

Zhengqian Jin

Ph.D. Candidate

omwtbarca@gmail.com

jingshengluo.github.io



It's All About
Perseverance.

Ezra Knot Lab



Fields of Interest: Frontier Battery Technology (AFLMB, SEI Evolution); Advanced Material Design (2D High-Entropy Materials); First-Principles Calculations (DFT); AI/ML-Driven Discovery; Scientific Visualization & Tooling.

Education

- | | |
|----------------|---|
| 2023 – Present | Ph.D. in Electronic Science and Technology
<i>Xi'an Jiaotong University (XJTU), Xi'an, China</i>
Advisors: Prof. Kai Xi & Prof. Shujiang Ding |
| 2019 – 2023 | B.S. in Applied Chemistry
<i>Tongji University, Shanghai, China</i>
Honors: Outstanding Bachelor's Thesis of Tongji University; Second Prize for Outstanding University Student Paper in Shanghai. |

Publications

[‡] indicates equal contribution, @ indicates corresponding author

First & Co-first Author

1. **Z. Jin[@]**, K. Xi. "Adapting to Information Overload: A Proposed Framework for Digital Research." *Matter*, 9 (2026) 102777.
2. **Z. Jin**, Z. Cao, L. Jin, S. Ding, K. Xi. "High-Entropy Layered Hydroxides: Pioneering Synthesis, Mechanistic Insights, and Multifunctional Applications in Sustainable Energy and Biomedicine." *Nano-Micro Letters*, 18 (2026) 200.
3. Z. Cao[‡], **Z. Jin[‡]**, W. Li[‡], P. Li, Y. He, K. Jia, C. Liu, N. Li, M. Xu, W. Tang, W. Xue, R.V. Kumar, S. Ding, K. Xi[@]. "Intramolecular Polarization-Mediated Solvation and Interphase Engineering for Low-Temperature High-Voltage Lithium Metal Batteries." *Advanced Materials* (2026) 74260.
4. L. Jin[‡], **Z. Jin[‡]**, T. Deng[‡], P. Liu, J. Tian, R. Gao, ... & K. Xi. "Boosting Solid-Solid Conversion Kinetics via Electron-Pinned Interface Engineering for High-Energy-Density Li-S Batteries." *Advanced Materials*, (2026) e73517.
5. T. Deng[‡], **Z. Jin[‡]**, L. Jin, H. Luo, J. Wang, J. Gao, ... & K. Xi. "Relay catalyst for accelerating lithium polysulfide conversion kinetics and long-life lithium sulfur batteries." *Nano Energy*, 138 (2025) 110896.
6. M. Xu[‡], X. Wang[‡], **Z. Jin[‡]**, et al. "Decoupling the roles of grain boundary strength and grain size hidden in grain-level electro-chemo-mechanical failure of solid-state electrolyte." *Journal of*

Energy Chemistry, 101 (2025) 685-691.

Co-authored Publications

7. X. Chen, X. Cui, J. Wang, Y. Chen, C. Lin, Z. Wang, J. Liu, S. Liu, **Z. Jin**, J. Wang, K. Xi, W. Yan. "A Hierarchically Porous Multifunctional Current Collector for High-Performance Li-S Batteries." *Advanced Functional Materials*, (2026) e75650.
8. H. Li, H. Jin, T. Deng, C. Yang, **Z. Jin**, Y. Zhang, ... & K. Xi. "Anion-Defect Engineering in Transition Metal Compounds for Lithium-Sulfur Batteries: Current Progress, Mechanistic Insights, and Future Directions." *Advanced Energy Materials*, (2025) e04213.
9. C. Liu, **Z. Jin**, X. Xu, Z. Cao, Y. Wang, Z. Sun, ... & K. Xi. "Accelerating Near-Electrode Li⁺ Transport via High-Electronegativity Substrates for Sustainable Fast-Charging Lithium Metal Batteries." *Advanced Functional Materials*, (2025) e24392.
10. C. Liu, W. Li, Z. Wang, **Z. Jin**, T. Deng, Z. Yang, ... & K. Xi. "Crystal Facet-Engineered Anion Regulation Enables Fast-Charging Stability in Lithium Metal Batteries." *Angewandte Chemie International Edition*, (2025) e202512742.
11. H. Jin, H. Li, T. Deng, C. Yang, K. Pan, **Z. Jin**, ... & K. Xi. "Modulating carrier-catalyst heterointerfaces to boost catalytic polysulfide conversion in lithium-sulfur batteries." *Energy Materials*, 5 (2025) 500107.
12. T. Deng, J. Wang, H. Zhao, **Z. Jin**, L. Jin, X. Men, ... & K. Xi. "Dynamically Regulating Polysulfide Degradation via Organic Sulfur Electrolyte Additives in Lithium-Sulfur Batteries." *Advanced Energy Materials*, 14 (2024) 2402319.
13. J. Hu, L. Huang, W. Liu, **Z. Jin**, X. Wang, X. Xing. "Adsorption of O₂ on cationic gold clusters: Analyses on bonding strength and extent of activation." *Chinese Journal of Chemical Physics*, 37 (2024) 351-360.
14. J. Hu, J. Ma, **Z. Jin**, W. Liu, L. Huang, X. Wang@ and X. Xing@. "Reactivity of cationic silver clusters with O₂: a probe of interplay between clusters' geometric and electronic structures." *Physical Chemistry Chemical Physics*, 26 (2024) 7407-7415.

Patents

1. K. Xi, **Z. Jin**, et al. "A modified separator with catalyst for lithium-sulfur batteries, preparation method, and application." CN202511309541.7.
2. K. Xi, T. Deng, **Z. Jin**, et al. "A relay catalyst for lithium-sulfur batteries, preparation method, and application." CN202510321209.6.
3. K. Xi, C. Liu, Y. Deng, **Z. Jin**, et al. "An MXene material, preparation method, and application." CN202510539047.3.
4. H. Li, K. Xi, K. Pan, H. Jin, C. Yang, S. Yin, X. Wang, T. Deng, **Z. Jin**, et al. "A composite cathode material for Li-S batteries based on 1T phase MoS₂/graphene composites." CN202510380459.7.

Software Copyright

1. K. Xi, **Z. Jin**. *AtomFeed*: Battery Literature Intelligent Push Software [V1.0]. Chinese Software Copyright Reg. No. 2026SR0729645. Copyright holder: Xi'an Jiaotong University. Registered July 2026.

Skills & Interests

Computational	First-Principles Calculations (DFT), Machine Learning for Materials Science
Programming	Python (PyTorch, Scikit-learn, Pandas, NumPy), MATLAB, Origin
Languages	Chinese (Native), English (Fluent), Spanish (Conversational)
Interests	Science visualization, long-distance running (half-marathon), football, UFC, NFL