

Tutorial 215:00-16:00
Room C (301)

Organizer	Minjoon Park (Pusan National Univ., Korea)
Speaker	Minjoon Park (Pusan National Univ., Korea)
Topic	Battery
Session Title	Basic Principle of Electrochemical Energy Storage Devices

This tutorial introduced the various energy storage systems such as lithium-ion battery, redox flow battery and metal-air battery, focusing on their materials and devices. Also, the challenges and prospects of each systems will be discussed in terms of nanomaterials.

Tutorial 316:00-17:00
Room C (301)

Organizer	Kwanyong Seo (UNIST, Korea)
Speaker	Kwanyong Seo (UNIST, Korea)
Topic	Solar Cells and Hydrogen generation
Session Title	Basic Principles of Solar Cells and its Application

This tutorial will cover a wide range of topics, mainly based on crystalline silicon (c-Si) solar cells, from basic principles of solar cells to the state of art solar cell technologies and applications including hydrogen generation. Solar cells are the energy conversion device that converts light energy into electrical energy. To understand the energy conversion process, we should understand 3 important components of solar cells: 1) light source (Sun), 2) active materials, and 3) device structure. And then, we will be ready to figure out 4 important steps of the energy conversion process: light absorption-carrier generation-carrier separation-carrier collection. Also, we will discuss the current status and new challenge of solar cell technologies based on various active materials such as c-Si, organic polymer, and perovskite. At the end of this tutorial, I will also briefly introduce the hydrogen generation process by using solar cells, which is called a photovoltaic-electrochemical (PV-EC) system.