



Institut de Minéralogie et de Physique des Milieux Condensés  
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# SÉMINAIRE

## Lundi 17 mai, 10h30

*Salle de conférence, Bâtiment 15  
Campus Boucicaut, 140 rue de Lourmel, 75015 Paris*

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# LOW MOLECULAR DENSITY OF SINGLE MOLECULAR MAGNET GRAFTED ON GRAPHENE AND NANOTUBES

Graphene and carbon nanotubes are considered promising materials for applications in future molecular electronics. Particular interest lies in the field of molecular spintronics: molecular magnets exhibit exciting properties for spin manipulation however they are difficult to address individually. We propose to probe them by using carbon based devices as sensors. One of the main challenges is to understand and control the deposition process and the grafting mechanism down to the molecular level.

I present here our first studies on the grafting and the arrangement of single molecular magnets ( $\text{TbPc}_2$ ) on graphene sheets for different number of layers. By means of micro-Raman spectroscopy and Atomic Force Microscopy, I demonstrate that the coupling interaction between the two materials is carried mainly by the  $\pi$ -systems and that the molecules selectively graft on graphene with uniform dispersion and a number of layers dependent-density. Moreover, as the interaction is soft, the intrinsic electronics properties of graphene are preserved.

This work shows the possibility to build graphene-based devices with new magnetic functionalities for spintronics applications.

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