Venerdì 6 Dicembre 2024
alle ore 11.00

presso l'AULA 2 dell'Edificio F
Area della Ricerca CNR di Firenze
Via Madonna del Piano 10, Sesto Fiorentino (FI)

la Prof.ssa Rita Mazzoni
Dipartimento di Chimica Industriale "Toso Montanari"
Università degli Studi di Bologna, Italia

terrà il seguente seminario:

"Molecular approaches to sustainable catalysis"

Si invitano tutti gli interessati a partecipare.

Dr. Luca Gonsalvi
Dirigente di Ricerca CNR

Dr. Claudio Sangregorio
Direttore CNR-ICCOM

Short Abstract:

The necessity to reduce fossil fuels exploitation and CO_2 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 presented and discussed.

Biographic sketch:

Rita Mazzoni got the M.Sc in Industrial Chemistry at the University of Bologna (2001) and the Ph.D in Chemical Science in 2005. At the moment she is a professor in general and inorganic chemistry. Her research interests are focused on the rational design, synthesis and application of homogeneous catalytic systems for sustainable biomass conversion (e.g. bio-oil mixtures, HMF and bioethanol valorization) and energy transition (water oxidation, hydrogen production, acqueous phase reforming) based on group 7-11 metal complexes which combine cyclopentadienone, carbonyl and N-heterocyclic carbene ligands in mononuclear complexes. More in details: i) Rational design of homogeneous ruthenium based catalytic systems for the development of innovative processes toward the conversion of bio-based platforms (e.g. 2,5-hydroxymethyl furfural (HMF), 2,5-bis-hydroxymethylfurfural (BHMF), bio-ethanol from waste) to building blocks for green and energy transition (second generation bio-fuel) and for sustainable materials such as bio-based polymers; ii) Design, synthesis and application of Earth-abundant transition metal complexes (e.g. Fe and Mn) for energy transition (water oxidation, hydrogen production, acqueous phase reforming) and for the development of sustainable materials for sensor applications, flame behaviour control and bio-inorganic applications; iii) Design, synthesis and application ruthenium and iron complexes for the catalytic or electrocatalytic production of hydrogen from bio-based substrates or acidic hydrogen sources. Rita Mazzoni is Editorial Board member of *Scientific Reports.* Member of the Centre for Industrial Research, Renewable Sources Environment, Sea, Energy (CIRI-FRAME); Member of the scientific commitee of the Center of Chemical Catalysis – University of Bologna and President of the Directive Commitee of the Emilia Romagna branch of the Italian Chemical Society.