

Jason F. Khoury
Assistant Professor
Arizona State University
School of Molecular Sciences, Navrotsky-Eyring Center for Materials of the Universe
Email: jason.khoury@asu.edu

Professional Preparation

The Ohio State University	Chemistry	B.S. (honors), 2015
Northwestern University	Chemistry	Ph.D., 2020
Princeton University	Chemistry	Postdoctoral Fellow, 2020 – 2023

Appointments and Positions

Arizona State University, School of Molecular Sciences, Tempe, AZ

Assistant Professor

2023 – present

Products

Publications (* – Corresponding Author; underline – graduate students in Khoury Lab; # – Postdoctoral Fellows in Khoury Lab; ^ – undergraduates in Khoury Lab)

1. Zhai, H-F.#; Bud'ko, S. L.; Fritsky, J.W.; **Khoury, J.F.*** Mixed-Valent Ce Disrupts Magnetic Ordering in CeFe₂Ga₈. *J. Mater. Chem. C* **2026**, Advance Article.
2. Loloe, A.; Scharrer, M.; Geraci, T.S.; Zhai, H-F.#; Flores, M.S.; Bhatt, P.; Riaz, A.A.; Thakur, P.K.; Lee, T-L.; Regoutz, A.; Brgoch, J.; **Khoury, J.F.**; Navrotsky, A.; Birkel, C.S. A-Site Solid Solution Effects on Electrical Resistance, Oxidation Resistance, and Hardness of MAX Phases V₂(As_{1-x}P_x)C and V₂(As_{1-x}Ge_x)C. *Inorg. Chem.* **2026**, *65*, 3370 – 3378.
3. Fritsky, J.W.; Zhai, H-F.#; Zhao, Y.; Rauniyar, A.; Botana, A.S.; **Khoury, J.F.*** Preferential Site Ordering Alters the Magnetic Behavior of Sm₃Ru₄Sn_{13-x}Ge_x (x = 0 – 2). *Inorg. Chem.* **2025**, *64*, 19679 – 19687.
4. Villalpando, G.V.; Jovanovic, M.; Hoff, B.; Jiang, Y.; Singha, R.; Yuan, F.; Hu, H.; Calugaru, D.; Mathur, N.; **Khoury, J.F.**; Dulovic, S.; Singh, B.; Plisson, V.M.; Pollak, C.J.; Moya, J.M.; Burch, K.S.; Bernevig, B.A.; Schoop, L.M. Accessing bands with extended quantum metric in Kagome Cs₂Ni₃S₄ through soft chemical processing. *Sci. Adv.* **2024**, *10*, ead11103.
5. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Queiroz, R.; Yang, X.; Singha, R.; Salters, T.H.; Pollak, C.J.; Lee, S.B.; Ong, N.P.; Schoop, L.M. Towards 1D transport in 3D materials: SOC-induced charge-transport anisotropy in Sm₃ZrBi₅. *Adv. Mater.* **2024**, 2404553.
6. Herb, M.; Weigl, L; Hofman, N.; Gradl, J.; **Khoury, J.F.**; Schoop, L.; Gierz, I. Direct evidence for efficient carrier multiplication in the topological insulator Bi₂Se₃. *arXiv preprint* **2024**, arxiv:2405.01323.
7. Onyszczak, M.; Uzan-Narovlansky, A.J.; Tang, Y.; Wang, P.; Jia, Y.; Yu, G.; Song, T.; Singha, R.; **Khoury, J.F.**; Schoop, L.M.; Wu, S. A platform for far-infrared spectroscopy of quantum materials at millikelvin temperatures. *Rev. Sci. Instrum.* **2023**, *94*, 103903.
8. Song, X.; Hoff, B.; Singha, R.; Stiles, J.W.; Skorupskii, G.; **Khoury, J.F.**; Cheng, G.; Kamm, F.; Uzan, A.J.; Dulovic, S.; Wu, S.; Pielnhofer, F.; Yao, N.; Schoop, L.M. Acid-

- Assisted Soft Chemical Route for Preparing High-Quality Superconducting 2M-WS₂. *Chem. Mater.* **2023**, *35*, 5487 – 5496.
9. Salters, T.H.; Orlandi, F.; Berry, T.; **Khoury, J.F.**, Whittaker, E.; Manuel, P.; Schoop, L.M. Charge density wave-templated spin cycloid in topological semimetal NdSb_xTe_{2-xδ}. *Phys. Rev. Mater.* **2023**, *7*, 044203.
 10. Song, X.; Singha, R.; Cheng, G.; Yeh, Y.-W.; Kamm, F.; **Khoury, J.F.**; Pielhofer, F.; Batson, P.E.; Yao, N.; Schoop, L.M. Synthesis of an aqueous, air-stable superconducting 1T'-WS₂ monolayer-ink. *Sci. Adv.* **2023**, *9*, eadd6167.
 11. **Khoury, J.F.**; Song, X.; Schoop, L.M. Ln₃MBi₅ (Ln = Pr, Nd, Sm; M = Zr, Hf): Intermetallics with Hypervalent Bismuth Chains. *Z. Anorg. Allg. Chem.* **2022**, e202200123.
 12. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Singha, R.; Song, X.; Queiroz, R.; Ong, N.P.; Schoop, L.M. A Class of Magnetic Topological Material Candidates with Hypervalent Bi Chains. *J. Am. Chem. Soc.* **2022**, *144*, 9785-9796. (DOI: 10.1021/jacs.2c02281)
 13. Song, X.; Schneider, S.M.; Cheng, G.; **Khoury, J.F.**; Jovanovic, M.; Yao, N.; Schoop, L.M. Kinetics and Evolution of Magnetism in Soft-Chemical Synthesis of CrSe₂ from KCrSe₂. *Chem Mater.* **2021**, *33*, 8070-8078. (DOI: 10.1021/acs.chemmater.1c02620)
 14. Singha, R.; Salters, T.H.; Teicher, S.M.L.; Lei, S.; **Khoury, J.F.**; Ong, N.P.; Schoop, L.M. Evolving Devil's staircase magnetization from tunable charge density waves in nonsymmorphic Dirac semimetals. *Adv. Mater.* **2021**, *33*, 2103476. (DOI: 10.1002/adma.202103476)
 15. **Khoury, J.F.** and Schoop, L.M. Chemical Bonds in Topological Materials. *Trends Chem.* **2021**, *3*, 700-715. (DOI: 10.1016/j.trechm.2021.04.011)
 16. Slade, T.J.; Pal, K.; Grovogui, J.A.; Bailey, T.P.; Male, J.; **Khoury, J.F.**; Zhou, X.; Chung, D.Y.; Snyder, G.J.; Uher, C.; Dravid, V.P.; Wolverton, C.; Kanatzidis, M.G. Contrasting SnTe-NaSbTe₂ and SnTe-NaBiTe₂ Thermoelectric Alloys: High Performance Facilitated by Increased Cation Vacancies and Lattice Softening. *J. Am. Chem. Soc.* **2020**, *142*, 12524-12535. (DOI: 10.1021/jacs.0c05650)
 17. **Khoury, J.F.**; Rettie, A.J.E.; Robredo, I.; Krogstad, M.J.; Malliakas, C.D.; Bergara, A.; Vergniory, M.G.; Osborn, R.; Rosenkranz, S.; Chung, D.Y.; Kanatzidis, M.G. The subchalcogenides Ir₂In₈Q (Q = S, Se, Te): Dirac semimetal candidates with re-entrant structural modulation. *J. Am. Chem. Soc.* **2020**, *142*, 6312-6323. (DOI: 10.1021/jacs.0c00809)
 18. **Khoury, J.F.**; He, J.; Pfluger, J.E.; Hadar, I.; Balasubramanian, M.; Stoumpos, C.C.; Zu, R.; Gopalan, V.; Wolverton, C.; Kanatzidis, M.G. Ir₆In₃₂S₂₁, a polar, metal-rich semiconducting subchalcogenide. *Chem. Sci.* **2020**, *11*, 870-878. (DOI: 10.1039/C9SC05609B)
 19. **Khoury, J. F.**; Rettie, A.J.E.; Khan, M.A.; Ghimire, N.J.; Robredo, I.; Pfluger, J.E.; Pal, K.; Wolverton, C.; Bergara, A.; Jiang, J.S.; Schoop, L.M.; Vergniory, M.G.; Mitchell, J.F.; Chung, D.Y.; Kanatzidis, M.G. A new three-dimensional subsulfide Ir₂In₈S with Dirac semimetal behavior. *J. Am. Chem. Soc.* **2019**, *141*, 19130-19137. (DOI: 10.1021/jacs.9b10147)
 20. **Khoury, J. F.**; Hao, S.; Stoumpos, C. C.; Yao, Z.; Malliakas, C. D.; Aydemir, U.; Slade, T. J.; Snyder, G. J.; Wolverton, C.; Kanatzidis, M.G. Quaternary Pavonites A_{1+x}Sn_{2-x}Bi_{5+x}S₁₀ (A⁺ = Li⁺, Na⁺): Site Occupancy Disorder Defines Electronic

- Structure. *Inorganic Chemistry* **2018**, *57*, 2260-2268. (DOI: 10.1021/acs.inorgchem.7b03091)
21. Sharits, A. R.; **Khoury, J.F.**; Woodward, P.M. Evaluating NaREMgWO₆ (RE = La, Gd, Y) Doubly Ordered Double Perovskites as Eu³⁺ Phosphor Hosts. *Inorg. Chem.* **2016**, *55*, 12383-12390. (DOI: 10.1021/acs.inorgchem.6b02295)

Oral Presentations

1. Zhai, H-F.#; Bud'ko, S. L.; Fritsky, J.W.; **Khoury, J.F.*** Mixed-Valent Ce Disrupts Magnetic Ordering in CeFe₂Ga₈. Angular Momentum Online Symposium, March 2026 (Invited Oral Presentation)
2. Zhai, H-F.#; Bud'ko, S. L.; Fritsky, J.W.; **Khoury, J.F.*** Mixed-Valent Ce Disrupts Magnetic Ordering in CeFe₂Ga₈. APS March Meeting, Denver, CO, March 2026
3. Fritsky, J.W.; Zhai, H-F.#; Zhao, Y.; Rauniyar, A.; Botana, A.S.; **Khoury, J.F.** Preferential Site Ordering Alters the Magnetic Structure of Sm₃Ru₄Sn_{13-x}Ge_x. North American Solid State Chemistry Conference, Ames, IA, July 2025
4. Fritsky, J.W.; Zhai, H-F.#; Zhao, Y.; Rauniyar, A.; Botana, A.S.; **Khoury, J.F.** Preferential Site Ordering Alters the Magnetic Structure of Sm₃Ru₄Sn_{13-x}Ge_x. 30th Rare Earth Research Conference, Lemont, IL, June 2025 (Invited Oral Presentation)
5. Fritsky, J.W.; Zhai, H-F.#; Zhao, Y.; Rauniyar, A.; Botana, A.S.; **Khoury, J.F.** Preferential Site Ordering Alters the Magnetic Structure of Sm₃Ru₄Sn_{13-x}Ge_x. Quantum Foundry Workshop, Santa Barbara, CA, May 2025 (Invited Oral Presentation)
6. Fritsky, J.W.; Zhai, H-F.#; Zhao, Y.; Rauniyar, A.; Botana, A.S.; **Khoury, J.F.** Preferential Site Ordering Alters the Magnetic Structure of Sm₃Ru₄Sn_{13-x}Ge_x. American Chemical Society Spring 2025, San Diego, CA, March 2025
7. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Queiroz, R.; Yang, X.; Singha, R.; Salters, T.H.; Pollak, C.J.; Lee, S.B.; Ong, N.P.; Schoop, L.M. Towards 1D transport in 3D materials: SOC-induced charge-transport anisotropy in Sm₃ZrBi₅ American Chemical Society Spring 2024, New Orleans, LA, March 2024
8. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Singha, R.; Song, X.; Queiroz, R.; Ong, N.P.; Schoop, L.M. A Class of Magnetic Topological Material Candidates with Hypervalent Bi Chains. Beckman Symposium, Irvine, CA, August 2023
9. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Singha, R.; Song, X.; Queiroz, R.; Ong, N.P.; Schoop, L.M. A Class of Magnetic Topological Material Candidates with Hypervalent Bi Chains. MRS Spring 2023, San Francisco, CA, April 2023
10. **Khoury, J.F.**; Han, B.; Jovanovic, M.; Singha, R.; Song, X.; Queiroz, R.; Ong, N.P.; Schoop, L.M. A Class of Magnetic Topological Material Candidates with Hypervalent Bi Chains. APS March Meeting, Las Vegas, NV, March 2023

Synergistic Activities

1. Arizona Science Center (2025 – present): Developed and implemented Learning Lab activities at the Arizona Science Center focused on solid state chemistry, crystallography, and mineralogy. The learning lab activities were open to Arizona Science Center visitors in the greater Phoenix area, allowing for people of all ages, socioeconomic backgrounds, and demographics to learn more about solid state materials chemistry.

2. Lead Organizer for NSF Quantum Materials Synthesis Workshop (June 2026). Co-organizing quantum materials synthesis workshop with Eric Toberer. The workshop will focus on synthetic approaches to quantum materials and how artificial intelligence can assist with the process.
3. MateriAlZ Winter School Workshop Leader (January 2024): Led tutorial workshop on quantum materials to ~30 materials chemistry undergraduates from all across the United States. Assisted the organizers in setting up the meeting and answering questions for the participants.
4. Graduate student exchange with the University of Tokyo (2025 – present): Collaboration between the Khoury Lab at ASU SMS and the Hirschberger Lab in the Department of Applied Physics at the University of Tokyo to facilitate graduate student exchanges. Members from both groups will visit each other's universities to learn new expertise, facilitating collaborations between the United States and Japan.
5. Grant and Paper Reviewer (2018 – Present): Reviewed grants for multiple agencies, including the Arnold O. Beckman Foundation, Gordon and Betty Moore Foundation, and the ACS Petroleum Research Fund (PRF). Reviewed papers for wide range of journals, including (but not limited to) Journal of the American Chemical Society, Science Advances, ACS Nano, Chemistry of Materials, Inorganic Chemistry, and more.

Honors and Awards

Arizona State University

Arizona State University SEMTE CARET Seed Funding Award 2025

Princeton University

Arnold O. Beckman Postdoctoral Fellowship 2021

Northwestern University

Hierarchical Materials Cluster Program Fellowship 2017

PLU Marple Schweitzer Travel Grant Award 2018

North American Solid State Chemistry Conference Poster Presentation Award 2019

The Ohio State University

Arts and Sciences Undergraduate Research Scholarship 2011

Ohio House of Science and Engineering (OHSE) Scholarship 2011

Gary A. Marconi Scholarship 2013

Gary Booth Scholarship 2014

ACS P3 Presidential Award 2015