bed Particle-to-sCO2 Heat Exchanger Using Particle Swarm Optimization. ASME Energy Sustainability Conference 2021, online. Presentation

41. **Zheng, Y.** Caceres Gonzalez, R. A., Hatzell, M. C., and **K.B. Hatzell**. Concentrating Solar Thermal Desalination: an Approach of Utilizing High-Exergy Solar Radiation for Water Production. ASME Energy Sustainability Conference 2021, online. [Presentation]

40. **Zheng, Y.**, **K.B. Hatzell**, Caceres Gonzalez, R., and Hatzell, M. C. Theoretical Analysis of Solar Thermal Desalination Performance Limitation. ASME Power Conference 2020, online. [Presentation]

39. **M.B. Dixit**, and **K.B. Hatzell**. Real and reciprocal space characterization of solid state batteries. Gordon Research Seminar. Ventura, Ca (2020)

38. **M.B. Dixit**, ***W. Zaman***, P. Kenesei, J.S. Park, J. Almer, and **K.B. Hatzell**. Real and reciprocal space characterization of solid state batteries. MRS Fall 2019. Boston, MA (2019)

37. X. Chen, M. Palmer, **M.B. Dixit**,A. Westover, **K.B. Hatzell** and N. Dudney. Thin Solid Composite Electrolyte with Three-Dimensional Interconnected Structures MRS Fall 2019. Boston, MA (2019)

36. N. Singh,**M.B. Dixit**, J. Horwath, E. Stach, T. Arthur and **K.B. Hatzell**. Multi-modal and multi-scale characterization of thiophosphate solid state batteries.MRS Fall 2019. Boston, MA (2019)

35. **M.B. Dixit**, W. Zaman, Y. Bootwala, M.C. Hatzell, and **K.B. Hatzell**. Scalable manufacturing of hybrid solid electrolytes for all solid state batteries. ASME IMECE 2019. Salt Lake City, Utah (2019)

34. **M.B. Dixit**, W. Zaman, Y. Bootwala, M.C. Hatzell, and **K.B. Hatzell** Scalable manufacturing of hybrid solid electrolytes for all solid state batteries. ASME IMECE 2019. Salt Lake City, Utah (2019)

33. **Y. Zheng**, Y. Bootwala, M.C. Hatzell, and **K.B. Hatzell** Synchrotron x-ray tomography thermal conductivity analysis of packed bed particle-to-sCO2 heat exchangers. ASME IMECE 2019. Salt Lake City, Utah (2019)

32. **M.B. Dixit**, and **K.B. Hatzell** Synchrotron X-rays: A Versatile Probe for Studying All-Solid-State Batteries. ASME IMECE 2019. Salt Lake City, Utah (2019)

31. **N. Hortance**, and **K.B. Hatzell** Opportunities and challenges for intermediate temperature ammonia production. Electrochemical Society Meeting 2019. Atlanta, Ga (2019)

30. **W. Zaman**, **N. Hortance**,**M. Dixit**, and **K.B. Hatzell**, M.C. Hatzell. Tracking percolation and transport pathways in hybrid solid electrolytes for all solid state batteries. Electrochemical Society Meeting 2019. Atlanta, Ga (2019)

29. Y. Bootwala, **W. Zaman**, **K.B. Hatzell**, M.C. Hatzell. Evaluation of surface, bulk, electrochemical and desalination properties of $Ti_3C_2T_x$. Electrochemical Society Meeting 2019. Atlanta, Ga (2019)

28. **M.B. Dixit**, and **K.B. Hatzell** Engineering transport pathways and interfaces in hybrid solid electrolytes at Roll-to-Roll manufacturing scales. Electrochemical Society Meeting 2019. Atlanta, Ga (2019)

27. **W. Zaman**, and **K.B. Hatzell** Water adsorption on ion-intercalated MXene studied with ambient pressure XPS. ICAACC 2019. Dayton, Fl (2019)

26. **W. Zaman**, **M. Dixit**, and **K.B. Hatzell** Understanding structural transformations at solid|solid interfaces in all solid state batteries. ICAACC 2019. Dayton, Fl (2019)

25. **K.B. Hatzell**, **M.B. Dixit**, and F.Shen. *Scalable Manufacturing Platform of Multi-Material Solid Electrolytes for Solid State Battery Applications*. Materials Research Society Meeting, December 2018. Boston, MA, USA.

24. **K.B. Hatzell**, **M.B. Dixit**, and **F.Shen**. *Scalable Manufacturing Platform of Multi-Material Solid Electrolytes for Solid State Battery Applications*. Materials Research Society Meeting, December 2018. Boston, MA, USA.

23. **K.B. Hatzell**, **M.B. Dixit**, and **F.Shen**. *Scalable Manufacturing Platform of Multi-Material Solid Electrolytes for Solid State Battery Applications*. Materials Research Society Meeting, December 2018. Boston, MA, USA.

22. **K.B. Hatzell**, **M.B. Dixit**, **F.Shen**, and Xianghui Xiao. *X-Ray Tomography Studies of Ceramic Solid Electrolytes for Solid-State Battery Applications*. Materials Research Society Meeting, December 2018. Boston, MA, USA.

21. **F. Shen** and **K.B. Hatzell**. *Enhancing stability between garnet electrolyte and Li metal electrode with a metal carbide coating*, Materials Research Society Meeting, December 2018. Boston, MA, USA.

20. **K.B. Hatzell**. *Engineering transport pathways and interfaces in composite solid electrolytes*. Third Bunsen Colloquium on Solid-State Batteries. November 2018, Frankfurt, Germany.

19. **K.B. Hatzell**, **B. Harkey**, **M. Dixit**, and F. Shen. *Processing and Manufacturing High Performing Polymer: Ceramic Solid Electrolytes*. ECS annual Meeting, September 2018, Cancun, Mexico.
18. **M. Dixit**, **B. Harkey**, **F. Shen**, and **K.B. Hatzell**. *Catalyst Layer Interactions That Affect Coatability.* ECS annual Meeting, September 2018, Cancun, Mexico.
17. **K.B. Hatzell**, **M. Dixit**, and **F. Shen**. *The Effect of Pore Connectivity on Li Dendrite Propagation within Llzo Electrolytes Observed with Synchrotron X-Ray Tomography.* ECS annual Meeting, September 2018, Cancun, Mexico.
16. **M. Dixit**, D. Moreno, **K.B. Hatzell**, M.C. Hatzell. *Evaluating Microstructure and Transport within Flow Electrodes for Capacitive Deionization* ECS annual Meeting, September 2018, Cancun, Mexico.
15. **K.B. Hatzell**. *Understanding transport at confined interfaces.* SCIALOG seminar on Energy Storage. November 2017, Tuscon, AZ, USA.
14. **K.B. Hatzell** *In-Situ Studies of Anion Electroadsorption Mechanisms*. AICHE Conference, November 2017, Minneapolis, MN, USA.
13. **K.B. Hatzell** *Direct observation of active material interactions in a flowable electrode using advanced synchrotron techniques*. CDI and Electroadsorption Conference, July 2017, Seoul, Korea.
12. **K.B. Hatzell** and A.Z. Weber *In-situ transformation of nafion dispersions probed with x-ray and neutron scatting.* Electrochemical Society Meeting, October 2017, Hawaii, HI, USA.
11. **K.B. Hatzell** and A.Z. Weber. *In-situ transformation of nafion dispersions probed with x-ray and neutron scattering.* AICHE Meeting, November 2017, Sam Francisco, CA, USA.
10. **K.B. Hatzell**, J. Eller, and Y. Gogotsi *Active material arrangement and its effect on electronic conductivity in a suspension electrode.*Electrochemical Society Meeting, October 2015, Phoenix, AZ, USA.
9. C. Ren, **K.B. Hatzell**,M. Alhabeb, Z. Ling, K. Mahmoud, and Y. Gogotsi. *MXene-based membranes as novel materials for ion separation*. Electrochemical Society Meeting, October 2015, Chicago, Il, USA.
8. **K.B. Hatzell**, L. Fan, M. Beidaghi, M.Boota, E. Pomerantseva, E.C. Kumbur, and Y. Gogotsi. *Expanding the voltage window in an aquous-based asymmetric manganese-dioxide/activated carbon suspension electrode system"*. Materials Research Society Meeting, December 2014, San Francisco, CA, USA.
7. **K.B. Hatzell** and Y. Gogotsi. *An overview on flowable electrodes for grid energy storage and desalination*. Joint Center for Energy Storage Research Symposium on Grid Energy Storage, October 2014, Urbana-Champaign, Il, USA.
6. **K.B. Hatzell** and Y. Gogotsi. *Capacitive suspension electrodes: An overview of the pysical and chemical properties governing energy storage performance*. Materials Research Society Meeting, December 2014, Boston, Ma, USA.
5. **K.B. Hatzell** and Y. Gogotsi. *High electro-adsorption capacity electrodes for capacitive deionization* . Materials Research Society Meeting, December 2014, Boston, Ma, USA.
4. **K.B. Hatzell** and Y. Gogotsi. *A high performance pseudocapacitive flow electrode for the electrochemical flow capacitor*. Electrochemical Society Meeting, October 2013, San Francisco, CA, USA.
3. **K.B. Hatzell** and Y. Gogotsi. *The electrochemical flow capacitor for efficient grid scale energy storage*.TMS Meeting, April 2013, San Antonio, TX, USA.
2. **K.B. Hatzell** and Y. Gogotsi. *Optimization of flowable electrodes for the electrochemical flow capacitor*. Electrochemical Society Meeting, 2013, San Francisco, CA, USA.

1. **K.B. Hatzell** and Y. Gogotsi. *Methods for enhancing the flowable electrode capacitance in the electrochemical flow capacitor*. Materials Research Society Meeting, 2013, San Francisco, CA, USA.

Summary of Research Awards

PI Lab Funding , *January 2017-Present*.

2023 **PI: K.B. Hatzell**, *Inorganic Membranes for High Density Flow Batteries for Grid Energy Storage*, **Princeton Innovation Fund for Exploratory Energy Research**, 09/01/2023-08/30/2025.

2023 **PI: K.B. Hatzell**, *Field-Assisted Sintering for Control over Polymorphs in Polycrystalline Lithium Ion Conducting Ceramics* , **ONR Young Investigator Program**, 03/01/2023-02/30/2026.

2022 **PI: K.B. Hatzell**, *Water as a conduit for direct air capture* , **High Meadows Environmental Institute** , 10/01/2022-09/30/2024.

2022 **co-PI: K.B. Hatzell**, *Understanding the Transport and Crystallization of Lithium Ion During Interfacial Evaporation* , **Princeton MRSEC Seed Grant**, 12/01/2022-11/30/2023.

2022 **PI: K.B. Hatzell**, *Advanced in situ and operando characterization of batteries under ultra-low temperature conditions*, **NASA Early Career Faculty Award**, 10/01/2022-09/30/2025.

2022 **PI: K.B. Hatzell**, *Liquid-metal electrodes for low-cost and low temperature solid state batteries for long duration energy storage*, **Department of Energy, Basic Energy Sciences**, 01/01/2023-12/30/2026.

2022 **co-PI: K.B. Hatzell**, *Energy Frontier Research Center: Advanced Materials for Energy-Water Systems Center (Lead: UChicago)*, **Department of Energy, Basic Energy Sciences** , 09/01/2022-08/30/2026.

2022 **co-PI: K.B. Hatzell**, *Energy Frontier Research Center: Mechano-Chemical Understanding of Solid Ion Conductors (Lead: Michigan)*, **Department of Energy, Basic Energy Sciences** , 09/01/2022-08/30/2026.

2022 **co-PI: K.B. Hatzell**, *Speeding up healing with next-gen electric band-aids using cell-inspired supercapacitive electrodes*, **Princeton Catalysis Initiatve** , 08/01/2022-07/30/2024.

2022 **PI: K.B. Hatzell**, *Advanced in situ x-ray diagnostic tools for understanding material transformations in batteries exposed to thermal gradients*, **Office of Naval Research** , 06/01/2022-05/30/2026.

2022 **co-PI: K.B. Hatzell**, *GRadient EnhAnced Transformative Solid-State Batteries (GREAT SSB)*, **Defense Advanced Research Projects Agency (DARPA)**, 03/01/2022-02/28/2026.

2021 **PI: K.B. Hatzell**, *Unraveling the role of chemo-mechanics in all solid state batteries*, **National Science Foundation**, 08/15/2021-07/01/2025.

2021 **PI: K.B. Hatzell**, *Development of advanced diagnostic tools, models, and technoeconomic analyses for high-heat-transfer coefficient particle heat exchangers*,
Department of Energy, Solar Energy Technology Office, 08/01/2021-08/01/2022.

2021 **PI: K.B. Hatzell**, *IR spectroscopy of inorganic-organic solid ion conductors*,
Toyota Research Institute, 01/01/2021-08/01/2021.

2020 **PI: K.B. Hatzell**, *Ion transport in solids*,
Sloan Foundation Fellowship, 03/01/2020-03/01/2022 (NCE -2023).

2020 **PI: K.B. Hatzell**, *Transport in solid state batteries*,
Toyota Research Institute , 01/01/2020-01/01/2021.

2019 **co-PI: K.B. Hatzell**, *Effect of hydrodynamic interactions on electrochemical performance of flowable electrodes*,
National Science Foundation, 09/01/2019-09/01/2023.

2019 **PI: K.B. Hatzell**, *Ion conduction in hybrid solid electrolytes*,
ECS Toyota Young Investigator Fellowship, 07/05/2019-07/05/2020.

2019 **Co-PI: K.B. Hatzell**, *Reactive Material Formulations for Additive Manufacturing*,
Office of Naval Research, 07/05/2019-07/05/2021.

2019 **PI: K.B. Hatzell**, *CAREER: Understanding interfaces in cross-disciplinary education and energy storage systems*,
National Science Foundation, 09/01/2019-09/01/2024.

2018 **PI: K.B. Hatzell**, *Collaborative Research: GOALI: Evaluating thermo-electro-adsorption mechanisms for waste-heat driven ion-separation processes*,
National Science Foundation, 09/01/2018-09/01/2022.

2017 **PI: K.B. Hatzell**, *EPRI/WERF: Collaborative Research: Electrical percolation in flowable electrodes for energy-efficient water re-use applications*,
National Science Foundation , 01/03/2018-01/03/2021.

2017 **PI: K.B. Hatzell**, *Collaborative Research: Co-Extrusion of Organic-Inorganic Colloidal Inks for Energy Conversion Applications*,
National Science Foundation, 09/01/2017-09/01/2021.

Book Chapters and Invention Disclosures

2019 **K.B. Hatzell**, *T. Gilbert, A. Kilic, and M.B. Dixit*, Method for control over pressure for a solid state energy systems, Invention Disclosure.

2019 **K.B. Hatzell**, *M.C. Hatzell, and M.B. Dixit*, Multi-material printing device for energy storage and conversion applications, U.S. Patent Application No. 17/279,260.

2016 **K.B. Hatzell and Y. Gogotsi**, *Suspension Electrodes for Flow-Assisted Electrochemical Systems*, Nanomaterials in Advanced Batteries and Supercapacitors, Springer International Publishing. 2016 377-416

2014 **K.B. Hatzell**, *P. Simon, P.L. Taberna, B. Daffos, E. Iwama, T. Tzedakis, Y. Gogotsi,and O. Gogotsi*, Method and device to remove ions from an electrolytic media, such as water desalination, using suspension of divided materials in a flow capacitor, U.S. Patent Application. 14/896,356, filed June 5, 2014.

Post-Doc Advising (6 current, 11 Total)

1. Maha Yusuf (Aug. 2023-Present)
Notable Accomplishments: Princeton Presidential Post Doctoral Fellow

2. Daren Wu (2023-Present)
   Topic: DOE Basic Energy Science - Liquid Metal Electrodes
3. Min-Gi Jeong (2022-Present)
   Topic: Office of Naval Research Project on Thermal Gradients in Solid State Batteries
4. Yaguang Zhu (2022-Present)
   Topic: DOE Energy Frontier Research Center - focused on Membranes and direct air capture
   Notable Accomplishments: Mistletoe Fellowship - Momental Foundation
5. Lin Lin (2023-Present)
   Topic: ONR Project on Polymorphism is solid ion conductors
6. Se-Hwan Park (2023-Present)
   Topic: DARPA Project morphogenic interfaces for advanced anodes
7. Zilai Yan (2022-2023)
   Topic: NASA Project on Batteries exposed to lunar eclipse environments
   Current Position: Materials Characterization Scientist, Solid Energy Systems
8. Dhanya Puthesseri (2021-2023)
   Topic: DARPA Project on Advanced X-ray Characterization of Thick Cathodes for Solid State Batteries
   Current Position: Senior Battery Scientist at 24M
9. Yang Du (2021-2022)
   Topic: DOE Solar Energy Technology Office - X-ray characterization of falling particle receivers
10. Yuxun Ren (2019-2021); Vanderbilt
    Topic: Hybrid Solid Electrolytes for Solid State Batteries
    Current Position: Post-Doc University of Maryland
11. Fengyu Shen (2017-2019); Vanderbilt
    Topic: Lithium metal garnet based solid state batteries
    Current Position: Project Scientist Lawrence Berkeley National Laboratory

Graduate Advising (7 Current [F2023], 11 Total)

1. Ana Claus (2023-Present) - PhD Student in MAE at Princeton (G1)
   Topic: TBD
2. Simon Ji (2023-Present) - PhD Student in MAE at Princeton (G1)
   Topic: TBD
3. Yanjie Zheng (2019-Present) - PhD Student in MAE at Princeton (G4)
   Topic: Decarbonizing Heat (Co-Advised with Jesse Jenkins)
   Notable Accomplishments: Best Paper and Presentation at ASME Energy and Sustainability Conference
4. Xunakai Chen (2021-Present) - PhD Student in CBE at Princeton University (G3)
   Topic: Silicon solid state batteries
5. Kim Ventura-Martinez - PhD Student in Chemistry (G2)
   Topic: Low dimensional materials
6. Austin Fan (2022-Present) - PhD Student in CBE at Princeton University (G2)
   Topic: Low temperature electrolytes for space missions
   Notable Accomplishments: NSF Graduate Research Fellow
7. Austin Booth (2022-Present) - PhD Student in CBE at Princeton University (G2)

Topic: Direct Air Capture

8. Wahid Zaman (2018-2022) - PhD Student in ME at Vanderbilt University; Visiting Researcher at Princeton

   Topic: High capacity stripping of lithium metal

   Notable Accomplishments: Best Presentation at the Energy informatics forum conference

   Current Position: Exponent Consulting

9. Nicholas Hortance (2018-2022) - PhD Student in Interdisciplinary Material Science at Vanderbilt University

   Topic: Intermediate Temperature Synthesis of Ammonia

   Current Position: Electric Hydrogen

10. Bryce Harkey (2017-2019) - MS Student in Interdisciplinary Material Science at Vanderbilt University

    Topic: Polymer Electrolyte for Solid State Batteries

    Current Position: Carbon 3D

11. Marm Dixit (2017-2021) - PhD Student in ME at Vanderbilt University

    Topic: Advanced x-ray characterization of solid state batteries

    Notable Accomplishments: Weinberg Distinguished Staff Fellow at Oak Ridge National Lab

    Current Position: Staff Scientist at Oak Ridge National Lab

Undergraduate Students, Senior Thesis [0 Current, 5 Total)

1. Timothy Kopek - MAE Undergraduate Student - 2022-2023

   Topic: Moisture Driven Direct Air Capture

2. Ethan Lam - MAE Undergraduate Student - 2022-2023

   Topic: Moisture Driven Direct Air Capture

3. Diane Yang - Electrical Engineering Undergraduate Student - 2022-2023

   Topic: Batteries Architecture Design for EVs

4. Camille Reeves - Astrophysics Undergraduate Student - 2022-2023

   Topic: Implication of the Kesseler Effect on Waste Management in Space

5. Shaylee McBride - MAE Undergraduate Student - 2021-2022

   Topic: Batteries design for UAVs

Undergraduate Students, Research [2 Current, 20 Total]

1. Hao Teng (2023), Electrical and Computer Engineering at Princeton University (Class of 2026)

   Topic: Advanced Visualization of 3D X-ray Imaging

2. Justin Smallwood (2023), Mechanical and Aerospace Engineering at Princeton University (Class of 2026)

   Topic: Moisture Driven Direct Air Capture

3. Andrew He (2023), Electrical and Computer Engineering at Princeton University (Class of 2026)

   Topic: Advanced Visualization of 3D X-ray Imaging

4. Frida Ruiz (2022), BS in Civil and Environmental Engineering at Princeton University (Class of 2025)

   Topic: Silicon anode for solid state batteries

5. Xinlin Zhong (2018-2020), Mechanical Engineering at Vanderbilt University (Class of 2020)

   Topic: Lithium metal electrochemistry

Current Position: PhD Student at MIT

6. Matthew Regala (2018-2020), Mechanical Engineering at Vanderbilt University (Class of 2020)
   Topic: Tortuosity effects in all solid state battery
7. Tristan Gilbert (2018-2019), Mechanical Engineering at Vanderbilt University (Class of 2020)
   NSF GRFP at Stanford Mechanical Engineering
8. Kyra Ownsby (2019)- Chemical Engineering at Vanderbilt University (Class of 2021)
   Topic: Li metal solid state batteries
   Current Position: NSF GRFP, Chemical Engineering at University of Tennessee
9. Latif Gbadamoshie (2018-2020), Mechanical Engineering at Vanderbilt (Spring 2022 Graduation)
   Topic: Synthesis and processing of oxide solid electrolytes
10. Nafisa Ibrahim (2018), BS in Chemistry (Summer 2018)
    Topic: Processing hybrid solid electrolytes
    Best Poster Award and Winner of Travel Support to NSF REU Poster Program (2018)
    Current Position: NSF GRFP, Chemistry at UIUC
11. Matt MacDonald (2019), Mechanical Engineering at Vanderbilt University
    Topic: Transport at polymer|ceramic interfaces *VUSE REU Program*
12. Jonathan Algoo (2019), Chemistry at Vanderilt University
    Topic: Printable humidity sensors using MXene Materials
    SyBBURE Research Program
13. Putri Desmawardi (2017)), Chemical Engineering at Vanderbilt University
    Topic: Printing hybrid solid electrolytes
14. Kelly Couget (2017), Chemical Engineering at Vanderbilt University
    Topic: Colloidal Inks
15. Jordan Bair (2017), Chemical Engineering at Vanderbilt University
    Topic: Psuedocapacitive materials for desalination applications
16. Savannah Appleberry (2017), Chemical Engineering at Vanderbilt University
    Topic: Dynamic light scattering of colloidal inks
17. Cassidy McConnell (2017), Civil Engineering and Vanderbilt University
    Topic: Phosphate electroadsorption mechanisms
18. Aaron Douglas (2017), Mechanical Engineering at Vanderbilt University)
    Topic: Phosphate electroadsorption mechanisms
19. Rachel Tan, UC Berkeley (2016).
    Topic: Colloidal materials for manufacturing
20. Sabrina Curtis, UC Berkeley (2016).
    Topic: Advanced electrolytes for flow batteries

High School Students Students, Research [3 Total]

1. Stella Vujic, Harpeth High School (2018), Yale (2022).
2. Reese Graves, Harpeth High School (2020), Naval Academy (2024).
3. Devon Campbell, Harpeth High School (2021), Columbia University (2025).

Thesis Committee [7 Current, 11 Total]

1. Yubin Lin, Electrical and Computer Engineering at Princeton University (2022-Present)
   Title: TBD
   Advisor: Prof. Daniel Cohen

2. Guangye Zhou Civil and Environmental Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Jason Ren

3. Cole Hullfish Chemical and Biological Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Michele Sarazen

4. Yijie Xu, Mechanical and Aerospace Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Yiguang Ju

5. Christopher Kondratowicz, Mechanical and Aerospace Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Yiguang Ju and Prof. Bruce Koel

6. Mohd Shaharyar Wani, Mechanical and Aerospace Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Craig Arnold

7. Camila Llerena-Olivera, Environmental Engineering at Princeton University (2022-Present)
Title: TBD
Advisor: Prof. Peter Jaffe

8. Kody Wolfe, Interdisciplinary Department of Material Science at Vanderbilt University (2021)
Title: Electron Transfer at Biologically Modified Electrodes
Advisor: Prof. David Cliffel

9. Ray Matsumoto, Chemical and Biomolecular Engineering at Vanderbilt University (2020)
Title: Molecular Simulation Studies Toward Robust Supercapacitors: Scalable Screening and Modeling of Complex Systems
Advisor: Prof. Peter Cummings

10. Krysta Waldrop, Chemical and Biomolecular Engineering at Vanderbilt University (2020)
Title: Electrospun Electrodes for Proton Exchange Membrane Fuel Cells
Advisor: Prof. Peter Pintauro

11. Kate Moyer, Interdisciplinary Department of Material Science at Vanderbilt University (2019)
Title: Electrochemical Synthesis of Energy Storage Systems and Materials
Advisor: Prof. Cary Pint

12. Kelsay Neely, Mechanical Engineering at Vanderbilt University (2019))
Title: Additively Manufactured Thermite-Based Energetics: Characterization and Applications
Adivsors: Prof. Kevin Galloway and Prof. Alvin Strauss

13. Li Wang, , Interdisciplinary Department of Material Science at Vanderbilt University (2019)
Title: Thermodynamics of Capacitive Deionization
Advisor: Prof. Shihong Lin

PhD Thesis Reader [1 total]

1. Juliane I. Preimesberger, Mechanical and Aerospace Engineering at Princeton University (2022)
Title: Studying the Piezoelectrochemical Phenomenon Using Lithium-Ion Batteries
Advisor: Prof. Craig Arnold

University Service

2023 MAE Junior Faculty Search Committee

2023- Committee on conference and faculty appeal

2023 Andlinger Center Distinguished Post Doctoral Review Committee

2022– Priorities Committee

2022 Andlinger Center Maeder Fellowship Review Committee

2022– First year academic advisor at Princeton

2021– Academic Advisor for Student Chapter of the Electrochemical Society

2021– Mechanical and Aerospace Engineering Graduate Admission Committee

2021– Member, Program in Sustainable Energy

2021-2022 Andlinger Center for Energy and Environment Junior Faculty Search Commitee

2021-2022 Mechanical and Aerospace Engineering Faculty Search Committee

2017-2018 Civil and Environmental Engineering Faculty Search Committee at Vanderbilt University

2017-2021 Graduate Admission Committee at Vanderbilt University

2017-2021 Academic Advisor for Vanderbilt Engineering Ambassadors

Professional Service

2023 Guest Editor Wiley - ChemSusChem/Advanced Energy Materials topic on Post Lithium Storage - Shaping the Future of Batteries

2023-Present **Appointed** to Editorial Board for Royal Society of Chemistry Material Horizons

2022-2024 **Elected** Co-Chair (2022) and Chair (2024) for Gordon Research Conference on Batteries

2022-2025 **Appointed** to the National Synchrotron Light Source II (NSLS-II) Microscopy and Imaging Proposal Review Panel (PRP)

Evaluates user proposals for synchrotron time and assigns instrument allocations.

2022– **Topic Editor:** ACS Accounts for Materials Research

Accounts of Materials Research publishes concise personal reviews on research focused on materials science and engineering. Duties involve processing 30+ papers annually, assign reviewers, evaluate reviews/perspectives, and make editorial decisions.

2020-2022 **Scientific Advisory Committee** for Department of Energy Energy Frontier in Research Center at Argonne National Lab/U Chicago (AMEWS)

2019-2021 **Elected** Representative to the User Executive Committee - Center for Nanophase Material Science at Oak Ridge National Lab

2017– **Proposal Reviewer** for Department of Energy Basic Energy Sciences, Department of Energy Technology Commercialization, Department of Energy Advanced Manufacturing Office, Department of Energy EFRC, National Science Foundation Reviewer (Division of Materials Research and Chemical, Biological, Environmental, and Transport Division), Solar Energy Technology Office

2020-2022 **Associate Editor** for Frontiers in Chemical Engineering, sub-topic electrochemical engineering

2018-2019 **Member** of the Swarthmore College advisory board for the engineering department

2016-2017 **Member** of Women's Initiative Committee at AICHE

2015– **Journal Reviewer:** Nature, Science, Nature Energy, Nature Materials, ACS Applied Materials and Interfaces, Journal of Energy Storage, ACS Energy Letters, Environmental Science and Technology, Journal of Material Chemistry A, etc.

2017-Present **Symposium Organization and Chair:** Electrochemical Society (ECS) - Chair of Solid State Battery Session 2019, American Chemical Society (ACS) - Chaired session on electrochemical separations, Orlando Fl May 2019, Electrochemical Society -Organizer Intermediate temperature fuel cell sympositum, Atlanta, Ga Oct. 2019, Session Chair at Material Research Society (2020) meeting in *Symposium: CM03: In Situ/Operando Analysis of Electrochemical Materials and Interfaces, Materials Research Society Fall 2022 - Organizer of Materials for Battery Recycling Symposium*

Educational Outreach and Diversity Equity and Inclusion

2023 Joint US-Africa Materials Institute: **NSF Workshop, Nairobi Kenya**
Speaker and activity leader on materials for separation for students in students from Africa/US attending the workshop.

2022 Leader of Power Hour at Gordon Research Conference: **GRC Batteries**
Led two hour workshop on diversity, equity, and inclusion within the battery community.

2021-2022 Program in Institutional and Historical Racism in Engineering, Technology, and Innovation
Participated in inaugural class focused on institutional racism hosted by Keller Center.

2020 Guest Lecture: **Meet the Engineer**
Guest lectured at Brentwood middle school for 'meet the engineer' day.

2019 Science Demo: **Nashville Maker Faire**
My research group hosted a demo on electrodeposition and electrochemistry at the Maker Faire 2019. Maker faire draws over 500 people from surrounding region for day long event.

2018-2021 Science Demo: **Vanderbilt Science Academy**
My research group hosted a demo on hydrogen production for a group of middle school students during the summer of 2018. This program is for student in 7th and 8th graders and is intended to expose them to the wide array of opportunities in engineering.

2017-2021 Faculty Advisor: **Women in Mechanical Engineering**
Group provides mentoring, professional development, and education outreach for women in mechanical engineering .

2017-2021 Faculty Advisor: **Engineering Ambassadors**
Group organizes an Engineering Day annually for local middle school students. Event draws over 60+ students to participate in engineering activities. Over 30 graduate students are involved across campus.

2017-2021 Research Mentor: **Harpeth Hall for Girls**
Our research group facilitates a year long research opportunity for a junior or senior girl at Harpeth Hall (Nashville Area All-Girls School).

Teaching and Advising

- Five semesters of teaching Undergraduate Thermodynamics at Vanderbilt
- Created an undergraduate class at Vanderbilt: Battery and Fuel Cell Electric Vehicles (Fall 2019)
- Created new undergraduate/graduate class at Princeton Electrochemical Engineering (Fall 2021, Spring 2022)
- Create new undergraduate course on Negative Emissions Technologies at Princeton (Fall 2022)

Professional Memberships

Royal Society of Chemistry.
Electrochemical Society.
Materials Research Society.
American Chemical Society.
American Institute of Chemical Engineers.
American Society of Mechanical Engineers.
American Association for the Advancement of Science.