

Venerdì 13 Dicembre 2024

alle ore 11.00

presso AULA 20 (sala riunioni) dell'Edificio A
Area della Ricerca CNR di Pisa
Via Giuseppe Moruzzi, 1 – Pisa

il **Dr. Stefan Vajda**

J Heyrovsky Institute of Physical Chemistry, Czech Academy of Sciences
Prague, Czech Republic

terrà il seguente seminario:

**"Subnanometer Clusters in Oxidative Dehydrogenation Reactions:
Knobs for Controlling Activity & Selectivity, One Atom a Time"**

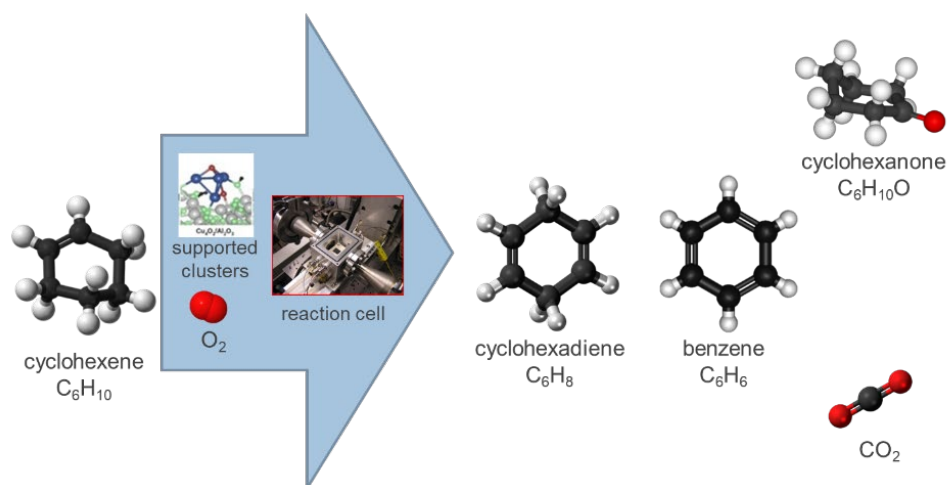
Si invitano tutti gli interessati a partecipare.

Dr. Alessandro Fortunelli
Dirigente di Ricerca

Dr. Claudio Sangregorio
Direttore ICCOM

Short Abstract:

(The presentation will focus on catalysis, performed under realistic reaction conditions of pressure and temperature, driven by supported monodisperse subnanometer clusters made of a handful of atoms, supported on technologically relevant oxide- and model carbon-based supports.



Schematic of the oxidative dehydrogenation of cyclohexene showing possible reaction products

As an example of controlling catalyst performance at the atomic level along available tuning knobs, monometallic Co, Cu, Pd and bimetallic CuPd clusters in the oxidative dehydrogenation of cyclohexene and cyclohexane will be discussed, where the atomic precision design of mono- and bimetallic clusters allows for the fine-tuning of their activity and selectivity by varying the size and/or the composition of these atomic clusters in an atom-by-atom fashion and by the choice of support material and varying reaction conditions.)

Biographic sketch:

Stefan Vajda obtained his PhD from Chemistry at the Charles University Prague, Czech Republic on time-resolved fluorescence spectroscopy, after which he spent a year as Fulbright Scholar at the University of Chicago working on ultrafast spectroscopy. After Habilitation in Experimental Physics at the Free University Berlin, Germany on time resolved and optimal laser control studies of free clusters and molecules, he established at the Argonne National Laboratory, USA a new research direction of studies of size-selected cluster-based catalysts under realistic reaction conditions of temperature and pressure - from the fabrication of catalyst to testing to in situ/operando characterization. Currently, at the Heyrovsky Institute in Prague, he further focuses on technologically relevant processes catalyzed by clusters and nanoparticles.