

CONTACT INFORMATION
Personal Homepage
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PROFESSIONAL FOCUS
Highly interdisciplinary thinker with strong interpersonal skills and a passion for teaching and student-led research. Current research in synthesis and characterization of wide-range of quantum materials such as frustrated magnetism, topological order, and correlated electron systems. Interested in developing solid-state chemistry/physics coursework and research program to encourage cross-discipline student engagement.

EDUCATION
University of Maryland, College Park, MD Aug. 2015 - March 2020

- Ph.D. in Chemical Physics, GPA: **3.69/4**
Magnetism and superconductivity in topotactically modified transition metal chalcogenides

Washington College, Chestertown, MD Aug. 2011 - May 2015

- B.S in Chemistry and B.A in Mathematics, GPA: **3.63/4**
Group theory and vibrational spectroscopy with simple and symmetrical astrochemical applications.
- *Cum laude* with Honors in Mathematics and Minor in Physics

PROFESSIONAL EXPERIENCE
Department of Chemistry - The Johns Hopkins University February 2022 - current

- Postdoctoral Research Scholar
- Advisor: Dr. Tyrel M. McQueen

Department of Physics - United States Naval Academy March 2020 - February 2022

- Assistant Research Professor
- Advisor: Dr. Michelle E. Jamer

Department of Chemistry - University of Maryland Aug. 2015 - March 2020

- Graduate Research Assistant and Teaching Assistant
- Advisors: Dr. Efrain E. Rodriguez

Quantum Materials Center - University of Maryland Aug. 2015 - March 2020

- Graduate Research Assistant and Teaching Assistant
- Advisors: Dr. Johnpierre Paglione

Geophysical Laboratory - Carnegie Institution of Washington June 2014 - August 2014

- Summer Scholars Intern
- Advisor: Dr. Muhetaer Aihaiti

PUBLICATIONS

1. Zhou, X., **Wilfong, B.**, Chen, X., Laing, C., Pandey, I.R., Chen, Y.P., Chen, Y.S., Chung, D.Y. and Kanatzidis, M.G. Sr(Ag_{1-x}Li_x)₂Se₂ and [Sr₃Se₂][(Ag_{1-x}Li_x)₂Se₂] Tunable Direct Band Gap Semiconductors. *Angewandte Chemie International Edition*, 2023, 62, 14.
2. Koppel, C., **Wilfong, B.**, Iwanicki, A., Hedrick, E., Berry, T., & McQueen, T. M. Machine-Guided Design of Oxidation-Resistant Superconductors for Quantum Information Applications. *Inorganics*, 2023, 117.
3. Pogue, E. A, New, A., McElroy, K., Le, N. Q., Pekala, M. J., McCue, I., Gienger, E., Domenico, J., Hedrick, E., McQueen, T. M., **Wilfong, B.**, Piatko, C. D., Ratto, C. R., Lennon, A., Chung, C., Montalbano, T., Bassen, G., & Stiles, C. D. Closed-loop machine learning for discovery of novel superconductors. *arXiv preprint*, 2022, arXiv:2212.11855.
4. **Wilfong, B.**, Sharma, V., Bishop, O., Fedorko, A., Heiman, D., Barua, R., & Jamer, M. E. The effect of vanadium substitution on the structural and magnetic properties of (Fe_{1-x}V_x)₃Ga₄. *Journal of Magnetism and Magnetic Materials*, 2022, 563, 169964.

5. Zhou, X., Malliakas, C. D., Yakovenko, A. A., **Wilfong, B.**, Wang, S. G., Chen, Y. S., Yu, L., Wen, J., Balasubramanian, M., Wang, H. H., Young Chung, D., & Kanatzidis, M. G. Coherent approach to two-dimensional heterolayered oxychalcogenides using molten hydroxides. *Nature Synthesis*, 2022, 1, 729-737.
6. **Wilfong, B.**, Fedorko, A., Baigutlin, D. R., Miroshkina, O. N., Zhou, X., Stephen, G. M., Friedman, A. L., Sharma, V., Bishop, O., Barua, R., Bennett, S. P., Young Chung, D., Kanatzidis, M. G., Buchelnikov, V. D., Sokolovskiy, V. V., Barbiellini, B., Bansil, A., Heiman, D., & Jamer, M. E. Helical spin ordering in room-temperature metallic antiferromagnet Fe₃Ga₄. *Journal of Alloys and Compounds*, 2022, 917, 165532.
7. Campbell, D. J., **Wilfong, B.**, Zic, M. P., Levy, G., Na, M. X., Pedersen, T. M., Gorovikov, S., Zavalij, P. Y., Zhdanovich, S., Damascelli, A., Rodriguez, E. E., & Paglione, J. Physical properties and electronic structure of single-crystal KCo₂As₂. *Physical Review Materials*, 2022, 6, 045003.
8. **Wilfong, B.**, Sharma, V., Naphy, J., Bishop, O., Bennett, S. P., Prestigiacomo, J., Barua, R., & Jamer, M. E. Altering the magnetic ordering of Fe₃Ga₄ via thermal annealing and hydrostatic pressure. *Journal of Alloys and Compounds*, 2022, 894, 162421.
9. Li, T., Jayathilake, R., Balisetty, L., Zhang, Y., **Wilfong, B.**, Diethrich, T. J., & Rodriguez, E. E. Crystal field-induced lattice expansion upon reversible oxygen uptake/release in YbMn_xFe_{2-x}O₄. *Materials Advances*, 2022, 3, (2), 1087-1100.
10. Zheng, H., **Wilfong, B.**, Hickox-Young, D., Rondinelli, J. M., Zavali, P., & Rodriguez, E. E. Polar ferromagnetic metal by intercalation of metal-amine complexes. *Chemistry of Materials*, 2021, 33, (13), 4936-4947.
11. **Wilfong, B.**, Liyanage, W. N. L. C., Naphy, J., Gilbert, D., Bennett, S. P. & Jamer, M. E. Using methodical compositional tuning to optimize Co_{1-x}Tb_x structural and magnetic properties. *Applied Physics Letters*, 2021, 118, (21), 212405.
12. **Wilfong, B.**, Zhou, X., & Rodriguez, E. E. Hydrothermal Synthesis and Crystal Growth. In *Fundamentals of Quantum Materials: A Practical Guide to Synthesis and Exploration*, 99-136.
13. Campbell, D. J., Collini, J., Slawinska, J., Autieri, C., Wang, L., Wang, K., **Wilfong, B.**, Eo, Y.S., Neves, P., Graf, D., Rodriguez, E. E., Butch, N. P., Buongiorno Nardelli, M., & Paglione, J. Topologically driven linear magnetoresistance in helimagnetic FeP. *npj Quantum Materials*, 2021, 6, (1), 1-7.
14. Jamer, M. E., **Wilfong, B.**, Buchelnikov, V. D., Sokolovskiy, V. V., Miroshkina, O. N., Zagrebin, M. A., Baigutlin, D. R., Naphy, J., Assaf, B. A., Lewis, L. H., & Pulkkinen, A. Superconducting and Antiferromagnetic Properties of Dual-phase V₃Ga. *Applied Physics Letters*, 2020, 117, (6), 062401.
15. **Wilfong, B.**, Zhou, X., Zheng, H., Babra, N., Brown, C.M., Lynn, J.W., Taddei, K.M., Paglione, J., & Rodriguez, E. E., Long-range magnetic order in hydroxide layer-doped (Li_{1-x-y}Fe_xMn_yOD)FeSe. *Physical Review Materials*, 2020, 4, (3), 034803.
16. Zhou, X., Wang, L., Fan, X., **Wilfong, B.**, Liou, S.C., Wang, Y., Zheng, H., Feng, Z., Wang, C., & Rodriguez, E. E., Isotope Effect between H₂O and D₂O in Hydrothermal Synthesis. *Chemistry of Materials*, 2020, 32, (2), 769.
17. Virtue A., Zhou, X., **Wilfong, B.**, Lynn, J. W., Taddei, K., Zavalij, P., Wang, L., & Rodriguez, E. E. Magnetic order effects on the electronic structure of KMMnS₂ (M = Cu, Li) with the ThCr₂Si₂-type structure. *Physical Review Materials*, 2019, 3, (4), 044411.
18. **Wilfong, B.**, Zhou, X., Vivanco, H., Campbell, D. J., Wang, K., Graf, D., Paglione, J., & Rodriguez, E. E. Frustrated magnetism in the tetragonal CoSe analog of superconducting FeSe. *Physical Review B*, 2018, 97 (10), 104408.
19. Zhou, X., **Wilfong, B.**, Liou, S. C., Hodovanets, H., Brown, C. M., & Rodriguez, E. E. Proton and ammonia intercalation into layered iron chalcogenides. *Chemical Communications*, 2018, 54, (50), 6895-6898.
20. Zhou, X., Eckberg, C., **Wilfong, B.**, Liou, S. C., Vivanco, H., Paglione, J., & Rodriguez, E. E. Superconductivity and magnetism in iron sulfides intercalated by metal hydroxides. *Chemical Science*, 2017, 8, (5), 3781-3788.

21. Larson, A. M., **Wilfong, B.**, Moetakef, P., Brown, C. M., Zavalij, P., & Rodriguez, E. E. Metal-insulator transition tuned by magnetic field in $\text{Bi}_{1.7}\text{V}_8\text{O}_{16}$ hollandite. *Journal of Materials Chemistry C*, 2017, 5, (20), 4967-4976.
22. Zhou, X., **Wilfong, B.**, Vivanco, H., Paglione, J., Brown, C. M., & Rodriguez, E. E. Metastable layered cobalt chalcogenides from topochemical deintercalation. *Journal of the American Chemical Society*, 2016, 138, (50), 16432-16442.
23. **Wilfong, B.**, Ahart, M., Gramsch, S. A., Stock, C., Li, X., Luo, H., & Hemley, R. J. High $P - T$ Raman study of transitions in relaxor multiferroic $\text{Pb}(\text{Fe}_{0.5}\text{Nb}_{0.5})\text{O}_3$. *Journal of Raman Spectroscopy*, 2016, 47, (2), 227-232.

TEACHING
EXPERIENCE

United States Naval Academy

- SP211 - General Physics I Summer 2020
 - Taught SP211 fully remote as a 8 week class to 20 students - combined asynchronous lectures and synchronous problem solving sessions

University of Maryland

- CHM146 - General Chemistry for Majors Spring 2017
 - Led discussions, problem solving sessions and office hours for 50 students, included all assignment/exam grading.
- CHM484 - Physical Chemistry II Lab Fall 2016
 - Led and instructed students in spectroscopic lab ~ 30 students, included lab-related lectures/discussion and lab report grading.
- CHM483 - Physical Chemistry I Lab Spring 2016
 - Led and instructed students in analytical lab ~ 30 students, included lab-related lectures/discussion and lab report grading.
- CHM132 - General Chemistry I Lab Fall 2015
 - Led and instructed students in chemistry lab ~ 75 students, included lab-related lectures/discussion and lab report grading.

PRESENTATIONS

1. *Hydrothermal Synthesis: Basics and Applications to Quantum Materials*
Wilfong, B. - Invited Speaker - *Fundamentals of Quantum Materials*
Fundamentals of Quantum Materials - Winter School, University of Maryland - June 2022
2. *Evolution of magnetic order under high fields and external pressure in metallic Fe_3Ga_4*
Wilfong, B., Sharma, V., Fedorko, A., Bishop, O., Zhou, X., Stephen, G. M., Friedman, A. L., Heiman, D., Barua. R., & and Jamer, M. E.
15th Joint Intermag-MMM Conference, New Orleans, LA, January 2022.
3. *Hydrothermal Synthesis: Basics and Applications to Quantum Materials*
Wilfong, B. - Invited Speaker - *Fundamentals of Quantum Materials*
Fundamentals of Quantum Materials - Winter School, University of Maryland - January 2020
4. *Hydrothermal design of magnetic heterolayer iron-based superconductors*
Wilfong, B., Zhou, X., Zheng, H., Babra, N., Rodriguez, E. E. & Paglione, J.
American Physical Society - March Meeting, Boston, MA, March 2019.
5. *Coexistence of Magnetism and Superconductivity by Chemical Design of Transition Metal Doped LiOHFeSe*
Wilfong, B., Zhou, X., & Rodriguez, E. E.
American Conference for Neutron Scattering - MRS, College Park, MD, June 2018.
6. *Metastable layered metal chalcogenides: From superconductivity to ferromagnetism*
Wilfong, B., Zhou, X., Vivanco, H., & Rodriguez, E. E.
American Chemical Society - National Meeting, San Fransisco, CA, March 2017.
7. *in-situ Raman spectroscopic investigation of relaxor multiferroic $\text{Pb}(\text{Fe}_{0.5}\text{Nb}_{0.5})\text{O}_3$ under high pressure and temperature conditions.*
Wilfong, B., Ahart, M., Gramsch, S. A., Li, X., Luo, H., Stock. C., & Hemley, R. J.
American Physical Society - March Meeting, San Antonio, TX, March 2015.