Yinong Zhou

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Current Position

Auburn University — Auburn, AL
Assistant Professor, Physics — 08/2024 - present

Previous Position

University of California, Irvine — Irvine, CA
Postdoctoral Scholar, Physics and Astronomy — 09/2021 - 07/2024

Education

University of Utah — Salt Lake City, UT
Doctor of Philosophy (Ph.D.), Materials Science and Engineering — 08/2016 - 08/2021
University of Science and Technology of China (USTC) — Hefei, Anhui, China
Bachelor of Science (B.S.), Applied Physics — 09/2012 - 06/2016

Research Interests

Computational condensed matter research using density functional theory (DFT), theoretical modeling, and machine learning to investigate diverse nanomaterials and quantum materials, design and discover novel materials, and reveal their electronic, topological, superconducting, magnetic, optical, and phononic properties.

Publications

Google Scholar: https://scholar.google.com/citations?user=-Pz-7TQAAAAJ&hl=en&oi=ao

[26] D. Lopez, J.K. Bidika, et al., **Y. Zhou**, M.Q. Arguilla, "Compositional heterogeneity drives nanoscale ring formation in optically active one-dimensional van der Waals crystals", ChemRxiv (2026).

[25] S.J. Allison, S. Kwon, M.A. Sakib, **Y. Zhou**, et al., M.Q. Arguilla, "Bonding-imposed crystallization of 1D nanostructures based on a luminescent and anisotropic 2D van der Waals crystal", ChemRxiv (2025).

[24] H. Mustafa, et al., **Y. Zhou**, R. He, W. Jin, "Dilute magnetic impurity-induced effective phonon magnetic moment in Fe-doped monolayer MoS2." *2D Materials* 12.4: 041002 (2025).

[23] H. Yang, **Y. Zhou**, et al., R. Wu, and X. Pan, "Phonon modes and electron-phonon coupling at the FeSe/SrTiO3 interface", *Nature* 635, 332-336 (2024).

[22] D. Lopez, **Y. Zhou**, et al., M.Q. Arguilla, "Bonding-Directed Crystallization of Ultra-Long One-Dimensional NbS3 van der Waals Nanowires." *Journal of the American Chemical Society* 146, 33: 22863-22868 (2024).

[21] **Y. Zhou**, D.L.M. Cordova, G.M. Milligan, M.Q. Arguilla, and R. Wu, "Higher-dimensional spin selectivity in chiral crystals." *Phys. Rev. B.* 110, 045434 (2024).

[20] L. Chen, A.X. Wu, et al., **Y. Zhou**, et al., J. D. Sanchez-Yamagishi "Exceptional electronic transport and quantum oscillations in thin bismuth crystals grown inside van der Waals materials." *Nature Materials* 13:1-6 (2024).

[19] Y. Wu, et al., **Y. Zhou**, et al., R. Wu, Y. An "Electronic transport characteristics and nanodevice designs for β-HfNCl monolayer." *Results in Physics* 57: 107360 (2024).

[18] J. Liu*, **Y. Zhou***, et al., R. Wu, and L. A. Jauregui "Controllable strain-driven topological phase transition and dominant surface-state transport in HfTe5." *Nat. Commun.* 15, 332 (2024).

[17] D.L. Cordova, **Y. Zhou**, et al., M.Q. Arguilla, "Sensitive thermochromic behavior of InSeI, a highly anisotropic and tubular 1D van der Waals Crystal." *Advanced Materials*: 2312597 (2024).
[16] Y. An, J. Chen, Y. Yan, J. Wang, **Y. Zhou**, et al., R. Wu, and W. Liu "Higher-order Topological and Nodal Superconductors MS (M= Nb and Ta) Transition-metal Sulfides." *Phys. Rev. B*. 108.5: 054519 (2023).
[15] M. Pan*, X. Zhang*, **Y. Zhou***, P. Wang*, et al., F. Liu "Growth of Mesoscale Ordered Two-Dimensional Hydrogen-Bond Organic Framework with the Observation of Flat Band." *Phys. Rev. Lett.* 130.3: 036203, Editor's Suggestion, (2023).
[14] **Y. Zhou**, and R. Wu. "Remote control of spin polarization of topological corner states." *Phys. Rev. B.* 107.3: 035412 (2023)
[13] S. K. Chong*, P. Zhang*, J. Li*, **Y. Zhou**, et al., R. Wu, and K. L. Wang "Electrical manipulation of topological phases in quantum anomalous Hall insulator." *Advanced Materials* 35.11: 2207622 (2022).
[12] **Y. Zhou**, G. Sethi, H. Liu, and F. Liu, "Excited quantum Hall effect: enantiomorphic flat bands in a Yin-Yang Kagome lattice." *Nanotechnology* 33.41: 415001 (2022).
[11] H. Liu, G. Sethi, **Y. Zhou**, J. T. Sun, S. Meng, and F. Liu, "High-temperature Floquet fractional quantum Hall state in a Kagome lattice with photo-inverted hopping." *Phys. Rev. B*. 105.16: L161108 (2022).
[10] G. Sethi, **Y. Zhou**, L. Zhu, L. Yang, and F. Liu "Flat-band-enabled triplet excitonic insulator in a diatomic kagome lattice." *Phys. Rev. Lett.* 126.19: 196403 (2021).
[9] C. Liu, **Y. Zhou**, et al., F. Liu, and J. Jia "Sierpiński Thin Film Structure Turning off the Electronic Topology in Bi Films on InSb(111)B Surfaces." *Phys. Rev. Lett*. 126.17: 176102 (2021).
[8] **Y. Zhou**, and F. Liu, "Realization of an Antiferromagnetic Superatomic Graphene: Dirac Mott Insulator and Circular Dichroism Hall Effect." *Nano Lett.* 21.1: 230-235 (2021).
[7] **Y. Zhou**, G. Sethi, C. Zhang, X. Ni, and F. Liu, "Giant intrinsic circular dichroism of enantiomorphic flat Chern bands and flatband devices." *Phys. Rev. B.* 102, 125115 (2020).
[6] X. Ni, **Y. Zhou**, G. Sethi, and F. Liu, "π-Orbital Yin–Yang Kagome bands in anilato-based metal-organic frameworks." *Physical Chemistry Chemical Physics* 22.44: 25827-25832 (2020).
[5] **Y. Zhou**, K-H Jin, H. Huang, Z. Wang and F. Liu, "Weyl points created by a three-dimensional flat band." *Phys. Rev. B.* 99, 201105(R) (2019).
[4] L. Hu, H. Huang, Z. Wang, W. Jiang, X. Ni, **Y. Zhou**, et al., F. Liu "Ubiquitous Spin-Orbit Coupling in a Screw Dislocation with High Spin Coherency." *Phys. Rev. Lett*. 121: 066401, Editor's Suggestion, (2018).
[3] C. Zhang, H. Huang, X. Ni, **Y. Zhou**, et al., F. Liu "Band gap reduction in van der Waals layered 2D materials via a de-charge transfer mechanism." *Nanoscale* 10: 16759 (2018).
[2] X. Zhang, **Y. Zhou**, B. Cui, M. Zhao, and F. Liu, "Theoretical Discovery of a Superconducting Two-Dimensional Metal−Organic Framework." *Nano Lett.* 17.10: 6166–6170 (2017).
[1] **Y. Zhou**, W. Chen, P. Cui, J. Zeng, Z. Lin, E. Kaxiras, and Z. Zhang, "Enhancing the hydrogen activation reactivity of nonprecious metal substrates via confined catalysis underneath graphene." *Nano Lett.* 16.10: 6058-6063 (2016).
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Teaching

PHYS 5500/6500 Fundamentals of Physics: Math Methods, Auburn University — Fall 2025
PHYS 4100 Fundamentals of Quantum Mechanics — Spring 2025
PHYS 5500/6500 Fundamentals of Physics: Math Methods, Auburn University — Fall 2024