

Materials in Energy Production and Storage

It is now recognized that the key to solving the energy problems of the future rest in part on developing new classes of functional materials that will contribute to energy production and storage. The purpose of this course is to establish a connection between materials, energy production/storage and the environment. The course will emphasize the relationship between fundamental materials properties, chemical and energy transformation and energy storage. Applications will cover the critical role of materials for photovoltaics, catalytic properties, hydrogen production and storage, nuclear energy, fuel cells, batteries and environmental considerations. The unique role of nanostructured materials in addressing energy needs will be described. Students completing the course will have an appreciation of the critical role of materials in addressing the pressing need for developing sustainable and environmentally friendly energy.

Prerequisites: MSE 250