Dr. Huan Zhao
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Center for Nanophase Materials Sciences
Oak Ridge National Laboratory

RESEARCH AREAS

Nanoelectronics, Nanophotonics, Condensed Matter Physics, Quantum Optics, Optical Imaging

EDUCATION & PROFESSIONAL EXPERIENCE

12/04/2023 ~ Eugene P. Wigner Distinguished Staff Fellow, Oak Ridge National Laboratory

01/03/2023 ~ 12/03/2023 Postdoc, Caltech Optical Imaging Laboratory, Department of Medical Engineering, Caltech. Advisor: Prof. Lihong Wang

09/09/2019 ~ 01/02/2023 Director's Postdoctoral Fellow, Center for Integrated Nanotechnologies, Los Alamos National Laboratory. Advisor: Dr. Han Htoon

08/05/2014 ~ 12/18/2019 PhD, Department of Electrical Engineering, University of Southern California. Advisor: Prof. Han Wang

09/01/2010 ~ 06/30/2014 Bachelor's in physics (with honors), Nanjing University.

AWARDS AND HONORS

07/2023 Eugene P. Wigner Distinguished Staff Fellowship (~0-2 awardees worldwide per year)

05/2019 Director's Postdoctoral Fellowship, Los Alamos National Laboratory (<5%)

01/2019 Chinese Government Award for Outstanding Self-Financed Students Abroad (< 1%)

07/2017 *Nano Research* Top Paper Award (~10 awardees worldwide per year)

02/2014 Four-Year Viterbi Dean's Doctoral Fellowship, USC (< 5%)

SELECTED PUBLICATIONS

Selected Journal Publications, including Preprints (†: Huan as co-1st author)

[01] Alex L. Melendez , Peter Groszkowski, Yueh-Chun Wu, Steven Randolph, Sujoy Ghosh, Liangbo Liang, Stephen Jesse, An-Ping Li, Joshua T. Damron, Yan Wang, Benjamin J. Lawrie, Ivan V. Vlassiouk, and **Huan Zhao***. Probing Spin Defects via Single Spin Relaxometry. Arxiv preprint. **arxiv.org/abs/2504.09432**

[02] **Huan Zhao**. Quantum Light: Creation, Integration, and Applications. Nanophotonics (in press).

Selected Published Paper

[1] **Zhao, Huan***, Htoon, Han, Goldner, Philippe, Yu, Mengjie, Sheldon, Matthew and Fernández-Domínguez, Antonio I.. "Quantum light: creation, integration, and applications" *Nanophotonics*, 2025

[2] Jinli Chen, Chaohan Cui, Ben Lawrie, Yongzhou Xue, Saikat Guha, Matt Eichenfield, **Huan Zhao**, Xiaodong Yan. Low-Dimensional Solid-State Single-Photon Emitters. *Nanophotonics* 0 (**2025**).

[3] **Huan Zhao**; Saban Hus; Jinli Chen; Xiaodong Yan; Ben Lawrie; Stephen Jesse; An-Ping Li; Liangbo Liang; Han Htoon. Telecom-Wavelength Single-Photon Emitters in Multi-Layer Inse. *ACS nano* 19.7 (**2025**): 6911-6917.

[4] **Huan Zhao**; Linghan Zhu; Xiangzhi Li; Vigneshwaran Chandrasekaran; Jon Kevin Baldwin; Michael T Pettes; Andrei Piryatinski; Li Yang; Han Htoon. Manipulating Interlayer Excitons for near-Infrared Quantum Light Generation. *Nano Letters.* **2023**, *23*, 11006-11012.

[5] Xiangzhi Li; Andrew C Jones; Junho Choi; **Huan Zhao**; Vigneshwaran Chandrasekaran; Michael T Pettes; Andrei Piryatinski; Märta A Tschudin; Patrick Reiser; David A Broadway. Proximity-Induced Chiral Quantum Light Generation in Strain-Engineered Wse2/Nips3 Heterostructures. *Nature Materials.* **2023**, *22*, 1311-1316.

[6] **Huan Zhao**; Michael T Pettes; Yu Zheng; Han Htoon. Site-Controlled Telecom-Wavelength Single-Photon Emitters in Atomically-Thin MoTe2. *Nat Commun.* **2021**, *12*, 6753.

[7] **Huan Zhao**; Beibei Wang; Fanxin Liu; Xiaodong Yan; Haozhe Wang; Wei Sun Leong; Mark J Stevens; Priya Vashishta; Aiichiro Nakano; Jing Kong. Fluidic Flow Assisted Deterministic Folding of Van Der Waals Materials. *Advanced Functional Materials.* **2020**, *30*, 1908691.

[8] Tong Wu†; **Huan Zhao**†; Fanxin Liu; Jing Guo; Han Wang. Machine Learning Approach for Device-Circuit Co-Optimization of Stochastic-Memristive-Device-Based Boltzmann Machine. *arXiv preprint arXiv:1905.04431.* **2019**.

[9] Shanyuan Niu†; **Huan Zhao**†; Yucheng Zhou; Huaixun Huyan; Boyang Zhao; Jiangbin Wu; Stephen B Cronin; Han Wang; Jayakanth Ravichandran. Mid-Wave and Long-Wave Infrared Linear Dichroism in a Hexagonal Perovskite Chalcogenide. *Chemistry of Materials.* **2018**, *30*, 4897-4901.

[10] Shanyuan Niu†; Graham Joe†; **Huan Zhao**†; Yucheng Zhou; Thomas Orvis; Huaixun Huyan; Jad Salman; Krishnamurthy Mahalingam; Brittany Urwin; Jiangbin Wu. Giant Optical Anisotropy in a Quasi-One-Dimensional Crystal. *Nat Photonics.* **2018**, *12*, 392.

[11] **Huan Zhao**; Zhipeng Dong; He Tian; Don DiMarzi; Myung-Geun Han; Lihua Zhang; Xiaodong Yan; Fanxin Liu; Lang Shen; Shu-Jen Han. Atomically Thin Femtojoule Memristive Device. *Advanced Materials.* **2017**, *29*, 1703232.

[12] Bolin Liao†; **Huan Zhao**†; Ebrahim Najafi; Xiaodong Yan; He Tian; Jesse Tice; Austin J Minnich; Han Wang; Ahmed H Zewail. Spatial-Temporal Imaging of Anisotropic Photocarrier Dynamics in Black Phosphorus. *Nano letters.* **2017**, *17*, 3675-3680.

[13] Jiang-Bin Wu†; **Huan Zhao**†; Yuanrui Li; Douglas Ohlberg; Wei Shi; Wei Wu; Han Wang; Ping-Heng Tan. Monolayer Molybdenum Disulfide Nanoribbons with High Optical Anisotropy. *Advanced Optical Materials.* **2016**, *4*, 756-762.

[14] **Huan Zhao**†; Jiangbin Wu†; Hongxia Zhong; Qiushi Guo; Xiaomu Wang; Fengnian Xia; Li Yang; Pingheng Tan; Han Wang. Interlayer Interactions in Anisotropic Atomically Thin Rhenium Diselenide. *Nano Research.* **2015**, *8*, 3651-3661.

[15] **Huan Zhao**; Qiushi Guo; Fengnian Xia; Han Wang. Two-Dimensional Materials for Nanophotonics Application. *Nanophotonics.* **2015**, *4*, 128-142.