Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart
Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme

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Dienstag, 30. April 2013	17:15 Uhr	Hörsaal V 57.01

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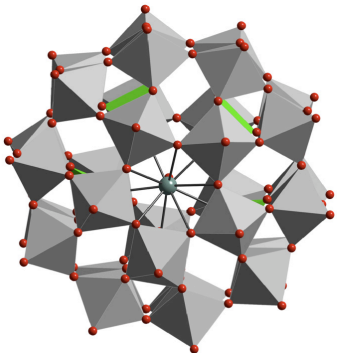
Molecular Spintronics



Eugenio Coronado Miralles
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Abstract

Spin-based electronics is one of the emerging branches in today's nanotechnology and the most active area within nanomagnetism. So far spintronics has been based on conventional materials like inorganic metals and semiconductors. Still, molecular electronics emerged several decades ago as a promising possibility to complement or even to replace conventional inorganic electronics when it goes nano. In this context, a natural evolution of molecular electronics is that of using magnetic molecules, as well as molecule-based materials, as components of new spintronic systems.

In this talk I will show with four examples the important role that chemistry can play in molecular spintronics and, in general, in molecular nanomagnetism. The first example will deal with the chemical design of nanostructured materials exhibiting multifunctional properties, in particular magnetism and electric conductivity. The second example will show the possibility to design multifunctional molecular devices combining luminescence and spin-valve properties (i.e., Spin-OLEDs). The third example will concern the electrical addressing of the spin in molecular nanoobjects. Finally, I will focus onthe use of single-molecule magnets as qubits in quantum computing.