

MAGNETIC MOMENTS AND HYSTERESIS OF AN ENDOHEDRAL SINGLE-MOLECULE MAGNET ON A METAL

B.Buechner^a, R. Westerstrom^b, K. Junghans^c and Y. Zhang^d

^a Institute for Solid State Research, IFW Dresden, Germany

^b Physik-Institut, Universität Zürich, Switzerland

^c Institute for Solid State Research, IFW Dresden, Germany

^d Institute for Solid State Research, IFW Dresden, Germany

Endohedral fullerenes containing clusters of lanthanides are a new interesting class of molecular magnets. The magnetism of these systems depends on the number of lanthanides, their spatial arrangement and their magnetic quantum number. The magnetic hysteresis which is characteristic for single-molecule magnets, is also observed when the fullerenes are deposited on metal substrates. In my talk I will present studies on Dy-nitride cluster fullerenes. It will be shown that the interaction between the endohedral unit in the single-molecule magnet Dy₂ScN@C-80 and a rhodium (111) substrate leads to alignment of the Dy 4f orbitals. The resulting orientation of the Dy₂ScN plane parallel to the surface is inferred from comparison of the angular anisotropy of x-ray absorption spectra and multiplet calculations in the corresponding ligand field. Element specific magnetization curves from different coverages exhibit hysteresis at a sample temperature of 4 K. From the measured hysteresis curves, we estimate the zero field remanence lifetime during x-ray exposure of a submonolayer to be about 30 seconds.

References

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