Sustainable Chemistry: Hybrid Photocatalysts for Solar Energy Conversion

Gonghu Li, Assistant Professor
Department of Chemistry & Materials Science Program, University of New Hampshire

Natural sunlight is the most abundant renewable energy resource available to us. Catalysis science and nanoscience are uniquely situated to contribute in many meaningful ways to renewable energy research. This seminar will introduce different approaches to achieve efficient solar energy conversion by combining nanomaterials with molecular complexes. These approaches include environmental photocatalysis, solar cells and solar fuels. At UNH, we fabricate innovative hybrid photocatalysts for solar fuel applications. In particular, coordination complexes of transition metals, including Re and Co, are attached onto surfaces of silica and titania nanoparticles. These hybrid photocatalysts demonstrated interesting properties in light-driven chemical transformations, including CO₂-to-fuel conversion. Such research activities are also incorporated into our outreach program including annual solar energy workshops.