Tianyu Li

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Work Experience

01/2023—:

Postdoc researcher in Materials Department, University of California, Santa Barbara

Advised by Prof. Ram Seshadri and Prof. Raphaële Clément

Education

09/2013—07/2017:

B.S. in Chemistry, Nankai University

Research supervisor : Prof. Wenjun Zheng

10/2016—05/2017:

Exchange Undergraduate Research Assistant Internship, Yale University

Under supervision of Prof. Judy Cha

08/2017—11/2022:

Ph. D. in Chemistry, Graduate Research Assistant, Teaching Assistant,

University of Maryland, College Park

Under supervision of Prof. Efrain E. Rodriguez

Publications:

Submitted:

(1) **Li, T.;** Geraci, T.; Koirala, K.P.; Zohar, A.; Bassey, E.; Chater, P.; Wang, C.; Navrotsky, A.; Clément, R. Structural Evolution in Disordered Rock Salt Cathodes. *Under review*

(2) Leonard, M. B.; **Li, T.;** Rodriguez, E. E. Low-Temperature Decomposition and Oxidation of Nerve Agent Simulant on Mesoporous Nickel Oxide and Cu-Doped Nickel Oxide. *ACS Appl. Mater. Interfaces. Accepted,* ASAP

(3) Algrim, L.; Gibbons, W. T.; Leonard, M.; **Li, T.**; Rodriguez, E. E.; Eichhorn, B. W.; Zachariah, M. R. Adsorption Kinetics within Mesoporous SBA16 of DMMP and Methanol to Probe Mass Transfer Limits. *Submitted*.

Published:

(1) **Li, T**.; Rodriguez, E. E. Multiscale Characterizations of Structural Evolution in Mesoporous CeO_2. *Chem. Commun.* **2024**. DOI:10.1039/D4CC02128B.

(2) Mandujano, H. C.; **Li, T.;** Zavalij, P. Y.; Rodriguez, E. E. Kinetic and Thermodynamic Pathways Via Ion Exchange Metathesis of Cobalt Thiophosphate. *Chem. Mater.* **2024**, *36* (10), 5172–5183. DOI:10.1021/acs.chemmater.4c00556.

(3) Ahmed, R. A.; Koirala, K. P.; Lee, G. H.; **Li, T**.; Zhao, Q.; Fu, Y.; Zhong, L.; Daddona, J. D.; Zuba, M.; Siu, C.; Kahvecioglu, O.; Battaglia, V. S.; Clément, R. J.; Yang, W.; Wang, C.; Xu, W. Enhanced Electrochemical Performance of Disordered Rocksalt Cathodes in a Localized High-Concentration Electrolyte. *Adv. Energy Mater.* **2024**, 2400722. DOI:10.1002/AENM.202400722.

(4) **Li, T**.; Leonard, M.; Tsyshevsky, R.; McEntee, M.; Karwacki, C.; Durke, E. M.; Kuklja, M. M.; Rodriguez, E. E. High Reactivity of Mesoporous CeO2 to Dissociate Chemical Warfare Agent Sarin. *Mater. Chem. Front.* **2023**, *7* (9), 1855–1866. DOI:10.1039/D2QM01253G.

(5) Li, A.-M.; Wang, Z.; Pollard, T. P.; Zhang, W.; Tan, S.; **Li, T.;** Jayawardana, C.; Liou, S.-C.; Rao, J.; Lucht, B. L.; Hu, E.; Yang, X.-Q.; Borodin, O.; Wang, C. High Voltage Electrolytes for Lithium-Ion Batteries with Micro-Sized Silicon Anodes. *Nat. Commun. 2024 151* **2024**, *15* (1), 1–14. DOI:10.1038/s41467-024-45374-0.

(6) **Li, T**.; Algrim, L.; McEntee, M.; Tsyshevsky, R.; Leonard, M.; Durke, E. M.; Karwacki, C.; Kuklja, M. M.; Zachariah, M. R.; Rodriguez, E. E. Aliovalent-Doping Effects on the Surface Activity of Mesoporous CeO2toward Nerve Agent Simulant DMMP Decomposition. *J. Phys. Chem. C* **2022**, *126* (42), 17923–17934. DOI:10.1021/ACS.JPCC.2C04853.

(7) **Li, T**.; Liou, S. C.; Hong, S. J.; Zhang, Q.; Mandujano, H. C.; Rodriguez, E. E. Structural Modulation and Spin Glassiness upon Oxidation in Oxygen Storage Material $LnFeMnO_{4+x}$ for Ln = Y, Lu, and Yb. *APL Mater.* **2023**, *11* (6), 61120. DOI:10.1063/5.0144717.

(8) Leonard, M. B.; Bruni, E.; Hall, M.; **Li, T**.; Rodriguez, E. E.; Durke, E. M. Experimental Study of the Adsorption and Decomposition of Sarin on Dry Copper(II) Oxide. *J. Phys. Chem. Lett.* **2022**, *13* (50), 11663–11668. DOI:10.1021/acs.jpclett.2c03187.

(9) Leonard, M. B.; **Li, T**.; Kramer, M. J.; McDonnell, S. M.; Vedernikov, A. N.; Rodriguez, E. E. Spectroscopic Studies of Methyl Paraoxon Decomposition over Mesoporous Ce-Doped Titanias for Toxic Chemical Filtration. *J. Hazard. Mater.* **2022**, *438*, 129536. DOI:10.1016/j.jhazmat.2022.129536.

(10) **Li, T**.; Tsyshevsky, R.; McEntee, M.; Durke, E. M.; Karwacki, C.; Rodriguez, E. E.; Kuklja, M. M. Titania Nanomaterials for Sarin Decomposition: Understanding Fundamentals. *ACS Appl. Nano Mater.* **2022**, *5* (5). DOI:10.1021/acsanm.2c00693.

(11) **Li, T**.; Rodriguez, E. E. Mesoporous Perovskite Titanates via Hydrothermal Conversion. *Chem. Commun.* **2022**, *58* (6), 783–786. DOI:10.1039/D1CC05343D.

(12) **Li, T**.; Jayathilake, R.; Balisetty, L.; Zhang, Y.; Wilfong, B.; Diethrich, T. J.; Rodriguez, E. E. Crystal Field-Induced Lattice Expansion upon Reversible Oxygen Uptake/Release in YbMn: XFe2- XO4. *Mater. Adv.* **2022**, *3* (2), 1087–1100. DOI:10.1039/d1ma00822f.

(13) **Li, T.**; Tsyshevsky, R.; Algrim, L.; McEntee, M.; Durke, E. M.; Eichhorn, B.; Karwacki, C.; Zachariah, M. R.; Kuklja, M. M.; Rodriguez, E. E. Understanding Dimethyl Methylphosphonate Adsorption and Decomposition on Mesoporous CeO_2 *ACS Appl. Mater. Interfaces* **2021**, *13* (45). DOI:10.1021/acsami.1c16668.

(14) **Li, T.**; Jayathilake, R. S.; Taylor, D. D.; Rodriguez, E. E. Structural Studies of the Perovskite Series La1-XSrxCoO3- δ during Chemical Looping with Methane. *Chem. Commun.* **2019**, *55* (34), 4929–4932. DOI:10.1039/c8cc09573f.

(15) Qin, Q.; Zhang, G.; Chai, Z.; Zhang, J.; Cui, Y.; **Li, T.**; Zheng, W. Ionic Liquid-Assisted Synthesis of Cu_7Te_4 Ultrathin Nanosheets with Enhanced Electrocatalytic Activity for Water Oxidation. *Nano Energy* **2017**, *41*, 780–787. DOI:10.1016/j.nanoen.2017.03.009.

Scientific and/or Technical Expertise:

- Scientific Writing and Speaking
- Teaching
- Material Chemistry, Inorganic Chemistry, Surface Chemistry, Solid Sate Chemistry
- Material Science, Solid State Physics
- Electrochemical Analysis, Battery fabrication and Assembly.
- Chemical Synthesis: High Temperature Solid State Synthesis of Inorganic powder and single crystal materials (Atmosphere & Vacuums); Liquid Phase Organic & Inorganic Synthesis.
- Diffraction Techniques and Crystal Structure Refinement and Solving: Lab XRD, Synchrotron XRD, Neutron Diffraction.
- Use of GSASII, Fullproof, TOPAS and JANA for diffraction refinement
- Hydrogen Evolution Electrochemical Catalysis Measurement.
- Perform SEM & TEM Characterizations and Image Processing.
- Spectroscopy Measurement and Analysis: Raman Spectroscopy, IR&DRIFTS, XPS, Solid State NMR.
- Magnetic property measurement and Analysis
- Nanostructure and Porosity characterization: Small Angle X-Ray Scattering and data fitting, Nitrogen Adsorption.
- Python for Data Processing and Fitting, Python for Simple Machine/Statistical Learning.

Other Research and Academical Experience

- As a general user on beamline granted on user proposals in Diamond Light Source, UK, Making use of I11 Beamline. 12/2023 – Current.

- As a general user on beamline granted on user proposals in Advanced Photon Source, Argonne National Lab, Making use of 11 Beamline and 17 Beamline. 06/2018 – Current.

- As a general user on beamtime granted on user proposals in Oak Ridge National Laboratory, making use of NOMAD and POWGEN Beamline. 10/2019 – Current.

- Contributed Poster Presenter in 2023 NASSAC
- Contributed talks and Poster Presenter in 2022 ACNS Conference
- Contributed talks in 2022 ACS Spring Conference
- Contributed talks in 2021 ACS Fall Conference
- Contributed talks in 2021 North America Solid State Chemistry Conference
- Poster Presenter in 2021 ACS Spring Conference.
- Poster Presenter in 2019 ACS Spring Conference.
- Poster Presenter in 2019 DTRA Science Review.
- Chemical Analyst (Internship) in Quality and Quantity Inspection Center in An' ning, Kunming steel and iron corporation Limited, China. 06/20/2016 - 08/20/2016.

Honors and Awards:

- **Gongneng Awards,** 2013-2014 academic years by School of Chemistry, Nankai University.
- **Outstanding Volunteer,** 2013-2014 academic years by School of Chemistry, Nankai University.
- **Gongneng Awards,** 2014-2015 academic years by School of Chemistry, Nankai University.
- **Dean's Fellowship,** 2018 summer by Department of Chemistry and Biochemistry, University of Maryland, College Park.
- **Goldhaber Travel Grant,** 2019 spring by Graduate School, University of Maryland.
- **G.Forrest Woods Fellowship,** 2021 summer by Department of Chemistry and Biochemistry, University of Maryland, College Park.
- **Goldhaber Travel Grant,** 2022 spring by Graduate School, University of Maryland
- **Ann G. Wylie Dissertation Fellowship,** 2022 by Graduate School, University of Maryland (One of highest honors of Graduate School in UMD).
- **Heeger Travel Fellowship,** 2023, Materials Research Laboratory, University of California, Santa Barbara