PhD Positions at Texas Tech University

Two PhD positions are available in the research group of Dr. Zeeshan Ahmad in the Mechanical Engineering Department at Texas Tech University with a start date of Fall 2022. Problems of interest include:

- Understanding and circumventing fundamental limitations in Li metal solid-state batteries. The project will involve simulations of solid-solid interfaces using first-principles density functional theory (DFT) and molecular dynamics and the development of continuum models for coupling external parameters such as pressure and temperature. These simulations will be complemented by battery cycling and imaging experiments in our lab.
- Hybrid semiconductors for photovoltaic, optoelectronic, and quantum information science applications. The project will advance our understanding of the structural, electronic, and optical properties of these materials using first-principles simulations. The research will be in close collaboration with experimental colleagues.
- Machine learning techniques for accelerating quantum many-body simulations/ beyond DFT approaches and high-throughput design of materials and interfaces. The major focus will be on developing methods for solving challenges in energy sustainability.

More information about research and publications can be found at `https://ahzeeshan.github.io/`.
Required qualifications

- A bachelor's or master's degree in mechanical engineering, chemical engineering, materials science, chemistry, physics, or a related field
- Strong analytical skills
- Knowledge of thermodynamics and strong programming skills in one or more of Python, C++, MATLAB, Fortran, Julia
- Interest in materials and methods for energy sustainability and decarbonization

Interested candidates should apply to the PhD program in Mechanical Engineering at Texas Tech University using this link: `https://www.depts.ttu.edu/gradschool/admissions/howtoapply.php` and email Dr. Ahmad at `azeeshan@uchicago.edu` with CV and areas of interest. Applications will be reviewed immediately upon receipt. Applications from underrepresented minorities are encouraged. Texas Tech is classified as an R1 research institution (very high research activity) by the Carnegie Classification of Institutions of Higher Education.