



IBS Center for Molecular Spectroscopy and Dynamics

Seminar

- **SPEAKER**

Dr. Minjee Seo (IBS CMSD)

- **TITLE**

Morphological Effects of Nanoporous Indium Tin Oxide electrodes towards Electron transfer and its applications as Bipolar electrode sensors

- **ABSTRACT**

With the advent of environmental issues and increasing demands for medical monitoring devices, highly efficient, as well as cost-effective and stable electrocatalysts are essential nowadays. In particular, nanoporous electrodes have been applied in diverse energy conversion devices and sensors owing to its enhanced electrocatalytic activity. The remarkable electrocatalytic activity effects of the nanoporous electrodes are usually understood on the basis of its enlarged surface area, crystalline facets, or surface defects. In the geometrical point of view, nanocavities of nanoporous electrodes offer unique spatial environment, resulting in altered physicochemical characteristics. For instance, it has been suggested that confinement of reactant molecules lead to enhanced interaction between the reactant molecule and the electrode surface, a phenomenon denoted as nanoconfinement effects. To clearly observe this 'nanoconfinement effect', nanoporous Indium tin oxide (ITO) electrodes are utilized to investigate the kinetics of a single electron transfer $\text{Fe}^{2+/3+}$. By varying the nanoporous ITO layer thickness and comparing their performance, we were able to effectively exclude electrocatalytic effects originating from the electrode surface, such as defects. The catalytic effects of nanoporous ITOs were also demonstrated by its applications in bipolar based sensors.

- **DATE AND VENUE**

September 9, 2020 (Wednesday, 5:00 - 6:00)
Seminar Room B (119), KU R&D Center

- **LANGUAGE**

Korean