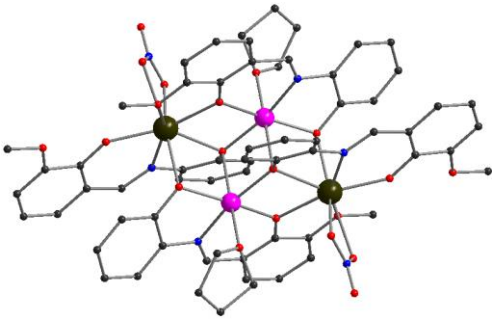
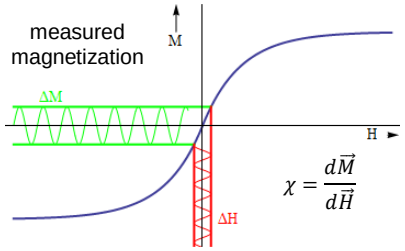
Master Thesis Project

AC Magnetic Susceptibility of Lanthanide Molecular Nanomagnets

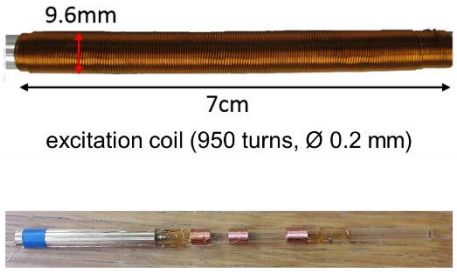


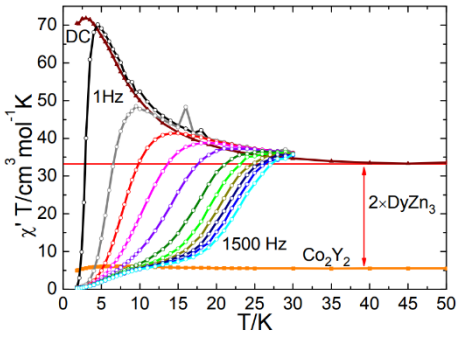
We study molecular nanomagnets because we believe they are the perfect arena to test quantum mechanics and quantum statistics of a well-defined and manageable number of interacting quantum objects. Despite their finite size, and in principle well known Hamiltonian, nanomagnets display a great variety of non-trivial collective behavior. To quote P.W. Anderson: “More is different”.

The aim of this project is to experimentally study the magnetic response of Lanthanide-containing single molecule magnets, most importantly their dynamic features such as magnetic relaxation. The work involves using and further developing our in-house high-frequency AC susceptometer to measure the magnetic relaxation as a function of temperature (1.5 K – 100 K) in the time and frequency domain, as well as performing numerical analysis of the obtained data.



The principle of ac susceptibility measurement.





General questions are which relaxation mechanisms are present in Lanthanide-containing single molecule magnets, and how they are to be described. You will contribute to the broader efforts in the group to advance the physical understanding of the phenomena in magnetic particles of mesoscopic size.

Interested?

Then don't hesitate to come for a coffee on the second floor of the Physik Hochhaus!

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