Università degli Studi di Udine

Dottorato di Ricerca in Scienze dell'Ingegneria Energetica e Ambientale

Seminari del Corso di Dottorato

Molecular Approaches to Sustainable Catalysis

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Abstract: The necessity to reduce fossil fuels exploitation and CO2 emissions has become urgent, as reflected by the zero-emission policy for the sales of new vehicles by 2035 supported by the European Parliament this year. The strategy envisions a combination of different approaches depending on the field of application. In this regard, the Guerbet reaction constitutes an ideal pathway for bio-ethanol (from waste) homologation in a circular economy perspective. The catalyst properties and the conditions employed need to be finely tuned to allow for the plurality of reactions involved that is why homogeneous systems, although still to be improved, are likely to be more applicable for the reaction industrialization. Catalytic molecular approaches, from the catalyst design to the process definition and development, will be described for this reaction. The possible role of molecular catalysis in the energy transition, exploiting other renewable substrates (e.g. water oxidation and fine chemical production) will be also discussed.

CV: Rita Mazzoni got the M.Sc in Industrial Chemistry at the University of Bologna (2001) and the Ph.D in Chemical Science at the same University in 2005. Since 2006 she has been a researcher in organometallic chemistry at the Department of Industrial Chemistry. At the moment she is a professor in general and inorganic chemistry. Main research interests are devoted to the design, synthesis and application of molecular catalysts in homogeneous or hybrid systems applied to the energy and environmental transition.