### DEPARTMENT OF CHEMISTRY

# Materials Innovation through Solid State Chemistry



# **Research Topics**

- Lithium-ion batteries, Sodium-ion batteries, Lithiumsulfur batteries
- Complex chalcogenides for thermoelectrics, super-ionic conductor and magnetic semiconductor
- Porous Frameworks (MOFs and Zeolites) for catalysis and gas storage
- Understanding structure-property-correlations

## **Contact Information**

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## Funding

National Science Foundation, American Chemical Society's-Petroleum Research Fund, UM Research Board







Complex chalcogenides showing ultra-low thermal conductivity

#### Keywords

• Batteries; Electrochemistry; Thermoelectrics; Catalysis; Magnetism; Chalcogenides; Oxides; MOFs; Synthesis; X-ray crystallography

#### **Representative publications**

Metal-organic frameworks as catalysts

- P. Sandineni, P. Madria, K. Ghosh, <u>A. Choudhury</u>, "A square channel vanadium phosphite framework as high voltage cathode for Li- and Na- ion batteries", *Materials Advances*, 2020, **1**, 698-707.
- S. Balijapelly, A. Hauble, M. Pollard, M. Poupon, V. Petříček, J. L. Watts, Y. S. Hor, S. M. Kauzlarich, <u>A. Choudhury</u>, "Ultralow thermal conductivity through the interplay of composition and disorder between thick and thin layers of makovickyite structure" *J. Mater. Chem. C*, 2021, **9**, 11207 11215.
- S. Balijapelly, Q. Zhang, P. Sandineni, A. Adhikary, S. Mohapatra, S. Sundaramoorthy, N. Gerasimchuck, A. V. Chernatynskiy, <u>A. Choudhury</u>, "High Sodium-Ion Conductivity in Interlocked Quaternary Chalcogenides Built with Supertetrahedral Building Units" *ACS Appl. Energy Mater.*, 2021, 4, 7942 7951.

