

## ME 250 SEMINAR

### **Transport of phonons and protons: Two vignettes on the application of materials simulation to address problems in energy conversion and energy storage.**

The imperative for replacing our use of climate heating fossil fuels with renewable energy sources needs no explanation. The societal and economic hurdles for changing the way that we use energy are rendered less painful if we find ways to both store and use energy more efficiently. In this talk, I will present two stories on modeling transport of phonons and protons to show how my research group uses simulation and theory to find materials solutions to these problems. By modeling phonon transport we seek to create inexpensive thermoelectric materials that can be used to recover waste heat as usable electrical power. Our study of proton transport is part of our efforts to find new battery chemistries that could be used for grid-scale electrical energy storage - batteries that can buffer the intermittent power generation from renewable energy sources such as wind and solar power.

**THURSDAY, February 11, 2021** | **ZOOM** | **11:00 AM - 11:50 AM**



Alex Greaney is an Assistant Professor in the Department Mechanical Engineering Department and the Materials Science and Engineering Program at UCR. His research group uses computation and theory to study a wide range of problems in materials science that aim to address problems in energy storage, energy conversion, energy efficiently and clean water.

You can find more about Alex's research at:

<http://www.alexgreaney.com>

**Alex Greaney**  
UC Riverside