

Wenli Bi
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EDUCATION

Ph.D. Physics	Washington University in St. Louis	2011
	Advisor: James S. Schilling	
	Thesis: <i>Studies in Magnetism and Superconductivity under extreme pressure</i>	
M.S. Physics	Drexel University	2006
B.S. Physics	Xi'an Jiaotong University, China	2002

PROFESSIONAL APPOINTMENT

Associate Professor, University of Alabama at Birmingham (UAB)	2023-
Assistant Professor, UAB, Birmingham, AL	2019-2023
Senior Spectroscopist, Argonne National Laboratory (ANL)/University of Illinois Urbana-Champaign (UIUC)	2017-2019
Visiting Spectroscopist, ANL/UIUC	2015-2017
Postdoctoral Research Associate, ANL/UIUC	2011-2015

SCHOLARSHIP/RESEARCH

FUNDING SUPPORT

1. **NSF MRI**, DMR-2215143, PI, \$419,614 (+30% cost share, total: \$599,448) 9/2022-8/2025
Title: *MRI: Acquisition of a Quantum Design Physical Properties Measurement System for Materials Research and Education*
2. **NSF CAREER**, DMR-2045760, PI, \$596,715 6/2021-5/2026
Title: *CAREER: Tuning quantum states of magnetic topological systems with pressure*
3. **NSF RII Track-4 Fellowship**, OIA-2033131, PI, \$212,530 1/2021-12/2022
Title: *RII Track-4: Pressure Tuning of Magnetic Topological Insulators using Synchrotron X-Ray Techniques*
4. **UAB Faculty Development Grant Program**, PI, \$9,366 5/2020-8/2022
Title: *Studies of Quantum Phase Transitions in Magnetic Topological Insulators*

HONORS AND AWARDS

NSF Career Award	2021
Washington University Dissertation Fellowship	2011
Washington University Fellowship	2007-2008
Washington University Arthur L. Hughes Summer Fellowship	2007
Teaching Assistant Fellowship	2004-2006
Xi'an Jiaotong University Outstanding Student Award	2002

PUBLICATIONS and MANUSCRIPTS

* corresponding author.

75. *Unusual electronic and magnetic transitions in EuMnSb₂ induced by pressure*

- R. Sereika, G. C. Jose, S. Huang, R. Jin, W. A. Shelton, W. Xie, J. Zhao, B. Lavina, E. E. Alp, Y. Xiao, D. Zhang, Y. K. Vohra, and **W. Bi***. *Submitted*.
74. *Evidence of ferromagnetism collapse and valence instability in EuB_6 at high pressures*
L. O. Kutelak, R. Sereika, G. Fabbris, L. Francisco, G. Lombardi, E. H. T. Poldi, J. Zhao, E. E. Alp, D. Haskel, N. M. Souza Neto, P. F. S. Rosa, **W. Bi**, and R. D. dos Reis. *Under Review*.
73. *Pressure-induced crystal structural and metal-insulator transitions in the quantum spin liquid candidate CsYbSe_2*
R. Sereika, Y. Wang, L. Yang, D. Zhang, S. Chariton, J. Xing, A. Sefat, Y. K. Vohra, and **W. Bi***. *Under review*.
72. *Metastable Phase Formation in Europium Hexaboride on Compression to 187 GPa*
R. Sereika, M. Clay, L. Zhu, P. F.S. Rosa, **W. Bi**, Y. Vohra. *Accepted for publication in J. Appl. Phys.*
71. *Strong enhancement of magnetic ordering temperature and structural/valence transitions in EuPd_3S_4 under high pressure*
S. Huyan, D.H. Ryan, T. J. Slade, B. Lavina, G. C. Jose, H. Wang, J. M. Wilde, R. A. Ribeiro, J. Zhao, W. Xie, **W. Bi**, E. E. Alp, S. L. Bud'ko, P. C. Canfield. [arXiv:2306.16517](https://arxiv.org/abs/2306.16517)
70. *The Hidden Hydroxide in BaNiO_3 Single Crystals Grown from a KOH Flux*
L. Jin, H. Wang, X. Xu, D. Ni, C. Yang, Y. Ku, C.-E. Liu, C.-Y. Kuo, C.-F. Chang, R. Sereika, **W. Bi**, W. Xie, R. J. Cava. [arXiv:2306.05488](https://arxiv.org/abs/2306.05488).
69. *Magnetic Ordering in Terbium at High Pressures and Low Temperatures*
M. P. Clay, R. Sereika, **W. Bi**, Y. K. Vohra, [J. Magn. Magn. Mater.](https://doi.org/10.1088/1741-7597/acd111) **580**, 170935 (2023).
68. *Evolution of magnetism, valence, and crystal lattice in EuCd_2As_2 under pressure*
G. C. Jose, K. Burrage, K. L. G. Jimenez, W. Xie, B. Lavina, J. Zhao, E. E. Alp, D. Zhang, Y. Xiao, Y. K. Vohra, and **W. Bi***. [Phys. Rev. B](https://doi.org/10.1103/PhysRevB.107.245121) **107**, 245121 (2023).
67. *Interplay of structure and magnetism in LuFe_4Ge_2 tuned by hydrostatic pressure*
M. O. Ajeesh, P. Materne, R. D. dos Reis, K. Weber, S. Dengre, R. Sarkar, R. Khasanov, I. Kraft, A. M. Leon, **W. Bi**, J. Zhao, E. E. Alp, S. Medvedev, V. Ksenofontov, H. Rosner, H.-H. Klauss, C. Geibel, and M. Nicklas. [Phys. Rev. B](https://doi.org/10.1103/PhysRevB.107.125136) **107**, 125136 (2023).
66. *Formation of metallic Fe in bridgmanite under shallow lower mantle conditions*
N. Tsujino, J. Girard, W. Bi, E. E. Alp, S. Karato. [Physics of Earth and Planetary Interiors](https://doi.org/10.1029/2023GL020100), **337**, 107010 (2023).
65. *Pressure-induced superconductivity in the weak topological insulator Bi_2TeI and the topological metal Bi_3TeI*
T. A. Elmslie, D. VanGennep, R. N. Baten, J. Downing, W. Bi, S. T. Weir, Y. K. Vohra, R. E. Baumbach, and J. J. Hamlin, *under revision*, [arXiv:2209.02688](https://arxiv.org/abs/2209.02688).
64. *Calcium dissolution in Bridgmanite in the Earth's deep mantle*
B. Ko, E. Greenberg, V. Prakapenka, E. E. Alp, **W. Bi**, Y. Meng, D. Zhang, and S.-H. Shim, [Nature](https://doi.org/10.1038/s41586-022-03888-8) **611**, 88 (2022).
63. *Competing spin-orbital singlet states in the $4d^4$ honeycomb ruthenate $\text{Ag}_3\text{LiRu}_2\text{O}_6$*
T. Takayama, M. Blankenhorn, J. Bertinshaw, D. Haskel, N. A. Bogdanov, K. Kitagawa, A. N. Yaresko, A. Krajewska, S. Bette, G. McNally, A. S. Gibbs, Y. Matsumoto, D. P. Sari, I. Watanabe, G. Fabbris, **W. Bi**, T. I. Larkin, K. S. Rabinovich, A. V. Boris, H. Ishii, H. Yamaoka, T. Irifune, R. Bewley, C. J. Ridley, C. L. Bull, R. Dinnebier, B. Keimer, H. Takagi, [Physical Review Research](https://doi.org/10.1038/s41567-022-02000-0), **4**, 043079 (2022).
62. *Planet Size Controls Fe Isotope Fractionation Between Mantle and Core.*
Ni, P., Shahar, A., Badro, J., Yang, J., **Bi, W.**, Zhao, J., Hu, M. Y., & Alp, E. E. (2022). [Geophysical Research Letters](https://doi.org/10.1029/2022GL098451), **49**, e2022GL098451 (2022).

61. *Structural, redox and isotopic behaviors of iron in geological silicate glasses: a NRIXS study of Lamb-Mössbauer factors and force constants.*

M. Roskosz, N. Dauphas, J. Hu, M. Y. Hu, D. R. Neuville, D. Brown, **W. Bi**, N. X. Nie, J. Zhao, & E. E. Alp (2022). [*Geochimica et Cosmochimica Acta*, 321, 182 \(2022\).](#)

60. *Pressure effect on magnetism and valence in ferromagnetic superconductor $\text{Eu}(\text{Fe}_{0.75}\text{Ru}_{0.25})_2\text{As}_2$ by synchrotron spectroscopy studies*

Z. Nix, J. Zhao, E. E. Alp, Y. Xiao, G.-H. Cao, Y. K. Vohra, and **W. Bi**^{*}, [*J. Phys.: Condes. Matter* 34, 415601 \(2022\).](#)

59. *Drastic Enhancement of Magnetic Critical Temperature and Amorphization in Topological Magnet EuSn_2P_2 under Pressure*

W. Bi^{*}, **T. Culverhouse**[#], Z. Nix, W. Xie, H.-J. Tien, T.-R. Chang, U. Dutta, J. Zhao, B. Lavina, E. E. Alp, D. Zhang, J. Xu, Y. Xiao, and Y. K. Vohra, [*npj Quantum Materials*, 7, 43 \(2022\).](#) *Highlighted by HPCAT and APS Science at ANL.* ^{#UAB Undergraduate.}

58. *Complex pressure-temperature structural phase diagram of honeycomb iridate Cu_2IrO_3*

G. Fabbris, A. Thorn, **W. Bi**, M. Abramchuk, F. Bahrami, J. H. Kim, T. Irifune, F. Tafti, A. N. Kolmogorov, and D. Haskel, [*Phys. Rev. B* 104, 014102 \(2021\).](#)

57. *Microscopic phase diagram of $\text{Eu}(\text{Fe}_{1-x}\text{Ni}_x)\text{As}_2$ ($x = 0, 0.04$) under pressure*

W. Bi^{*}, Z. Nix, U. Dutta, J. Zhao, E. E. Alp, D. Zhang, P. Chow, Y. Xiao, Y.-B. Liu, G.-H. Cao, and Y. K. Vohra, [*Phys. Rev. B* 103, 195135 \(2021\).](#)

56. *Iron, magnesium, and titanium isotopic fractionations between garnet, ilmenite, fayalite, biotite, and tourmaline: Results from NRIXS, ab initio, and study of mineral separates from the Moosilauke metapelite*
N.X. Nie, N. Dauphas, E.E. Alp, H. Zeng, C.K. Sio, J.Y. Hu, X. Chen, S.M. Aarons, Z. Zhang, H.-C. Tian, D. Wang, K.B. Prissel, J. Greer, **W. Bi**, M.Y. Hu, J. Zhao, A. Shahar, M. Roskosz, F.-Z. Teng, M.J. Krawczynski, P.R. Heck, and F.S. Spear, [*Geochim. Cosmochim. Acta* 302, 18 \(2021\).](#)

55. *$J_{\text{eff}}=3/2$ metallic phase and unconventional superconductivity in GaTa_4Se_8*

M. Y. Jeong, S. H. Chang, H. J. Lee, J.-H. Sim, K. J. Lee, E. Janod, L. Cario, A. Said, **W. Bi**, P. Werner, A. Go, J. Kim, and M. J. Han, [*Phys. Rev. B*, 103, L081112 \(2021\).](#)

54. *^{57}Fe Mössbauer isomer shift of pure iron and iron oxides at high pressure - an experimental and theoretical study*

J. K. Desmarais, **W. Bi**, J. Zhao, M. Y. Hu, E. Alp, and J. S. Tse, [*J. Chem. Phys.* 154, 214104 \(2021\).](#)

53. *Iron force constants of bridgmanite at high pressure: Implications for iron isotope fractionation in the deep mantle*

W. Wang, J. Liu, H. Yang, S.M. Dorfman, M. Lv, J. Li, F. Zhu, J. Zhao, M.Y. Hu, **W. Bi**, E.E. Alp, Y. Xiao, Z. Wu, and J.F. Lin, [*Geochim. Cosmochim. Acta* 294, 215 \(2021\).](#)

52. *Pressure-induced collapse of magnetic order in jarosite*

R.A. Klein, J.P.S. Walsh, S.M. Clarke, Z. Liu, E.E. Alp, **W. Bi**, Y. Meng, A.B. Altman, P. Chow, Y. Xiao, M.R. Norman, J.M. Rondinelli, S.D. Jacobsen, D. Puggioni, and D.E. Freedman, [*Phys. Rev. Lett.* 125, 077202 \(2020\).](#)

51. *High-valence metals improve gen evolution reaction performance by modulating 3d metal oxidation cycle energetics*

B. Zhang, L. Wang, Z. Cao, S.M. Kozlov, F.P. García de Arquer, C.T. Dinh, J. Li, Z. Wang, X. Zheng, L. Zhang, Y. Wen, O. Voznyy, R. Comin, P. De Luna, T. Regier, **W. Bi**, E.E. Alp, C.W. Pao, L. Zheng, Y. Hu, Y. Ji, Y. Li, Y. Zhang, L. Cavallo, H. Peng, and E.H. Sargent, [*Nat. Catal.* 3, 985 \(2020\).](#)

50. *A new hydrous iron oxide phase stable at mid-mantle pressures*

H. Chen, S.Y. Xie, B. Ko, T. Kim, C. Nisr, V. Prakapenka, E. Greenberg, D. Zhang, **W. Bi**, A.E. Ercan, Y. Lee, and S.H. Shim, [Earth Planet. Sci. Lett. 550, 116551 \(2020\)](#).

49. *Effects of composition and pressure on electronic states of iron in bridgmanite*

S.M. Dorfman, V. Potapkin, M. Lv, E. Greenberg, I. Kupenko, A.I. Chumakov, **W. Bi**, E.E. Alp, J. Liu, A. Magrez, S.E. Dutton, R.J. Cava, C.A. McCammon, and P. Gillet, [Am. Mineral. 105, 1030 \(2020\)](#).

48. *Synthesis, elasticity, and spin state of an intermediate MgSiO₃-FeAlO₃ Bridgmanite: implications for iron in Earth's lower mantle*

F. Zhu, J. Liu, X. Lai, Y. Xiao, V. Prakapenka, **W. Bi**, E.E. Alp, P. Dera, B. Chen, and J. Li, [J. Geophys. Res. Solid Earth 125, 1 \(2020\)](#).

47. *Pressure-induced suppression of ferromagnetism in CePd₂P₂*

T.A. Elmslie, D. VanGennep, **W. Bi**, Y. Lai, S.T. Weir, Y.K. Vohra, R.E. Baumbach, and J.J. Hamlin, [Phys. Rev. B 102, 125146 \(2020\)](#).

46. *The Future of the Correlated Electron Problem*. 48 authors from “the Future of the Correlated Electron Problem Workshop” held at John Hopkins Univ. on Jan. 27-29, 2020. [arXiv:2010.00584v1 \(2020\)](#).

45. *Bad Vibrations? Exploring the vibrational side of spin-phonon coupling in SMMs via ¹⁶¹Dy Nuclear Resonance Vibrational Spectroscopy*

L. Scherthan, R. F. Pflieger, H. Auerbach, T. Hochdörffer, J. A. Wolny, **W. Bi**, J. Zhao, M. Y. Hu, E.E. Alp, C. E. Anson, R. Diller, A. K. Powell, V. Schünemann, [Angew. Chemie Int. Ed., 59, \(2020\)](#).

44. *Magnetic phase diagram of ε'-FeH*

J. Ying, J. Zhao, **W. Bi**, E. E. Alp, Y. Xiao, P. Chow, G. Shen, V. V. Struzhkin, [Phys. Rev. B. 101, 020405\(R\) \(2020\)](#).

43. *Elastic and magnetic properties of Fe₃P up to core pressures: Phosphorus in the Earth's core*

X. Lai, F. Zhu, Y. Liu, **W. Bi**, J. Zhao, E. E. Alp, M. Y. Hu, D. Zhang, S. Tkachev, M. H. Manghnani, V. B. Prakapenka, B. Chen, [Earth Planet. Sci. Lett. 531, 115974 \(2020\)](#).

42. *Influence of ligand substitution on magnetic hyperfine interaction in Dy6-based single molecule magnets/toroids.*

L. Scherthan, T. Ruppert, Y. Peng, A. Baniodeh, H. Auerbach, T. Hochdörffer, J. A. Wolny, **W. Bi**, J. Zhao, M. Y. Hu, T. S. Toellner, E. E. Alp, D. E. Brown, C. E. Anson, A. K. Powell, V. Schünemann, [Hyperfine Interact. 240, 124 \(2019\)](#).

41. *Iron isotopic fractionation between high-pressure mineral phases: Did terrestrial magma ocean crystallization and protracted core-mantle interactions fractionate iron isotopes*

H. Yang, M. Y. Hu, M. Roskosz, **W. Bi**, J. Zhao, E. E. Alp, J. Liu, J. Liu, T. Okuchi, N. Dauphas, [Earth and Planetary Science Letters, 506, 113 \(2019\)](#).

40. *Distinct pressure evolution of coupled nematic and magnetic orders in FeSe*

A. E. Böhmer, K. Kothapalli, W. T. Jayasekara, J. M. Wilde, B. Li, A. Sapkota, B. G Ueland, P. Das, Y. Xiao, **W. Bi**, J. Zhao, E. E. Alp, S. L. Bud'ko, P. C. Canfield, A. I. Goldman, and A. Kreyssig, [Phys. Rev. B 100, 064515 \(2019\)](#).

-----Publications before joining UAB-----

39. *Carbon isotopic signatures of super-deep diamonds mediated by iron redox chemistry*

J. Liu, W. Wang, H. Yang, Z. Wu, M. Y. Hu, J. Zhao, **W. Bi**, E. E. Alp, N. Dauphas, W. Liang, B. Chen, and J. F. Lin, [Geochemical Perspect. Lett. 10, 51 \(2019\)](#).

38. *¹⁶¹Dy Time-Domain Synchrotron Mössbauer Spectroscopy for Investigating Single-Molecule Magnets Incorporating Dy Ions*

- L. Scherthan, S. F. M. Schmidt, H. Auerbach, T. Hochdörffer, J. A. Wolny, **W. Bi**, J. Zhao, M. Y. Hu, T. Toellner, E. E. Alp, D. E. Brown, C. E. Anson, A. K. Powell, V. Schünemann, [Angew. Chemie International Ed. 58,3444 \(2019\)](#).
37. *Altered chemistry of oxygen and iron under deep Earth conditions*
J. Liu, Q. Hu, **W. Bi**, L. Yang, Y. Xiao, P. Chow, Y. Meng, V. B. Prakapenka, H. Mao, and W. L. Mao, [Nat. Commun. 10, 153 \(2019\)](#).
36. *Bandwidth controlled insulator-metal transition in BaFe₂As₃: A Mössbauer study under pressure*
P. Materne, **W. Bi**, J. Zhao, M. Y. Hu, M. L. Amigo, S. Siero, S. Aswartham, Bernd Büchner, and E. E. Alp, [Phys. Rev. B 99, 020505\(R\) \(2019\)](#).
35. *Microscopic phase diagram of LaFeAsO single crystals under pressure*
P. Materne, **W. Bi**, J. Zhao, M. Y. Hu, R. Kappenberger, S. Wurmehl, S. Aswartham, B. Büchner, and E. E. Alp, [Phys. Rev. B 98, 174510 \(2018\)](#).
34. *SciPhon: a data analysis software for nuclear resonant inelastic x-ray scattering with applications to Fe, Kr, Sn, Eu and Dy*
N. Dauphas, M.Y. Hu, E.M. Baker, J. Hu, Francois L.H. Tissot, E.E. Alp, M. Roskosz, J. Zhao, **W. Bi**, J. Liu, J.F. Lin, N. X. Nie, and A. Heard, [J. Synch. Rad. 25, 1581 \(2018\)](#).
33. *Impact of pressure on magnetic order in jarosite*
R. A. Klein, J. P.S. Walsh, S. M. Clark, Y. Guo, **W. Bi**, G. Fabbris, Y. Meng, D. Haskel, E. E. Alp, E. V. Duvne, S. D. Jacobsen, and D. E. Freedman, [J. Am. Chem. Soc. 140, 12001 \(2018\)](#).
32. *Superconducting and magnetic phase diagram of RbEuFe₄As₄ and CsEuFe₄As₄ at high pressure*
D.E. Jackson, D. VanGennep, **W. Bi**, D. Zhang, P. Materne, Y. Liu, G.-H. Cao, S.T. Weir, Y.K. Vohra, and J.J. Hamlin, [Phys. Rev. B 98, 014518 \(2018\)](#).
31. *High Pressure Investigations on the Semi-Heusler Compound CuMnSb*
P. Malavi, J. Song, **W. Bi**, A. Regnat, A. Senyshyn, C. Pfleiderer, and J.S. Schilling, [Phys. Rev. B 98, 054431 \(2018\)](#).
30. *Experimental constraints on the sound velocities of cementite Fe₃C to core pressures*
B. Chen, X. Lai, J. Li, J. Liu, J. Zhao, **W. Bi**, E. Ercan Alp, M.Y. Hu, and Y. Xiao, [Earth Planet. Sci. Lett. 494, 164 \(2018\)](#).
29. *Suppression of the magnetic order in CeFeAsO: nonequivalence of hydrostatic and in-plane chemical pressure*
P. Materne, **W. Bi**, E.E. Alp, J. Zhao, M.Y. Hu, A. Jesche, C. Geibel, R. Kappenberger, S. Aswartham, S. Wurmehl, B. Büchner, D. Zhang, T. Goltz, J. Spehling, and H. Klauss, [Phys. Rev. B 98, 14517 \(2018\)](#).
28. *Pressure-induced superconductivity in elemental ytterbium metal*
J. Song, G. Fabbris, **W. Bi**, D. Haskel, J. S. Schilling, [Phys. Rev. Lett. 121, 037004 \(2018\)](#).
27. *Valence and spin states of iron are invisible in Earth's lower mantle*
J. Liu, S.M. Dorfman, F. Zhu, Y. Xiao, **W. Bi**, and E.E. Alp, [Nat. Commun. 9, 1284 \(2018\)](#).
26. *High-Pressure Geophysical Properties of fcc Phase FeH_x*
E.C. Thompson, A.H. Davis, **W. Bi**, J. Zhao, E.E. Alp, D. Zhang, E. Greenberg, V.B. Prakapenka, and A.J. Campbell, [Geophys. Geosystems 19, 305 \(2018\)](#).
25. *Aqueous Superparamagnetic Magnetite Dispersions with Ultrahigh Initial Magnetic Susceptibilities*
Y. Fei, M. Iqbal, S.D. Kong, Z. Xue, C.P. McFadden, J.L. Guillet, L.H. Doerr, E.E. Alp, **W. Bi**, Y. Lu, C.B. Dandamudi, P.J. Ranganath, K.J. Javier, M. Ahmadian, C.J. Ellison, and K.P. Johnston, [Langmuir 34, 622 \(2018\)](#).

24. *A compact membrane-driven diamond anvil cell and cryostat system for nuclear resonant scattering at high pressure and low temperature*
J.Y. Zhao, **W. Bi**, S. Sinogeikin, M. Hu, E. E. Alp, J-F. Lin, C. Q. Jin, [Rev. Sci. Instrum. 88, 125109 \(2017\)](#).
23. *Resonant x-ray scattering reveals possible disappearance of magnetic order under hydrostatic pressure in the Kitaev candidate γ -Li₂IrO₃*
N.P. Breznay, A. Ruiz, A. Frano, **W. Bi**, R.J. Birgeneau, D. Haskel, and J.G. Analytis, [Phys. Rev. B 96, 20402 \(2017\)](#).
22. *Evidence for strong enhancement of the magnetic ordering temperature of trivalent Nd metal under extreme pressure*
J. Song, **W. Bi**, D. Haskel, and J.S. Schilling, [Phys. Rev. B 95, 205138 \(2017\)](#).
21. *Iron isotopic fractionation between silicate mantle and metallic core at high pressure*
J. Liu, N. Dauphas, M. Roskosz, M.Y. Hu, H. Yang, **W. Bi**, J. Zhao, E.E. Alp, J.Y. Hu, and J-F. Lin, [Nat. Commun. 8, 14377 \(2017\)](#).
20. *Magnetism of europium under extreme pressures*
W. Bi^{*}, J. Lim, G. Fabbris, J. Zhao, D. Haskel, E.E. Alp, M.Y. Hu, P. Chow, Y. Xiao, W. Xu, and J.S. Schilling, [Phys. Rev. B 93, 184424 \(2016\)](#).
19. *Phonon density of states of single-crystal SrFe₂As₂ across the collapsed phase transition at high pressure*
Y.Q. Wang, P.C. Lu, J.J. Wu, J. Liu, X.C. Wang, J.Y. Zhao, **W. Bi**, E.E. Alp, C.Y. Park, D. Popov, C.Q. Jin, J. Sun, and J.F. Lin, [Phys. Rev. B 94, 14516 \(2016\)](#).
18. *High-pressure synchrotron Mössbauer and X-ray diffraction studies: Exploring the structure-related valence fluctuation in EuNi₂P₂*
C. Li, Z. Yu, **W. Bi**, J. Zhao, M.Y. Hu, J. Zhao, W. Wu, J. Luo, H. Yan, E.E. Alp, and H. Liu, [Physica B Condens. Matter 501, 101 \(2016\)](#).
17. *Element-revolved magnetism across the temperature- and pressure-induced spin reorientation in MnBi*
Y. Choi, X. Jiang, **W. Bi**, P. Lapa, R.K. Chouhan, D. Paudyal, T. Varga, D. Popov, J. Cui, D. Haskel, and J.S. Jiang, [Phys. Rev. B 94, 184433 \(2016\)](#).
16. *Operando Analysis of NiFe and Fe oxyhydroxide electrocatalysts for water oxidation: detector of Fe⁴⁺ by Mössbauer spectroscopy*
J.Y.C. Chen, L. Dang, H. Liang, **W. Bi**, J.B. Gerken, S. Jin, E.E. Alp, and S.S. Stahl, [J. Am. Chem. Soc. 137, 15090 \(2015\)](#).
15. *Nuclear resonant inelastic X-ray scattering at high pressure and low temperature*
W. Bi^{*}, J. Zhao, J. Lin, Q. Jia, M.Y. Hu, C. Jin, R. Ferry, W. Yang, V. Struzhkin, and E.E. Alp, [J. Synchrotron Radiat. 22, 760 \(2015\)](#).
14. *Mechanisms for pressure-induced crystal-crystal transition, amorphization, and devitrification of SnI₄*
H. Liu, J.S. Tse, M.Y. Hu, **W. Bi**, J. Zhao, E.E. Alp, M. Pasternak, R.D. Taylor, and J.C. Lashley, [J. Chem. Phys. 143, 164508 \(2015\)](#).
13. *Spinel-olivine-pyroxene equilibrium iron isotopic fractionation and applications to natural peridotites*
M. Roskosz, C. K. I. Sio, N. Dauphas, **W. Bi**, F. L. H. Tissot, M. Y. Hu, J. Zhao and E. E. Alp, [Geochim. Cosmochim. Acta 169, 184 \(2015\)](#).
12. *Synthesis and electrochemical properties of novel LiFeTiO₄ and Li₂FeTiO₄ polymorphs with the CaFe₂O₄-type structures*
S.R. Bruno, C.K. Blakely, J.B. Clapham, J.D. Davis, **W. Bi**, E.E. Alp, and V. V. Poltavets, [J. Power Sources 273, 396 \(2015\)](#).
11. *Shear softening in low-spin Fe₇C₃ and implications for the solidity of Earth's inner core*

B. Chen, Z. Li, D. Zhang, J. Liu, M.Y. Hu, J. Zhao, **W. Bi**, E.E. Alp, Y. Xiao, P. Chow, and J. Li, [*Proc. Natl. Acad. Sci.* 111, 17755 \(2014\).](#)

10. *Conjugation in $Gd_{13}Fe_{10}C_{13}$ and its oxycarbide: unexpected connections between complex carbides and simple organic molecules*

A.B. Hadler, V.J. Yannello, **W. Bi**, E.E. Alp, and D.C. Fredrickson, [*J. Am. Chem. Soc.* 136, 12073 \(2014\).](#)

9. *Experimental determination of metal-metal redox cooperativity and electronic structure in catalytically active Cu-Fe and Zn-Fe heterobimetallic complexes*

M.K. Karunananda, F.X. Vázquez, E.E. Alp, **W. Bi**, S. Chattopadhyay, T. Shibata, and N.P. Mankad, [*Dalton Trans.* 43, 13661 \(2014\).](#)

8. *Sound velocities of bcc-Fe and $Fe_{0.85}Si_{0.15}$ alloy at high pressure and temperature*

J. Liu, J.-F. Lin, A. Alatas, and **W. Bi**, [*Phys. Earth Planet. Inter.* 233, 24 \(2014\).](#)

7. *Multistep synthesis of the $SrFeO_2F$ perovskite oxyfluoride via the $SrFeO_2$ infinite-layer intermediate*

C. K. Blakely, J. D. Davis, S. R. Bruno, M. Zhu, X. Ke, **W. Bi**, E. E. Alp, V. V. Poltavets, [*Journal of Fluorine Chemistry*, 159, 8 \(2014\).](#)

6. *Interplay between lattice dynamics and superconductivity in Nb_3Sn thin films*

S. Couet, H. Peelaers, M. Trekels, K. Houben, M.Y. Hu, J. Y. Zhao, **W. Bi**, E. E. Alp, E. Menéndez, B. Partoens, F. M. Peeters, M. J. Van Bael, A. Vantomme, and K. Temst, [*Phys. Rev. B* 88, 045437 \(2013\).](#)

5. *Synchrotron x-ray spectroscopy studies of valence and magnetic state in europium metal to extreme pressures*

W. Bi, N. M. Souza-Neto, D. Haskel, G. Fabbris, E. E. Alp, J. Zhao, R. G. Hennig, M. M. Abd-Elmeguid, Y. Meng, R. W. McCallum, K. Dennis, and J. S. Schilling, [*Phys. Rev. B* 85, 205134 \(2012\).](#)

4. *Pressure-induced structure transitions in Eu metal to 92 GPa*

W. Bi, Y. Meng, R. S. Kumar, A. L. Cornelius, W. W. Tipton, R. G. Hennig, Y. Zhang, C. Chen and J. S. Schilling, [*Phys. Rev. B* 83, 104106 \(2011\).](#)

3. *Dependence of magnetic ordering temperature of doped and undoped $EuFe_2As_2$ on hydrostatic pressure to 0.8 GPa*

H. B. Banks, **W. Bi**, L. Sun, Z. Zhao, G. F. Chen, X. H. Chen, and J. S. Schilling, [*Physica C*, 471, 476 \(2011\).](#)

2. *Pressure-induced superconductivity in europium metal*

M. Debessai, T. Matsuoka, J. J. Hamlin, **W. Bi**, Y. Meng, K. Shimizu and J. S. Schilling, [*J. Phys.: Conf. Ser.* 215, 012034 \(2010\).](#)

1. *Anomalous He-gas high-pressure studies on superconducting $LaO_{1-x}F_xFeAs$*

W. Bi, H. B. Banks, J. S. Schilling, H. Takahashi, H. Okada, Y. Kamihara, M. Hirano and H. Hosono, [*New J. Phys.* 12, 023005 \(2010\).](#)

PRESENTATIONS

High-pressure effect on candidate Dirac materials $EuMnPn_2$ ($Pn = Sb, Bi$) (Invited)

26th International Conference on High Pressure Science and Technology (AIRAPT) meeting in Edinburgh, UK, July, 2023.

High-pressure studies of Quantum Magnets (Invited)

First Experiments Workshop for APS 4-ID POLAR Beamline, Argonne National Laboratory, July 2023.

High-pressure studies of Kagome magnets (invited)

APS/CNM User Meeting Workshop on Bright Perspectives of Inelastic X-ray Scattering in the Post-APSU Era, ANL, April, 2023.

Studies of material properties under external pressure with synchrotron X-ray (invited)

Seminar talk at Department of Materials Science & Engineering, UAB, April 2023.

Studies of Topological magnets under high pressure (invited)

Symposium on Novel Approaches to Manipulate and Detect 2D Magnetism in van der Waals Quantum and Topological Materials, 2023 Materials Research Society Spring Meeting, San Francisco, CA, April 2023.

Introduction to magnetitic studies using synchrotron X-ray under external pressure (invited)

Tutorial talk at the 2023 Materials Research Society Spring Meeting, San Francisco, CA, April 2023.

Pressure-induced evolution of magnetism, valence, and crystal lattice in topological magnets (invited)

2022 IUCr High Pressure Workshop “Advanced High-Pressure Crystallography”, APS, ANL Dec. 2022.

High-pressure studies of topological magnets (invited)

Physics Seminar, Washington University in St. Louis, Dec. 2022.

Pressure studies of Dirac semimetal candidate EuMnSb_2 (poster)

International Workshop “Experimental Advances in the User of Pressure and Strain to Probe and Control Quantum Matter”. Iowa State University, May 2022.

Nuclear Resonant Scattering at Extreme Conditions (invited)

Seminar talk, Institute of High Energy Physics, China, May 2022.

High-pressure magnetic studies using synchrotron X-ray techniques (invited)

Fenichel Colloquium, Department of Physics, University of Cincinnati, Dec. 2, 2021.

High-pressure studies of magnetic superconductors and topological magnets (invited)

Seminar talk, University of Tennessee, Knoxville, Nov. 2021.

High-pressure magnetic studies by synchrotron Mössbauer spectroscopy in ^{151}Eu (invited)

Joint meeting of International Conference on Application of the Mössbauer Effect and Hyperfine Interactions, September, 2021 (hybrid).

Applications of synchrotron Mössbauer spectroscopy in high pressure research (invited)

Workshop on Advances in synchrotron-based research towards understanding the structure, evolution, and dynamics of Earth and planetary interiors, ANL, Sep. 2021.

Magnetic studies under high pressure (invited)

Chicago/DOE Alliance Center (CDAC) Webinar (online), May 2021.

Time-domain Synchrotron Mössbauer Spectroscopy at Extreme Conditions (invited)

Expert Workshop on Nuclear Resonant Scattering of Synchrotron Radiation (online), Jan. 2021

Pressure tuning of magnetism in Eu-based magnetic superconductors (invited)

Workshop on Advanced Spectroscopy Probes to Investigate Matter under Extreme Conditions – Opportunities Afforded by the MBA Lattice, APS/CNM Users Meeting (Virtual), Argonne National Laboratory, Sept. 2020.

Laser/X-ray Spectroscopy Applied to Microwave Plasma Chemical Vapor Deposition Systems

CPU2AL Annual Meeting, Oct. 2020.

Brightness of Physics – synchrotron applications to high pressure research

Lecture in Freshman Seminar, Department of Physics, UAB. Oct. 2020.

Pressure Evolution of Magnetism, Superconductivity and Valence in Eu-122 and Eu-1144 Superconductors (invited)

Physics Department Colloquium, UAB, Sept. 2019.

Nuclear Resonant Scattering (invited)

COMPRES Pre-annual Meeting Workshop on Inelastic X-ray and Nuclear Resonant Scattering, Big Sky, Montana, August, 2019.

Interplay of magnetism and superconductivity: pressure as a tuning knob (invited)
Physics Department Seminar, UAB, Jan. 2019.

Nuclear resonant scattering studies of magnetism and valence in Eu- and Dy-based systems: pnictides and SMMs (invited)
Workshop on Discovery, Synthesis, and Development of Emerging Materials and the Role of the APS Upgrade, APS, ANL, Sept., 2018.

High pressure studies of magnetism via synchrotron Mössbauer spectroscopy
Symposium on matter at high and ultra-high pressures, April 2018, Washington University in St. Louis.

Magnetism of Eu and Dy under extreme pressures (invited)
Workshop on Nuclear Resonant Scattering and Data Analysis, APS, ANL, Nov. 2017

Studies of pressure-induced magnetic and valence transitions in EuFe_2As_2 via synchrotron Mössbauer spectroscopy (invited)
26th International Conference on High Pressure Science and Technology (AIRAPT), Beijing, China, August 2017

Studies of pressure effect on magnetism via synchrotron Mössbauer spectroscopy
Advanced Photon Source User Science Seminar, APS, ANL, April 2016

Probing Magnetism and Lattice Dynamics via Nuclear Resonant Scattering (invited)
Physics Department Seminar, Washington University in St. Louis, St. Louis, MO, March 2016

Development of Nuclear Resonant Inelastic X-ray Scattering at High Pressure and Low Temperature (invited)
International Workshop on Nuclear Resonance Scattering of Synchrotron Radiation, Sep. 2015, DESY, Germany

Magnetism of Europium under Extreme Pressures (invited)
ICAME meeting, Sep. 17, 2015, Hamburg, Germany.

Nuclear Resonant Scattering at High Pressure and Low Temperature
APS High Pressure Special Interest Group Meeting, August 6, 2015, APS.

New Design of Cryostat and Membrane-driven Diamond Anvil Cell for Nuclear Resonant Inelastic X-ray Scattering (NRIXS) at High Pressure and Low Temperature
COMPRES annual meeting, July 7, 2015, Colorado Springs, Co.

Unusual Magnetism of Europium under Extreme Pressures (invited)
The 8th North American Mössbauer symposium, Jan. 2015, Boston, MA.

Nuclear Resonant Inelastic X-ray Scattering at High Pressure and Low Temperature
COMPRES annual meeting, June 2014, Stevenson, WA

Nuclear Resonant Scattering under High Pressure (invited)
Lawrence University Physics Seminar, May 2014, Appleton, WI

Valence and Magnetic State in Europium at Extreme Pressures (invited)
The 7th North American Mössbauer Symposium, Jan. 2013, Austin, TX

Synchrotron X-ray Spectroscopy Studies of Valence and Magnetic State in Europium Metal to Extreme Pressures (poster)
Gordon Conference on Research at High Pressures, Biddeford, ME, June 2012

Pressure-Induced Structure Transitions in Eu Metal to 92 GPa

American Physical Society March meeting, Dallas, TX, March 2011

Magnetism and Superconductivity under Extreme Pressure in Rare Earth Elements (invited)
Magnetic Materials Group, APS, ANL, Feb. 2011

High-Pressure Studies of Structure, Valence and Magnetism in Europium Metal to 92 GPa
Gordon Conference on Research at High Pressures, Holderness, NH, June 2010

High-Pressure Studies of Structure and Valence in Europium Metal to 92 GPa,
Advanced Photon Source User Science Seminar, ANL, Feb. 2010

Pressure-Induced Superconductivity in Europium Metal (invited)
Physics Seminar, University of Nevada, Las Vegas, Sep. 2009

STUDENT AND POSTDOC SUPERVISION

Graduate Students

- Hunter Kantelis, physics graduate student, 1/2023-present.
- Greeshma C. Jose, physics graduate student, 1/2021-present.
- James Petri, physics graduate student, 08/2023-present.
- Zachary Nix, 10/2019-4/2022, M.S. in 8/2021.

Undergraduate Students

- Trenton Culverhouse, physics major, Undergraduate Research Assistant, 12/2020-present; UAB REU student, Summer, 2021.
- Bennett Gamble, chemistry major, Undergraduate Research Assistant, 06/2023-present.
- Isaac Mendez, NSF-REU student from Brigham Young University-Idaho, Summer, 2023.
- Hunter Kantelis, NSF-REU student from U. of South Florida, Summer, 2022.
- Lucas Clemetsen, UAB Honors College, 11/2019-3/2020

High School Students

- Andrew Choi, Summer Intern from Hoover High School. 06/2023-07/2023.
- Alexandra King, Jefferson County International Baccalaureate School, 12/2019 – 3/2020.

Postdoc Scholars

- Raimundas Sereika, 8/2022 – present
- Sudeshna Samanta, 8/2022 – 07/2023

TEACHING

COURSES TAUGHT

General Physics II (PH222), Spring of 2020, 2021, 2022, 2023.

Light Matter Interactions (PH752), Fall of 2019, 2020, 2021.

SERVICES

UNIVERSITY SERVICE

- Member of Faculty Mentoring System of Physics Majors, Department of Physics, UAB, 2021-present.
- Served on two UAB Physics Faculty Search Committees for Non-Tenure Track Assistant Professor and Tenure Track Assistant Professor in 2021. Serving on UAB Physics Faculty Search Committee for Tenure Track Assistant Professor in Fall, 2022.
- Physics Graduate Program Committee member, UAB, 2022-present.

- Co-organized and served as panelist at the NSF CAREER Training Workshop, UAB, 2021, 2022, and 2023.
- Served as Dissertation Committee Member for 3 UAB physics Ph.D. Students and as Committee Chair for 1 master student.
- Guest Speaker at the UAB CORD 8th Grade Science Camp, June 2020.

PROFESSIONAL SCIENTIFIC COMMUNITY

- Sessional Chair at the 26th International Conference on High Pressure Science and Technology (AIRAPT) meeting in Edinburgh, UK, July, 2023.
- Panelist and ad hoc reviewer for NSF DMR, EAR/IF, OIA, and NSF CREST programs.
- Session chair at Material Research Society Spring Meeting, San Francisco, CA, April 2023.
- Served on Expert Committee for Canada Foundation of Innovation (CFI), Nov. 2022.
- Served as Session Chair at the COMPRES Annual Meeting, August 2022.
- Panelist for beamtime proposal review at the Advanced Photon Source, Argonne National Laboratory.
- Reviewer for peer-reviewed journals (*Science*, *Nature*, *Phys. Rev. Journals*, *npj Quantum Materials*, *JMMM*, *American Institute of Physics Journals*, *Advanced Materials*, *Chem. Catalysis*, *Journal of Alloys and Compounds*, *Inorganic Chemistry*).
- Organized, chaired and served as instructor in 5 workshops on Nuclear Resonant Scattering and Data Analysis, APS, ANL in Nov. of 2012, 2014, 2016, 2017, and 2018.
- Organized Workshop on Inelastic X-ray and Nuclear Resonant Scattering, COMPRES annual meeting, August, 2019, Montana.
- Convened and chaired the focused session “Nuclear Resonant and Inelastic X-ray Scattering at High Pressures” at the 26th International Conference on High Pressure Science and Technology (AIRAPT) meeting in Beijing, August, 2017.
- Served as Session Chair at the International Conference on the Applications of the Mössbauer effect (ICAME) in Hamburg, Germany, Sep. 2015.
- Carried out mail-in service to over 40 user groups in the conventional Mössbauer lab at APS, ANL, 2011-2019.

MEMBERSHIP IN PROFESSIONAL SOCIETY

- American Physical Society.
- Materials Research Society.
- Consortium for Materials Properties Research in Earth Sciences (COMPRES), 2011-2023.