

YITIAN WANG

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SUMMARY

Ph.D. scholar in Electrical Engineering specializing in thermal transport and lattice dynamics in functional oxides and solid-state ionic conductors. Experienced in crystal and thin-film growth, vacuum deposition, material characterization, and data-driven modeling using Python and MATLAB. Published 5 first-author works in leading journals and skilled at collaborating with national labs and cross-disciplinary device and materials teams. Additional teaching assistant experience during Ph.D. studies.

EDUCATION

University of California, Riverside, CA Ph.D. in Electrical and Computer Engineering	Mar. 2021 – Jun. 2026 (expected)
Columbia University in the City of New York, NY Master of Science, Material Science and Engineering	Aug. 2019 – Feb. 2021
University of California, Berkeley, CA Summer Session, Physics	Jul. 2017 – Aug. 2017
Beijing Normal University, CN Bachelor of Science, Physics	Sep. 2015 – Jun. 2019

SKILLS

Software	Python, MATLAB, R, SQL, LaTeX, COMSOL, SolidWorks, Linux
Analysis Tools	GSAS-II, Mantid, ImageJ, VESTA, Quantum ESPRESSO, VASP
Synthesis & Growth	Floating-Zone Crystal Growth, PVD / Magnetron Sputtering, CVD
Characterization	SEM, TEM, Scanning Tunneling Microscopy (STM), XRD, AFM, Inelastic Neutron Scattering, Raman, FTIR
Transport Properties	PPMS, DSC, TGA, Four-Probe Transport, Mechanical Strength Testing
Battery & Electrochem	Prototype Cell Assembly, Glovebox Operation, Separator Fabrication, EIS, Galvanostatic Cycling, Thermal Abuse Testing
Methods	Design of Experiments (DOE), AI Agent Training

AWARDS & ACTIVITIES

- Dissertation Completion Fellowship Award, University of California, Riverside (2025)
- MRS 2023 Spring Meeting Highly Commended Student Talk Award
- ‘Jingshi’ Scholarship, Beijing Normal University (2016 – 2018)
- COMAP Mathematical Contest in Modeling — team member and team leader

PROFESSIONAL MEMBERSHIPS

- Sigma Xi, The Scientific Research Honor Society — Elected Full Member (2026)
- American Physical Society (APS) — Member (2025 – 2026)
- Materials Research Society (MRS) — Student Member (through 2027)

RESEARCH EXPERIENCE

Graduate Research Assistant*University of California*

Jun. 2021 – Jun. 2025

Riverside, CA

- Pioneered lattice-dynamics studies on Li-ion solid-state electrolytes, extending work previously limited to Cu- and Ag-ion systems.
- Published 5 first-author papers in journals including *PRX Energy* and *J. Mater. Chem. A*.
- Built a floating-zone crystal growth workflow from scratch, producing centimeter-scale LLZTO single crystals that enabled phonon-resolved neutron scattering measurements previously infeasible on polycrystalline samples.
- Identified *diffuson*-mediated thermal transport in Li-ion conductors, providing the first verification of this mechanism in Li-ion solid-state electrolytes.
- Developed a two-channel (phonon + *diffuson*) thermal-conductivity model in MATLAB that explained anomalous temperature dependence in Li-ion conductors where the traditional Debye model failed.

Experiment Lead*Oak Ridge National Laboratory*

Jan. 2022 – Jul. 2023

Oak Ridge, TN

- Authored two successful beam time proposals and led inelastic neutron-scattering experiments on LLZTO single crystals using TAX (HFIR) and ARCS (SNS) at Oak Ridge National Laboratory (ORNL).
- Resolved the full phonon dispersion of a garnet solid electrolyte for the first time, providing experimental benchmarks for ab initio lattice-dynamics calculations.
- Built automated data-reduction pipelines in Mantid and Python, significantly reducing manual analysis time.
- Managed on-site experimental decisions and coordinated across ~7 research groups spanning UCR, UT Austin, ORNL, ETH Zürich, and TU Wien.

Student Researcher*Columbia University*

Sep. 2019 – Jan. 2021

New York, NY

- Engineered composite Li-ion battery separators (γ -C₃N₄/PVDF) via solution processing, targeting improved electrochemical reaction kinetics.
- Assembled and tested CR2032 full cells in an Ar-filled glovebox over 100+ galvanostatic cycles, characterizing cycling performance and interfacial stability via EIS.
- Applied first-principles DFT (Quantum ESPRESSO) to model defect stability in olivine cathode structures, complementing experimental work with computational materials design.

Student Researcher*Beijing Normal University*

Sep. 2018 – May 2019

Beijing, CN

- Designed a uniaxial-strain apparatus in SolidWorks exploiting differential thermal contraction for controlled detwinning of iron-based superconductors below 140 K.
- Built a Monte Carlo simulation in MATLAB to model atomic movement of metal atoms inside multi-wall carbon nanotubes, reproducing experimental observations.

TEACHING EXPERIENCE**Graduate Teaching Assistant****University of California, Riverside**

Technology in the Premodern World (ENGR 108)	Reader	Fall 2025	N/A
Circuits and Electronics Lab (EE 005)	Lab Instructor	Spring 2025	7.0/7.0 (96th %ile)
Technology in the Premodern World (ENGR 108)	TA / Reader	Spring 2025	5.7/7.0 (83rd %ile)
Linear Methods for Engr. Analysis – MATLAB (EE 020B)	Discussion TA	Winter 2023	6.5/7.0 (81st %ile)
Magnetic Materials (EE 139)	Discussion TA	Fall 2022	6.5/7.0 (77th %ile)

- Served 280+ students across 7 sections over 3 academic years.
- Achieved perfect 7.0/7.0 evaluation (96th percentile campus-wide) in EE 005, with consistently above-department averages across all courses.
- Selected student feedback: “singlehandedly one of the most effective teachers on this campus” and “top tier educator” (EE 005); “the backbone of the entire class” (EE 020B); “always helpful... feedback was helpful in creating a well organized presentation” (EE 139).

INTERNSHIP EXPERIENCE

Administrative Assistant, Physics Department

Beijing Normal University

Sep. 2018 – Jan. 2019

Beijing, CN

- Managed archival of 3 years of departmental paperwork and organized the academic calendar for 4 course sections.

Student Intern

Shanghai East China Computer Corp.

Jul. 2016 – Aug. 2016

Shanghai, CN

- Gained hands-on exposure to IT industry workflows, strengthening teamwork and cross-functional communication skills.

SELECTED PUBLICATIONS

1. **Y. Wang**, Q. Jia, S. Li, L. Shi, Y. Li, X. Chen. “Low thermal conductivity and lattice anharmonicity of NaSICON-type solid electrolyte $\text{Na}_3\text{Zr}_2\text{Si}_2\text{PO}_{12}$.” *Tungsten*, Nov. 2025. [\[Link\]](#)
2. **Y. Wang**, Q. Jia, S. Li, L. Shi, Y. Li, X. Chen. “Glass-like thermal transport in polycrystalline perovskite Li-ion conductor $\text{Li}_{3/8}\text{Sr}_{7/16}\text{Hf}_{1/4}\text{Ta}_{3/4}\text{O}_3$.” *Chem. Commun.*, Sep. 2025. [\[Link\]](#) [\[Front Cover\]](#)
3. **Y. Wang**, Y. Su, J. Carrete, H. Zhang, N. Wu, *et al.* “Origin of intrinsically low thermal conductivity in a garnet-type solid electrolyte.” *PRX Energy*, Jul. 2025 (OA fee waived). [\[Link\]](#)
4. S. Li, S. Guo, **Y. Wang**, H. Li, Y. Xu, V. Carta, J. Zhou, X. Chen. “Enhanced magnon thermal transport in yttrium-doped spin ladder compounds $\text{Sr}_{14-x}\text{Y}_x\text{Cu}_{24}\text{O}_{41}$.” *J. Appl. Phys.*, Jul. 2024. [\[Link\]](#)
5. **Y. Wang**, S. Li, N. Wu, Q. Jia, T. Hoke, L. Shi, Y. Li, X. Chen. “Thermal properties and lattice anharmonicity of Li-ion conducting garnet solid electrolyte $\text{Li}_{6.5}\text{La}_3\text{Zr}_{1.5}\text{Ta}_{0.5}\text{O}_{12}$.” *J. Mater. Chem. A*, Jun. 2024. [\[Link\]](#)
6. S. Guo, H. Li, X. Bai, **Y. Wang**, S. Li, R. E. Dunin-Borkowski, J. Zhou, X. Chen. “Size-dependent magnon thermal transport in a nanostructured quantum magnet.” *Cell Rep. Phys. Sci.*, Mar. 2024. [\[Link\]](#)
7. Y. Xu, Z. Barani, P. Xiao, S. Sudhindra, **Y. Wang**, *et al.* “Crystal structure and thermoelectric properties of layered van der Waals semimetal ZrTiSe_4 .” *Chem. Mater.*, Sep. 2022. [\[Link\]](#)
8. **Y. Wang**, X. Chen. “Single crystal growth and electrochemical studies of garnet-type fast Li-ion conductors.” *Tungsten*, Sep. 2022. [\[Link\]](#)

MEDIA COVERAGE

- [Why LLZTO is the Secret to Super-Fast EV Charging](#) — UC Riverside, Feb. 2026
- [Cool Battery Power](#) — UC Riverside News, Oct. 2025
- [ECE PhD Student Wins Materials Research Student Talk Award](#) — UCR ECE Department, May 2023