

## **Site-specific magnetic studies and control of large self-assembled spin systems**

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This PhD project builds on recent efforts to establish self-assembled spin systems coupled to magnetically ordered substrates and their control by axial ligands [1]. So far, respective studies have mainly focused on the coupling of magnetic molecules to ferromagnetic substrates [2]. However, these systems do not permit to manipulate the magnetization of the molecules independently of the ferromagnetic substrate by an external magnetic field. This hinders to study important parameters such as the coupling strength or the magnetic anisotropy energy of the molecules. Thus, in the next step we aim to prepare the self-assembled molecular layers on suitable antiferromagnetic substrates. Using a combination of techniques such as scanning tunneling microscopy/spectroscopy (STM/STS), X-ray absorption spectroscopy (XAS) and X-ray magnetic circular dichroism (XMCD) the site-specific behavior of individual spins shall be studied within the ensemble of molecular arrays and as individual ad-surface unit.

We seek for a highly motivated individual who enjoys working in a small team of scientists with different backgrounds. A master degree in materials science, physics, physical chemistry or related field is expected and an interdisciplinary background is of essential importance.

[1] C. Wäckerlin et al., On-surface coordination chemistry of planar molecular spin systems: novel magnetochemical effects induced by axial ligands. *Chem. Sci.* 3, 3154 (2012)

[2] C. Wäckerlin et al., Two-dimensional supramolecular electron spin arrays, submitted (2012).