28 de febrero de 2024

12.00 h
Sala de Grados
Facultad de Ciencias

INMA
INSTITUTO DE NANOCIENCIA Y MATERIALES DE ARAGÓN

Single Molecule Electronics

Richard J. Nichols
The University of Liverpool

This lecture presents detailed measurements of the electrical properties of single molecular wires and discusses how these have contributed to understanding charge flow through single molecular junctions. We have exploited scanning tunneling microscopy (STM) based methods for making single molecule measurements on a wide variety of molecular targets, from short molecular bridges to redox active organometallic molecular wires and for complex supramolecular assemblies. Such measurements have been made as two-terminal determinations and also under electrochemical potential control with electrolytes varying from aqueous solutions to ionic liquids. This presentation will review some of our findings on the electrical properties of molecule wires as well as presenting our latest data recorded using the STM break junction method, with a focus on mechanisms and stochastics of charge transport in single molecule wires.

Biography: Richard Nichols' research areas include investigating aspects of conduction in single molecules, single molecule electrochemistry, molecular electronics, nanoscience, scanning probe microscopy, nanoscale electrochemistry, interfacial electrochemistry, metal plating and in-situ spectroscopic methods for studying electrode surfaces. He is an expert in the field of scanning probe microscopy, particularly as applied to in-situ electrochemical measurements and single molecule electronics. He has ~200 publications in peer-reviewed journals. Since 2000 he has been developing techniques for the measurement of molecular electrical properties.

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