Università Ca'Foscari Venezia
Dipartimento di Scienze Molecolari e Nanosistemi

Dipartimento di Scienze Molecolari e Nanosistemi
Università Ca' Foscari Venezia
Campus Scientifico – Via Torino 155, 30170 Mestre (VE)
P.IVA 00816350276 - CF 80007720271
www.unive.it/dsmn

The Department of Molecular Sciences and Nanosystems organizes the seminar

Nanocatalysts for oxygen removal from model molecules present in fast pyrolysis bio-oil

Dr. Antonia Infantes Molina

Department of Inorganic Chemistry, Cristallography and Mineralogy - University of Malaga (Spain)

28th February 2020
at 12.15 Room Delta 0A

Abstract

Sustainable and suitable energy supply is one of the most important challenges that society faces. Residual biomass to produce biofuel could be a potential route to substitute fossil fuels since it is a renewable resource that could contribute to sustainable development and global environmental preservation and it appears to have significant economic potential.

Lignocellulosic biomass can be converted to various forms of energy by four strategies, (*i.e.* physical, chemical, biological and thermochemical processes) depending on the raw material characteristics and the type of energy desired. However, nowadays it is still a challenge to convert lignocellulosic materials to liquid fuels with high efficiency. Liquid fuels can be obtained from fast pyrolysis of lignocellulosic biomass. However, these liquid fuels have poor quality due to their low volatility, high viscosity, low heating value, high oxygen content, and poor chemical stability. This high oxygen content is due to the presence of oxygen-containing compounds such as alcohols, aldehydes, ketones, furans, and phenols. Catalytic upgrading enhances the properties of the pyrolysis bio-oil by removing oxygen compounds, reducing molecular weight and altering the chemical structure to resemble those of fossil fuels. The removal of oxygen from pyrolysis oil by a catalytic reaction with hydrogen is called hydrodeoxygenation (HDO). This is a typical hydrolysis reaction, where the carbon-oxygen bond is cleaved with hydrogen in the presence of a catalyst and removing oxygen in the form of water. The catalyst design is the key to achieve high conversion and selectivity values.

The organizer
Prof.ssa Elisa Moretti