

# CHRISTOPHER J. BARTEL

cbartel@umn.edu | <https://bartel.cems.umn.edu> | @ChrisJBartel | +1 612 625 6345

485 Amundson Hall, 421 Washington Ave SE 250, Minneapolis, MN 55455

Last updated: 12/27/24

## Appointments

---

<b>Assistant Professor</b> , University of Minnesota Chemical Engineering and Materials Science ( <a href="#">link</a> ) Chemical Physics, <i>Graduate Faculty</i> ( <a href="#">link</a> ) Data Science Initiative, <i>Affiliate</i> ( <a href="#">link</a> )	2022 – present
<b>Postdoctoral Scholar</b> , University of California, Berkeley Materials Science and Engineering ( <a href="#">link</a> ) Advisor: Prof. Gerbrand Ceder	2019 – 2022
<b>Graduate Research Assistant</b> , University of Colorado Boulder Chemical Engineering ( <a href="#">link</a> ) Advisors: Prof. Charles Musgrave & Prof. Alan Weimer Thesis: <i>Data-driven descriptors for the thermochemistry of inorganic crystalline solids</i>	2014 – 2018

## Education

---

<b>PhD</b> University of Colorado Boulder, Chemical Engineering	2014 – 2018
<b>BS</b> Auburn University, Chemical Engineering	2010 – 2014

## Publications

---

[Google Scholar](#) | [ORCID:0000-0002-5198-5036](#)

\* denotes corresponding author, + denotes equal contribution, denotes Bartel research group member

### UMN-affiliated

57. M. Murphy<sup>+</sup>, [K. Noordhoek](#)<sup>+</sup>, S. Gathmann, P. Dauenhauer\*, **C. Bartel**\*, Catalytic resonance theory: forecasting the flow of programmable catalytic loops, *Digital Discovery*, **2025**, [Accepted](#)
56. F. Lee, N. Szymanski, [K. Noordhoek](#), H. Shin, D. Kim, **C. Bartel**\*, B. Jalan\*, Unraveling the growth dynamics of rutile Sn<sub>1-x</sub>Ge<sub>x</sub>O<sub>2</sub> using theory and experiment, *Nano Letters*, **2025**, [Accepted](#)
55. Y. Cheng<sup>+</sup>, Y. Fujii<sup>+</sup>, Y. Nomata<sup>+</sup>, [M. Mazumder](#), N. Rosero-Navarro, A. Yamashita, Y. Mizuguchi, C. Moriyoshi, T. Mitsudome, T. Ina, K. Nitta, K. Tadanga, A. Miura\*, **C. Bartel**\*, Synthesis, electronic structure, and redox chemistry of Li<sub>2</sub>MnP<sub>2</sub>S<sub>6</sub>, a candidate high-voltage cathode material, *Chemistry of Materials*, **2024**, *36*, 9947-9958
54. N. Szymanski, Y. Byeon, Y. Sun, Y. Zeng, J. Bai, D. Kim, B. Helms, **C. Bartel**, H. Kim\*, G. Ceder\*, Quantifying the regime of thermodynamic control for solid-state reactions during ternary metal oxide synthesis, *Science Advances*, **2024**, *10*, 27, [eadp3309](#)
53. [N. Szymanski](#), **C. Bartel**\*, Computationally guided synthesis of battery materials, *ACS Energy Letters*, **2024**, *9*, 2902-2911
52. S. Gathmann, **C. Bartel**, L. Grabow, O. Abdelrahman, C. Frisbie, P. Dauenhauer\*, Dynamic promotion of the oxygen evolution reaction via programmable metal oxides, *ACS Energy Letters*, **2024**, *9*, 2013-2023
51. [K. Noordhoek](#), **C. Bartel**\*, Accelerating the prediction of inorganic surfaces with machine learning interatomic potentials, *Nanoscale*, **2024**, *16*, 6365-6382
50. M. Murphy, S. Gathmann, **C. Bartel**, O. Abdelrahman, P. Dauenhauer\*, Catalytic resonance theory: circumfluence of programmable catalytic loops, *Journal of Catalysis*, **2024**, *430*, 115343
49. G. Tran, A. Wustrow, D. O'Nolan, S. Tao, **C. Bartel**, T. He, M. McDermott, B. McBride, K. Chapman, S. Billinge, K. Persson, G. Ceder, J. Neilson\*, Selective synthesis towards defect-rich LaMnO<sub>3</sub> by low-temperature co-metathesis, *Inorganic Chemistry*, **2024**, *63*, 7, 32503257
48. Y. Zeng<sup>+</sup>, N. Szymanski<sup>+</sup>, T. He, K. Jun, L. Gallington, H. Huo, **C. Bartel**, B. Ouyang, G. Ceder\*, Selective formation of metastable polymorphs in solid-state synthesis, *Science Advances*, **2024**, *10*, 3, [eadj5431](#)

47. K. Cruse, V. Baibakova, M. Abdelsamie, K. Hong, **C. Bartel**, A. Trewartha, A. Jain, C. Sutter-Fella, G. Ceder\*, Text-mining the literature to inform experiments and rationalize impurity phase formation in BiFeO<sub>3</sub>, *Chemistry of Materials*, **2024**, *36*, 2, 772-785
46. M. McDermott, B. McBride, C. Regier, G. Tran, Y. Chen, A. Corrao, M. Gallant, G. Kamm, **C. Bartel**, K. Chapman, P. Khalifah, G. Ceder, J. Neilson, K. Persson\*, Assessing thermodynamic selectivity of solid-state reactions towards predictive synthesis of inorganic materials, *ACS Central Science*, **2023**, *9* (10), 1957-1975
45. N. Szymanski, P. Nevatia, **C. Bartel**, Y. Zeng, G. Ceder\*, Autonomous decision making for solid-state synthesis of inorganic materials, *Nature Communications*, **2023**, *14*, 6956
44. B. Deng, P. Zhong\*, K. Jun, K. Han, **C. Bartel**, G. Ceder\*, CHGNet: Pretrained universal neural network potential for charge-informed molecular dynamics and beyond, *Nature Machine Intelligence*, **2023**, *5*, 1031-1041
43. S. Nair, K. Noordhoek, D. Lee, **C. Bartel\***, B. Jalan\*, Solid source metal-organic MBE for elemental Ir and Ru films, *Journal of Vacuum Science & Technology A*, **2023**, *41* (6): 0620701
42. N. Szymanski, Z. Lun, J. Liu, Z. Cai, E. Self, **C. Bartel**, J. Nanda, B. Ouyang, G. Ceder\*, Modeling short-range order in disordered rocksalt cathodes by pair distribution function analysis, *Chemistry of Materials*, **2023**, *35*, 13, 49224934
41. T. He, H. Huo, **C. Bartel**, Z. Wang, K. Cruse, G. Ceder\*, Precursor recommendation for inorganic synthesis by machine learning materials similarity from scientific literature, *Science Advances*, **2023**, *9*, 23, adg8180
40. M. Kothakonda, A. Kaplan, E. Isaacs, **C. Bartel**, J. Furness, J. Ning, C. Wolverton, J. Perdew, J. Sun\*, Testing the r<sup>2</sup>SCAN density functional for the thermodynamic stability of solids with and without a van der Waals correction, *ACS Materials Au*, **2023**, *3*, 2, 102-111

#### Prior to joining UMN

39. N. Szymanski<sup>+</sup>, B. Rendy<sup>+</sup>, Y. Fei<sup>+</sup>, R. Kumar<sup>+</sup>, T. He, D. Milsted, M. McDermott, M. Gallant, E. Cubuk, A. Merchant, H. Kim, A. Jain, **C. Bartel**, K. Persson, Y. Zeng\*, G. Ceder\*, An autonomous laboratory for inorganic materials discovery, *Nature*, **2023**, *624*, 86-91
38. M. Abdelsamie, K. Hong, K. Cruse, **C. Bartel**, V. Baibakova, A. Trewartha, A. Jain, G. Ceder, C. Sutter-Fella\*, Combining text mining, in situ characterization, and ab initio calculations to rationalize BiFeO<sub>3</sub> crystallization pathways, *Matter*, **2023**, *6*(12), 4291-4305
37. N. Szymanski, **C. Bartel**, Y. Zeng, M. Diallo, H. Kim, G. Ceder\*, Adaptive X-ray diffraction with automatic phase identification, *npj Computational Materials*, **2023**, *9* (1), 31
36. M. Cosby, **C. Bartel**, A. Corrao, A. Yakovenko, L. Gallington, G. Ceder, P. Khalifah\*, Thermodynamic and kinetic barriers limiting solid state reactions resolved through in situ synchrotron studies of lithium halide salts, *Chemistry of Materials*, **2023**, *35*, 3, 917-926
35. L. Blanc<sup>+</sup>, Y. Choi<sup>+</sup>, A. Shyamsunder, B. Key, S. Lapidus, C. Li, L. Yin, B. Gwalani, Y. Xiao, **C. Bartel**, G. Ceder\*, L. Nazar\*, Phase stability and kinetics of topotactic dual Ca<sup>2+</sup>-Na<sup>+</sup> ion electrochemistry in NaSICON NaV<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>, *Chemistry of Materials*, **2023**, *35*, 2, 468-481
34. R. Sherbondy<sup>+</sup>, R. Smaha<sup>+</sup>, **C. Bartel**, M. Holtz, K. Talley, B. Levy-Wendt, C. Perkins, S. Eley, A. Zakutayev, G. Brennecke\*, High-throughput selection and experimental realization of two new Ce-based nitride perovskites: CeMoN<sub>3</sub> and CeWN<sub>3</sub>, *Chemistry of Materials*, **2022**, *34*, 15, 6883-6893
33. H. Huo, **C. Bartel**, T. He, A. Trewartha, A. Dunn, B. Ouyang, A. Jain, G. Ceder\*, Machine-learning rationalization and prediction of solid-state synthesis conditions, *Chemistry of Materials*, **2022**, *34*, 16, 7323-7336
32. N. Szymanski<sup>+</sup>, Y. Zeng<sup>+</sup>, T. Bennett, S. Patil, J. Keum, E. Self, J. Bai, Z. Cai, R. Giovone, B. Ouyang, F. Wang, **C. Bartel**, R. Clement, W. Tong, J. Nanda, G. Ceder\*, Understanding the fluorination of disordered rocksalt cathodes through rational exploration of synthesis pathways, *Chemistry of Materials*, **2022**, *34*, 15, 7015-7028
31. **C. Bartel\***, Review of computational approaches to predict the thermodynamic stability of inorganic solids, *Journal of Materials Science*, **2022**, *57*:10475-10498 (invited)

30. R. O'Toole, C. Hill, P. Buur, **C. Bartel**, C. Gump, C. Musgrave, A. Weimer\*, Hydrolysis protection and sintering of aluminum nitride powders with yttria nanofilms, *Journal of the American Ceramic Society*, **2022**, 105, 5, 3123-3127
29. B.J. Kwon\*, L. Yin, **C. Bartel**, K. Kumar, P. Parajuli, J. Gim, S. Kim, R. Klie, S. Lapidus, B. Key, G. Ceder, J. Cabana\*, Intercalation of Ca into a highly defective oxide at room temperature, *Chemistry of Materials*, **2022**, 34, 2, 836-846
28. R. Kingsbury, A. Gupta, **C. Bartel**, J. Munro, S. Dwaraknath, M. Horton, K. Persson\*, Performance comparison of r<sup>2</sup>SCAN and SCAN metaGGA density functionals for solid materials via an automated, high-throughput computational workflow, *Physical Review Materials*, **2022**, 6, 013801
27. Y. Chen, **C. Bartel**, M. Avdeev, Y. Zhang, P. Zhong, G. Zeng, Z. Cai, H. Kim, H. Ji\*, G. Ceder\*, Solid-state Ca ion diffusion in Ca<sub>1.5</sub>Ba<sub>0.5</sub>Si<sub>5</sub>O<sub>3</sub>N<sub>6</sub>, *Chemistry of Materials*, **2022**, 34, 1, 128-139
26. J. Hancock, K. Griffith, Y. Choi, **C. Bartel**, S. Lapidus, J. Vaughey, G. Ceder, K. Poeppelmeier\*, Expanding the ambient-pressure phase space of CaFe<sub>2</sub>O<sub>4</sub>-type sodium post spinel host-guest compounds, *ACS Organic and Inorganic Au*, **2022**, 2, 1, 8-22 (*invited | cover*)
25. H. Park\*, **C. Bartel**, G. Ceder, P. Zapol\*, Layered transition metal oxides as Ca intercalation cathodes: a systematic first-principles evaluation, *Advanced Energy Materials*, **2021**, 11, 48, 2101698
24. B. Ouyang<sup>+</sup>, J. Wang<sup>+</sup>, T. He, **C. Bartel**, H. Huo, Y. Wang, V. Lacivita, H. Kim, G. Ceder\*, Synthetic accessibility and stability rules of NASICONs, *Nature Communications*, **2021**, 12, 5752
23. L. Blanc<sup>+</sup>, **C. Bartel**<sup>+</sup>, Ha. Kim, Y. Tian, Hy. Kim, A. Miura, G. Ceder\*, L. Nazar\*, Toward the development of a high-voltage Mg cathode using a chromium sulfide host, *ACS Materials Letters*, **2021**, 3, 1213-1220
22. L. Yin, B. Kwon, Y. Choi, **C. Bartel**, M. Yang, C. Liao, B. Key, G. Ceder, S. Lapidus\*, Operando X-ray diffraction studies of the Mg-ion migration mechanisms in spinel cathodes for rechargeable Mg-ion batteries, *Journal of the American Chemical Society*, **2021**, 143, 28, 10649-10658
21. N. Szymanski, Y. Zeng, H. Huo, **C. Bartel**\*, H. Kim\*, G. Ceder\*, Toward autonomous design and synthesis of novel inorganic materials, *Materials Horizons*, **2021**, 8, 2169-2198 (*invited*)
20. N. Szymanski, **C. Bartel**, Y. Zeng, Q. Tu, G. Ceder\*, Probabilistic deep learning approach to automate the interpretation of multi-phase diffraction spectra, *Chemistry of Materials*, **2021**, 33, 11, 4204-4215
19. A. Miura<sup>+</sup>\*, **C. Bartel**<sup>+</sup>, Y. Goto, Y. Mizuguchi, C. Moriyoshi, Y. Kuroiwa, Y. Wang, T. Yaguchi, M. Shirai, M. Nagao, N. Rosero-Navarro, K. Tadanaga, G. Ceder, W. Sun\*, Observing and modeling the sequential pairwise reactions that drive solid-state ceramic synthesis, *Advanced Materials*, **2021**, 33, 24, 2100312
18. J. Koettgen, **C. Bartel**, J. Shen, K. Persson, G. Ceder\*, First-principles study of CaB<sub>12</sub>H<sub>12</sub> as a potential solid-state conductor for Ca, *Physical Chemistry Chemical Physics*, **2020**, 22 (47), 27600-27604
17. **C. Bartel**\*, A. Trewartha, Q. Wang, A. Dunn, A. Jain, G. Ceder\*, A critical examination of compound stability predictions from machine-learned formation energies, *npj Computational Materials*, **2020**, 6, 97
16. N. Singstock, **C. Bartel**, A. Holder\*, C. Musgrave\*, High-throughput analysis of materials for chemical looping processes, *Advanced Energy Materials*, **2020**, 14, 2000685
15. A. Miura\*, H. Ito, **C. Bartel**, W. Sun\*, N. Rosero Navarro, K. Tadanaga, H. Nakata, K. Maeda, G. Ceder, Selective metathesis synthesis of MgCr<sub>2</sub>S<sub>4</sub> by control of thermodynamic driving forces, *Materials Horizons*, **2020**, 7, 1310-1316
14. **C. Bartel**\*, J. Clary, C. Sutton, D. Vigil-Fowler, B. Goldsmith, A. Holder, C. Musgrave\*, Inorganic halide double perovskites with optoelectronic properties modulated by sublattice mixing, *Journal of the American Chemical Society*, **2020**, 142, 11, 5135-5145 (*correction*)
13. J. Koettgen, **C. Bartel**, G. Ceder\*, Computational investigation of chalcogenide spinel conductors for all-solid-state Mg batteries, *Chemical Communications*, **2020**, 56, 1952-1955

12. E. Rognerud<sup>+</sup>, C. Rom<sup>+</sup>, P. Todd, N. Singstock, **C. Bartel**, A. Holder, J. Neilson\*, Kinetically controlled low-temperature solid-state metathesis of manganese nitride Mn<sub>3</sub>N<sub>2</sub>, *Chemistry of Materials*, **2019**, 31, 18, 7248-7254
11. W. Sun\*, **C. Bartel**, E. Arca, S. Bauers, B. Matthews, B. Orvañanos, J. Tate, W. Tumas, A. Zakutayev, S. Lany, A. Holder\*, G. Ceder, A map of the inorganic ternary metal nitrides, *Nature Materials*, **2019**, 18, 732-739
10. **C. Bartel**, J. Rumptz, A. Weimer, A. Holder\*, C. Musgrave\*, High-throughput equilibrium analysis of active materials for solar thermochemical ammonia synthesis, *ACS Applied Materials & Interfaces*, **2019**, 11, 28, 24850-24858 (invited)
9. A. Palumbo, **C. Bartel**, J. Sorli, A. Weimer\*, Characterization of products derived from the high temperature flash pyrolysis of microalgae and rice hulls, *Chemical Engineering Science*, **2019**, 196, 527-537
8. **C. Bartel\***, C. Sutton, B. Goldsmith, R. Ouyang, C. Musgrave, L. Ghiringhelli\*, M. Scheffler, New tolerance factor to predict the stability of perovskite oxides and halides, *Science Advances*, **2019**, 5, eaav0693
7. **C. Bartel**, A. Weimer, S. Lany, C. Musgrave\*, A. Holder\*, The role of decomposition reactions in assessing first-principles predictions of solid stability, *npj Computational Materials*, **2019**, 5 (1), 4
6. R. O'Toole<sup>+</sup>, **C. Bartel**<sup>+</sup>, M. Kodas, A. Horrell, S. Ricote, N. Sullivan, C. Gump, C. Musgrave, A. Weimer\*, Particle atomic layer deposition of alumina for sintering yttria-stabilized cubic zirconia, *Journal of the American Ceramic Society*, **2019**, 102 (5) 2283-2293
5. **C. Bartel**, S. Millican, A. Deml, J. Rumptz, W. Tumas, A. Weimer, S. Lany, V. Stevanović, C. Musgrave\*, A. Holder\*, Physical descriptor for the Gibbs energy of inorganic crystalline solids and temperature-dependent materials chemistry, *Nature Communications*, **2018**, 9, 4168
4. B. Goldsmith\*, J. Esterhuizen, J. Liu, **C. Bartel**, C. Sutton, Machine learning for heterogeneous catalyst design and discovery, *AIChE Journal*, **2018**, 64 (7), 2311-2323 (invited | cover)
3. E. Arca\*, S. Lany, J. Perkins, **C. Bartel**, J. Mangum, W. Sun, A. Holder, G. Ceder, B. Gorman, G. Teeter, W. Tumas, A. Zakutayev\*, Redox-mediated stabilization of zinc molybdenum nitride, *Journal of the American Chemical Society*, **2018**, 140 (12), 4293-4301 (cover)
2. S. Zhang, E. Yu., S. Gates, W. Cassata, J. Makel, A. Thron, **C. Bartel**, A. Weimer, R. Faller, P. Stroeve, J. Tringe\*, Helium interactions with alumina formed by atomic layer deposition show potential for mitigating problems with excess helium in spent nuclear fuel, *Journal of Nuclear Materials*, **2018**, 499, 301-311
1. **C. Bartel**, C. Muhich, A. Weimer\*, C. Musgrave\*, Aluminum nitride hydrolysis enabled by hydroxyl-mediated surface proton hopping, *ACS Applied Materials & Interfaces*, **2016**, 8 (28), 18550-18559

## 2 other publications

2. **C. Bartel**, R. O'Toole, M. Kodas, A. Weimer, Core-shell ceramic particle colloidal gel and solid oxide fuel cell electrolyte, **2023**, US Patent No. 11,613,502 B2
1. **C. Bartel\***, Data-centric approach to improve machine learning models for inorganic materials, *Patterns*, **2021**, 2, 11, 100361 (invited preview)

## Honors & Awards

<b>Scialog Fellow in Sustainable Minerals, Metals, and Materials</b> Selected as one of ~50 early-career faculty fellows ( <a href="#">link</a> )	2024
<b>Emerging Investigator, <i>Nanoscale</i></b> ( <a href="#">link</a> )	2024
<b>Scialog Fellow in Negative Emission Science</b> Selected as one of ~50 early-career faculty fellows ( <a href="#">link</a> )	2023
<b>Outstanding Reviewer for <i>Materials Horizons</i></b> One of 10 selected for number, timeliness, and quality of reviews ( <a href="#">link</a> )	2020

<b>Max S. Peters Outstanding Graduate Student Award</b>	2019
Awarded annually to the top Ph.D. graduate in Chemical Engineering at CU-Boulder	
<b>DOE EFRC Team Science Competition Winner</b>	2019
One of 6 winners from 40 EFRC teams ( <a href="#">link</a> )	
<b>University of Washington Distinguished Young Scholars Seminar</b>	2019
One of 8 selected speakers from >100 applicants ( <a href="#">link</a> )	
<b>Department of Education GAANN Fellowship (×2)</b>	2017, 2018
Provided full tuition and graduate stipend for 15 months	
<b>National Science Foundation Graduate Research Fellowship</b>	2014 – 2017
Provided full tuition and graduate stipend for 36 months	
<b>Department of Chemical and Biological Engineering Service Award (×2)</b>	2016, 2017
Awarded for leading the organization of volunteering and outreach events	

## Teaching

---

### Course Instructor

University of Minnesota — Chemical Engineering and Materials Science

**ChEn/MatS 5802 – Applied ML in Chemical and Materials Engineering**  
Spring 2023 (5.8), Spring 2024 (5.8), *Spring 2025*

**ChEn 3201 – Numerical Methods in Chemical Engineering Applications**  
Fall 2024 (5.5)

**ChEn 3005 – Transport Phenomena: Momentum and Heat**  
Fall 2022 (5.5), Fall 2023 (5.7)

Ratings in parentheses are average Student Rating of Teaching scores for “Instructor Overall” (max = 6.0)

## Service (UMN)

---

<b>Research Supervision (<a href="#">Bartel Research Group</a>)</b>	2022 – present
<i>Postdoctoral Researchers</i>	
Dr. Nathan Szymanski (2024–)	
Dr. Madhulika Mazumder (2023–2024)   <i>Next position:</i> Postdoc, University of Birmingham (UK)	
<i>Graduate researchers (PhD)</i>	
Christopher Akiki (2024–)	
Zichen Huang (2024–)	
Adelina Carr (2023–)	
Armand Lannerd (2023–)	
Yi-Ting Cheng (2022–)	
Kyle Noordhoek (2022–)	
Jane Schlesinger (2022–)	
<i>Undergraduate researchers</i>	
Jingyi Fang (2024–)	
Talia Glinberg (2024–)	
Jerome Kappuzha (2024–)	
Simon Hjaltason (2023–)	
Jacob Nelson (2023–)	
Sean Sullivan (2022–2024)   <i>Next position:</i> Plant Engineer, Crysalis Biosciences	
<b>Graduate Admissions Committee</b>	2022 – present
Ph.D. Materials Science ( <a href="#">link</a> )	
M.S. Data Science for Chemical Engineering and Materials Science ( <a href="#">link</a> )	
<b>CSE Data Science Initiative   Ambassador to CEMS</b>	2024 – present
<b>CEMS Faculty Search Committee</b>	2024
<b>Faculty judge   UMN Chemistry Graduate Student Research Symposium</b>	2023



## Service (external)

---

<b>Early Career Advisory Board Member</b> <i>Materials Today Energy</i>	2023 – present
<b>Co-organizer   Peter O. Stahl Advanced Design Forum</b> ( <a href="#">link</a> )	2023, 2024, 2025
<b>Symposium co-organizer &amp; co-chair   MRS Spring Meeting</b> Accelerated and data-driven material discovery	2025
<b>Session co-organizer &amp; co-chair   AIChE Annual Meeting</b> CoMSEF: Machine Learning for Hard and Soft Materials MESD: Accelerated Discovery of Inorganic Materials	2023, 2024 2023, 2024
<b>Symposium co-organizer &amp; co-chair   Mach Conference</b> Systematic discovery and characterization of materials across compositions and structures	2024
<b>Co-organizer   UMN Data Science Initiative ML for Materials Workshop</b> ( <a href="#">link</a> )	2023
<b>Instructor   i-CoMSE Summer School on Machine Learning for Molecular Science</b> ( <a href="#">link</a> )	2023
<b>Co-organizer   Industrial Perspectives on Data Science in Chem. and Adv. Mater.</b> ( <a href="#">link</a> )	2022
<b>Peer Reviewer</b>	2018 – present

**Funding agencies:** *National Science Foundation* (Graduate Education), *US Department of Energy* (BES-CMS, BES-CCS, BES-MSE, ASCR, SCGSR), *ACS Petroleum Research Fund* (DNI, UNI), *United Kingdom Research and Innovation* (EPSRC), *Swiss National Science Foundation*

**ACS:** *Journal of the American Chemical Society, ACS Energy Letters, Chemistry of Materials, ACS Materials Letters, Accounts of Materials Research, Journal of Chemical Theory and Computation, Journal of Physical Chemistry C, ACS Omega*

**RSC:** *Energy and Environmental Science, Materials Horizons, Chemical Science, Digital Discovery, Journal of Materials Chemistry A, Physical Chemistry Chemical Physics, Catalysis Science and Technology*

**APS:** *PRX Energy, Physical Review Materials*

**NPG:** *Nature Computational Science, Nature Machine Intelligence Nature Communications, npj Computational Materials*

**Cell Press:** *Matter, Patterns*

**Wiley:** *Advanced Materials*

**AIP:** *Applied Physics Letters, APL Materials, Journal of Applied Physics, APL Machine Learning*

**Elsevier:** *Materials Today Energy, Journal of Materials Science, Computational Materials Science, Calphad, Journal of Solid State Chemistry, Journal of Physics and Chemistry of Solids*

## Invited Presentations

---

### Since joining UMN

33. **TMS Annual Meeting** | Las Vegas, NV | March 23, 2025  
*Computational Thermodynamics and Kinetics*
32. **Material Nexus** | London, England | August 23, 2024 (virtual)  
*Invited seminar*
31. **Midwest Machine Learning Symposium** | Minneapolis, MN | May 20, 2024  
*AI for Science*
30. **3M** | Maplewood, MN | May 1, 2024  
*Computational Technology Symposium (Keynote Speaker)*
29. **MRS Spring Meeting** | Seattle, WA | April 22, 2024  
*Integrating Machine Learning and Simulations for Materials Modeling*

28. **Cabot Corporation** | Boston, MA (virtual) | March 20, 2024  
*Technology Seminar*
27. **ACS Midwest-Great Lakes Regional Meeting** | St. Louis, MO | October 18, 2023  
*Theoretical Chemistry*
26. **Society of Engineering Science Annual Meeting** | Minneapolis, MN | October 8, 2023  
*Interatomic Models in Materials Simulations: Theory, Standards, Infrastructure, and Applications*
25. **Mach Conference** | Baltimore, MD | April 7, 2023  
*Systems for Fitting, Uncertainty Quantification, Selection, and Use of Interatomic Models*
24. **UMN Electrical and Computer Engineering** | Minneapolis, MN | March 17, 2023  
*Magnetic Seminar*
23. **IIT Delhi: Tryst** | Delhi, India (virtual) | February 15, 2023  
*Department of Chemical Engineering Learning Webinar*
22. **AIChE Annual Meeting** | Phoenix, AZ | November 18, 2022  
*Fundamental Theory and Characterizations for Optoelectronic Materials*
21. **UMN Aerospace Engineering & Mechanics** | Minneapolis, MN | October 4, 2022  
*Solid Mechanics Research Seminar*
20. **UMN CSE Data Science Initiative** | Minneapolis, MN | September 28, 2022  
*Machine Learning Seminar Series*

#### Prior to joining UMN

19. **U of Toronto Chemical Engineering & Applied Chemistry** | Toronto, ON | March 22, 2022  
*Department seminar*
18. **UC Irvine Materials Science and Engineering** | Irvine, CA | March 17, 2022  
*Department seminar*
17. **University of Utah Chemical Engineering** | Salt Lake City, UT | March 10, 2022  
*Department seminar*
16. **U of Maryland Chemical & Biomolecular Engineering** | College Park, MD | March 7, 2022  
*Department seminar*
15. **TMS Annual Meeting** | Anaheim, CA | February 28, 2022  
*Phase Stability, Transformations, and Reactive Formation in Electronic Materials XXI*
14. **U Minnesota Chemical Engineering & Materials Science** | Minneapolis, MN | Feb 22, 2022  
*Department seminar*
13. **Ohio State Chemical & Biological Engineering** | Columbus, OH (virtual) | February 15, 2022  
*Department seminar*
12. **NC State Chemical & Biomolecular Engineering** | Raleigh, NC | February 9, 2022  
*Department seminar*
11. **University of Utah Chemistry** | Salt Lake City, UT (virtual) | January 31, 2022  
*Department seminar*
10. **University of Florida Chemical Engineering** | Gainesville, FL | January 24, 2022  
*Department seminar*
9. **University of Virginia Chemical Engineering** | Charlottesville, VA | January 20, 2022  
*Department seminar*
8. **Indiana University Chemistry** | Bloomington, IN | January 12, 2022  
*Department seminar*
7. **SUNY Buffalo Materials Design and Innovation** | Buffalo, NY | December 17, 2021  
*Department seminar*

6. **TMS Annual Meeting** | Orlando, FL (virtual) | March 18, 2021  
*Phase Stability, Transformations, and Reactive Formation in Electronic Materials X* ([link](#))
5. **Northeastern University Chemical Engineering** | Boston, MA (virtual) | February 19, 2021  
*Department seminar*
4. **ASM International IMAT** | Cleveland, OH | September 2020 (canceled due to COVID-19)  
*Materials 4.0: Materials Information in the Product Life Cycle*
3. **Georgia Tech Chemical & Biomolecular Engineering** | Atlanta, GA | January 13, 2020  
*Department seminar*
2. **Lawrence Berkeley National Laboratory** | Berkeley, CA | August 12, 2019  
*Digital Solar Redox Materials Design Workshop*
1. **University of Washington Chemical Engineering** | Seattle, WA | July 1, 2019  
*Distinguished Young Scholars Seminar Series* ([link](#))