OKLAHOMA STATE UNIVERSITY
School of Chemical Engineering

Available Ph.D. Positions

Background: Advanced materials in energy-related application areas, such as batteries, fuel cells, electrolysis, and catalysis, are often exposed to high temperatures, and/or harsh chemical and electrochemical environments during their routine operation conditions. Performance and lifetime of these materials are directly associated with the interplay between the electrical, chemical and mechanical properties. Understanding and optimizing chemo-mechanical responses of advanced materials is required in order to design new materials with synergistic properties, which offer the possibility of fabricating high performance energy conversion and storage devices at low cost.

Job Description: Ph.D. students will work on the investigation of degradation mechanisms in electrochemical energy conversion and storage materials using *in situ* stress and strain measurement techniques. Electrode-electrolyte interaction, structural stability and material performance will be characterized in various of battery and fuel cell systems. Continuum based mathematical model will be derived in order to optimize material properties. New advanced materials with desired properties for next generation energy conversion and storage devices will be developed by utilizing material based strategies. Detailed project descriptions and planning will be undertaken directly with the successful candidates.

Our Offer: Advanced Materials & Electrochemistry for Energy (AMEE) Research Group in the School of Chemical Engineering at Oklahoma State University is seeking exceptionally talented and motivated students to join our young and ambitious research team. Ph.D. positions area available in the area of advanced batteries (e.g. Li-Sulfur, Li-Oxygen and Na-Ion), fuel cells (e.g. solid-oxide fuel cells) and other energy conversion and storage-related areas. Ph.D. students will develop exceptional skills and expertise in the areas of electrochemistry, defect chemistry, mechanics of materials, and material fabrication during their studies. The selected candidates will present their work at international conferences such as AIChE and ECS. They will also have opportunities to closely work with collaborators at the University of Illinois at Urbana-Champaign, Iowa State University, and Argonne National Laboratory.

How to Apply: Interested candidates should send their CV to amee.osu@gmail.com by addressing Dr. Özgür Çapraz.

About PI: Dr. Özgür Çapraz graduated from Middle East Technical University with a bachelor degree in Chemical Engineering in 2010. He received his Ph.D. degree in Chemical and Biochemical Engineering with a Mechanical Engineering minor from Iowa State University in 2014. Then, he continued his academic career as a post-doctoral researcher in the Beckman Institute at the University of Illinois at Urbana-Champaign. Dr. Çapraz is recently awarded to Assistant Professorship position in the School of Chemical Engineering at Oklahoma State University. For more information about his studies, please visit www.ocapraz.com.