



DEPARTMENT OF INDUSTRIAL CHEMISTRY
"TOSO MONTANARI"

Mercoledì 11 Aprile 2018 alle ore 15.00

presso l'aula 9

del Dipartimento di Chimica Industriale
"Toso Montanari"

Dr. Nikolaos Dimitratos

*School of Chemistry, Cardiff Catalysis Institute, Cardiff University,
Main Building, Park Place, Cardiff, Wales, CF10 3AT*

terrà una conferenza dal titolo:

*Catalytic applications of colloidal metal
nanoparticles and challenges*

Colleghi, dottorandi e studenti sono cordialmente invitati a
partecipare
Prof. Angelo Vaccari



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Colloidal metal nanoparticles as a toolbox for catalytic studies

Abstract

Catalytic applications of Au-based nanoparticles either in the form of colloids or supported nanoparticles have received vast attention in recent years. These materials are highly effective for the transformation of organic compounds to useful chemical products. Recently, the utilisation of colloidal methods has been explored for the synthesis of nanoparticles with controllable size and shape of Au-based nanoparticles. We have developed Au-based nanoparticles where the control of size, shape and morphology of structure (alloy or core-shell) is feasible. Here we present case studies where the influence of preparation in catalytic performance of Au-based nanoparticles synthesised by colloidal methods in a variety of important reactions in terms of activity and selectivity is evident, such as (i) the oxidation of glycerol, (ii) furfural and nitrophenol hydrogenation and (iii) the production of H₂ via (photo)catalytic processes. The catalysts have been characterised using a combination of techniques, (i) TEM/STEM HAADF/XEDS, (ii) X-ray absorption spectroscopy and (iii) X-ray photoelectron spectroscopy. Structure-activity relationships will be highlighted and discussed.

Biography

Dr. Nikolaos Dimitratos studied chemistry at the University of Bath and received a PhD at the University of Liverpool in 2003. He was a postdoctoral researcher at the University of Milan (Professor Laura Prati and Professor Michele Rossi) and University of Cardiff (Professor Graham J. Hutchings). His current research field is catalysis, covering areas of synthesis, characterisation and reactivity in oxidation and hydrogenation reactions. His main interests are in selective oxidation of alkanes/alcohols using gold-based catalysts, zeotype materials and heteropolyacids, hydrogenation of organic compounds and production of H₂ using (photo)catalytic processes. He is currently University Research Fellow and Independent Research Group Leader in the area of catalysis and nanoparticle synthesis at the school of Chemistry, Cardiff Catalysis Institute, Cardiff University.