Molecular magnetic systems grafted on a surface

Philippe Sainctavit*†[1]

[1]Institut de minéralogie, de physique des matériaux et de cosmochimie – CNRS : UMR7590, Université Pierre et Marie Curie (UPMC) - Paris VI, Institut de Recherche pour le Développement - IRD, Muséum National d'Histoire Naturelle (MNHN) – France

Abstract

In this course, I shall focus on the original properties that are exhibited by molecular magnetic systems when they are grafted on a surface.
I shall first present the Single Molecule Magnets (SMM) with their unique property associated to the quantum relaxation of magnetization. Then I shall review how such unusual properties are modified when SMMs are deposited on either a metallic, an insulating or a ferromagnetic surfaces. Emphasis shall be brought to the nature of the magnetic ions with a special attention to the orbit and spin contributions to the magnetization. The main technique of investigation is x-ray magnetic circular dichroism and for which the basic concepts shall be rapidly introduced.
In a second step, I shall present various thermomagnetic and photomagnetic systems where the magnetic properties can be triggered by an external stimulus such as temperature or light. The case of Spin Cross Overs (SCOs) shall be reviewed with a special attention to cooperativity when SCOs are deposited on a surface. I shall also present systems where a charge transfer is at the origin of the photomagnetism. Again the finite size of the charge transfer units and the observed modifications when the systems are deposited on a surface shall be addressed.

*Speaker
†Corresponding author: philippe.sainctavit@impmc.upmc.fr