

Opening position at ICMMO : 12-month Post-Doctoral fellowship

“Polarized Neutron Diffraction for Anisotropy in Molecular Magnets”

Research

The research project will explore the magnetic properties of molecular compounds exhibiting magnetic anisotropy using Polarized neutron diffraction (PND). This unique technique makes it possible to measure magnetic anisotropy vectors with precision, something very difficult with other techniques. Inelastic Neutron Scattering (INS) may also be used to understand low-energy magnetic excitations driven by the crystal field and/or exchange interactions. The combination of these techniques, coupled with magnetometry and complementary X-ray techniques, will enable us to gain an in-depth understanding of the local magnetic characteristics. Several magnetic compounds, based on transition metals or rare earths, are targeted, starting with the mononuclear $K_3[Fe^{3+}(CN)_6]$ and then coordination polymers built from this unit. The research project will involve synthetic chemists from ICMMO, and possibly other laboratories on the Plateau de Saclay in particular, with full fledge capacity to provide model samples, characterization tools and expertise in X-rays techniques. Several experimental methods will be used in the course of the project: X-ray Diffraction [XRD] and magnetometry SQUID/PPMS (at Saclay and Orsay), Polarized Neutron Diffraction [PND] and, possibly, Inelastic Neutron Scattering [INS], computation and data analysis.

Context

The 12-month grant is funded by the APICONE collaborative project scheme in the frame of the development program towards an “Innovative Compact Neutron Facility” implemented by LLB and other laboratories. The work will be performed at ICMMO (*Institut de Chimie Moléculaire et des Matériaux d'Orsay, UMR8182 Université Paris-Saclay/CNRS*) and LLB (*Laboratoire Léon-Brillouin, UMR12 CNRS/CEA, Saclay*) in strong collaboration with scientists at the Institut Laue-Langevin (ILL Grenoble). Candidates should have proven expertise in magnetism and scattering techniques (x-ray and/or neutrons) and strong taste for experimental physico-chemistry and solid-state physics. Expected start early 2025.

For further discussions and details, please contact:

Prof Anne Bleuzen (anne.bleuzen@universite-paris-saclay.fr)

Dr. Grégory Chaboussant (gregory.chaboussant@cea.fr)

Applicants must send the following documents to the above emails: Curriculum Vitae, Letter of Motivation and the names and contact addresses of two reference persons.