



School of Nano Science



IPM Condensed Matter &
Statistical Physics Group

Weekly Seminar

Nanostructures application for pollutants photocatalytic degradation and/or construction of biosensors

Invited speaker: **Prof. Mehrorang Ghaedi**

Department of Chemistry, Yasouj University

Abstract:

In the recent years, development of new porous materials having the ability of hydrogen sorption, has been the main purpose of many studies. Hydrogen is identified as an ideal fuel for energy conversion because of important advantages such as high efficiency, abundance supply, renewability, high gravimetric energy density and its role in the reduction of air pollution. Carbon nanotubes (CNTs) with unique physical and chemical properties instancing impressive chemical stability high, specific surface area, high mechanical ability and high electron-transfer rate are good choice for electrochemical hydrogen storage. Moreover, metal oxides are profitable, low toxicity and commodious energy storage materials for electrochemical storage applications. Among various methods that have been used for this regard, photocatalytic degradation as a cheap, available, clean and green purification technology in wastewater treatment process has always been considered. Therefore, application of nano-based materials for photocatalytic degradation of organic pollutants due to impressive properties of nanomaterial's in terms of high specific surface area, high surface free energy, sufficient reactive sites, fast dissolution, and various discontinuous properties (e.g. superparamagnetism, localized surface plasmon resonance, and quantum confinement effect) can enhance and improve the efficiency of photocatalytic degradation based methods for treatment and removal of organic pollutants from wastewater and environment. In addition, the sensing properties of solid-state optical sensor can be improved by using various nanomaterials such as graphene, metal oxides and colloidal carbon dots. Amongst, colloidal carbon dots (CDs) recently attain significant attention due to their interesting physical, optical, chemical properties and electron transfer behavior which can be related to large surface-to-volume ratio, and existence of functional groups, such as carboxylic acid, carbonyl, Amin and hydroxyl, on their surface which are fine and capable sites can be functionalized with some molecules.

Wednesday, 4 Mehr 1397 (Sep 26, 2018), 14:00-15:00

Seminar Room (classroom A), Farmanieh Building, IPM