



Universidad  
Carlos III de Madrid

# Seminario del Instituto Gregorio Millán

## ***Structural and functional relationship in materials, catalysts and environmental systems.***

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### Abstract

Material science and catalytic systems play a very important role in many man-kind activities as well as in nature. This can be easily understood if we consider that more than 90% of the chemical industry has catalysis-related processes. In nature, enzymes are the commonest and most efficient catalysts found. Taking this into account, the idea of transferring principles from nature to a chemistry lab and mimicking enzymatic reactions by synthetic catalysts looks very promising in an effort to produce highly active and selective catalysts. On the other hand solid materials used as heterogeneous catalysts (i.e. semiconductors, metal oxides), have advantages towards industrial applications. However, in order to achieve the ultimate goal of producing materials with improved properties and to understand in depth environmental systems, analysis in atomic scale and electronic level are considered mandatory. Towards this objective, the utilization of in-situ spectroscopic characterization techniques under real working conditions and computational chemistry have gained significance with respect to the most commonly used classical characterization methodology.

In this seminar, the application of in-situ characterization methodologies, to study catalytic systems and the synthesis of nanomaterials under real conditions will be presented regarding bio-mimetic and metal oxide catalysts. The advantages on understanding the underlying mechanism and establishing structural/functional relationship will be discussed.

Día y hora: Viernes, 23 de noviembre de 2012 a las 12:30 horas

Lugar: Sala 2.1.C19 (Edificio Sabatini), Universidad Carlos III