CENTRE D'INVESTIGACIÓ
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SEMINAR

Spin Polarisation above an Organic-Antiferromagnetic Interface

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The emerging field of organic spintronics aims to combine the advantantages of molecular electronics such as device miniaturisation and fabrication ease with the massive potential for application inherent in spintronics. Potential devices use organic molecules to control and manipulate spin-polarised signals. Such molecules are generally contacted with non-organic materials. As such, it is vital to understand the magneto-organic interface. It has been previously found that even the simplest non-magnetic molecule is capable of inverting the spin polarisation emerging from the clean ferromagnetic surface. We consider here an antiferromagnetic surface: a monolayer of Mn on a W(110) substrate. We perform ab-initio calculations in order to investigate the interface between simple organic molecules, both magnetic and non-magnetic, and an antiferromagnetic surface. The molecules considered include benzene (C6H6), cyclooctatetraene (C8H8) and small transition metal - benzene complexes. Simulated spin-polarised scanning tunneling micoscopy (SP-STM) images are presented. They show that the exact magnitude and sign of the spin polarisation in the vacuum above the molecule is strongly dependent on the bonding details at the interface and due to the antiferromagnetic surface it exhibits a strong intra-molecular spatial dependence.

REMEMBER

Dr. Nuala Caffrey

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Place: CIN2 Seminar Hall, CIN2 Bldg, UAB

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