ity and magneto-optical experiments of our collaborators in Ames and Knoxville (USA) portend small changes in the structure of the molecule with applied magnetic field.

MA 37.7 Fri 12:15 HSZ 403

AC-susceptibility measurements of spinclusters in high magnetic fields — •Roland Leppin and Bernd Pilawa — Physikalisches Institut, Universität Karlsruhe (TH)

The $Fe_2(hpdta)_1$, $Fe_4(hpdta)_2$ and $Fe_6(hpdta)_3$ clusters denote systems of antiferromagnetically coupled magnetic ions with s=5/2, which are surrounded by organic ligands. Of these spin systems the static magnetic susceptibility and exchange coupling constants are known, but no ESR signal can be detected to gain access to the electronic level structure. However, spin dynamics are still accessible via levelcrossing experiments with high field ac-susceptibility measurements.

Therefore an experimental setup has been developed to measure ac-susceptibility in a dc-magnetic field from 0 to 20T. Initial zero field measurements of a Mn_7 cluster support the expected paramagnetic blocking temperature behaviour. For the (hpdta)-systems it is expected to measure a peak in the ac-susceptibility, when the dc-field passes an electronic levelcrossing between the lowest energy level and the next higher excited state, causing a step-like increase in magnetization.

MA 37.8 Fri 12:30 HSZ 403

Tuning the magnetic ground state of a novel tetranuclear Nickel(II) molecular complex by high magnetic fields — •C. Golze[1,2], A. Alfonsov[1], R. Klingeler[1,3], B. Büchner[1], V. Kataev[1], C. Mennerich[2], H.-H. Klauss[2], M. Goiran[3], J.M. Broto[3], H. Rakoto[3], S. Demeshko[4], G. Leibeling[4], and F. Meyer[4] — [1]IFW Dresden, Germany — [2]TU Braunschweig, Germany — [3]LNCMP Toulouse, France — [4]University Göttingen, Germany

Electron spin resonance and magnetization data in magnetic fields up to 50 T of a novel multicenter magnetic molecular complex $[(L)2Ni_4(N_3)(O_2C\,Ada)_4](Cl\,O_4)$ are reported. In this compound, four Ni spins each $S = 1$ are coupled in a single molecule via the central μ_4-azide bridge which provides paths for magnetic exchange. A complex ESR spectrum comprising four resonance modes has been observed. Analysis of the frequency and temperature dependence of the ESR signals yields the relevant parameters of the spin Hamiltonian, in particular the single ion anisotropy gap and the g factor, which enables the calculation of the complex energy spectrum of the spin states in a magnetic field. The experimental results give compelling evidence for tuning the ground state of the molecule by magnetic field from a nonmagnetic state at small fields to a magnetic one in strong fields owing to the spin level crossing at a field of $\approx$ 25 T.

MA 37.9 Fri 12:45 HSZ 403

Magnetic and optical properties of oxamato bridged Cu(II) complexes — •Björn Bräuer[1], Tobias Rüffer[2], Dietrich R. T. Zahn[1], and Georgeta Salvan[1] — [1]Technische Universität Chemnitz, Institut für Physik, Reichenhainer Str. 70, D-09107 Chemnitz — [2]Technische Universität Chemnitz, Institut für Chemie, Straße der Nationen 62, D-09107 Chemnitz

Coordination complexes allow the step-wise incorporation of an extended number of transition metal ions. Bis-oxamato type transition metal complexes are prominent representatives of such systems and are used for the synthesis of trimetallic complexes. The magnetic coupling constant of such molecules and their spin density were determined using Superconducting Quantum Interference Device (SQUID) and Electron Paramagnetic Resonance measurements on powder. These molecules were also deposited as thin films on silicon using spin-coating. Variable Angle Spectroscopic Ellipsometry (VASE), Raman and IR spectroscopy studies showed that the molecular structure is preserved during the deposition process and that the films exhibit a preferential molecular orientation.

MA 37.10 Fri 13:00 HSZ 403

Quantum Tunneling of the Magnetization in Lanthanide Double-Decker Complexes — •H. Rupp[1], B. Barbara[2], P. Müller[1], S. Brink[3], O. Fuhr[3], and M. Ruben[3] — [1]Physikalisches Institut III, Universität Erlangen, Germany — [2]Laboratoire de Magnétisme Louis Néel, CRNS, Grenoble, France — [3]Institut für Nanotechnologie, Forschungszentrum Karlsruhe, Germany

Magnetization hysteresis of dysprosium double-decker single crystals was observed below 4K. For the first time a larger blocking temperature than for Mn acetate was found. The very large anisotropy of rare-earth ions has two opposing effects on the barrier height for reversal of the magnetization: The strong axial anisotropy results in a very large ligand-field splitting, whereas the large transversal anisotropy shortcuts the barrier. The observed steps in the hysteresis are due to quantum tunneling of the magnetization. We interpret these steps and related features in terms of intermolecular exchange, dipole-dipole and hyperfine interactions.