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Magnetization Hysteresis and Quantum Tunneling in Lanthanide Double-Decker Complexes H. RUPP, P. MÜLLER, Physikalisches Institut III, Universität Erlangen, Germany, S. BRINK, O. FUHR, M. RUBEN, INT, FZ Karlsruhe, Germany — We present magnetization measurements on single crystals of lanthanide double-deckers $[Pc_2Ln]^-$ TBA^+. The $4f^9$($4f^8$) configuration of the Dy^{3+} (Tb^{3+}), ion results in a J = 15/2 (J = 6) ground-state multiplett. In SQUID measurements on single crystal samples, we observed very large axial and a significant transverse anisotropy. Magnetization measurements using 2DEG ballistic Hall probes were carried out in a ^{3}He cryostat. Hysteresis was observed for both compounds up to blocking temperatures of 4.2 and >10 K, respectively. The coercivity increased with decreasing temperatures and increasing sweep rate, as expected for the superparamagnet-like behaviour of a SMM. The hysteresis loops displayed step-like features characteristic for resonant quantum tunnelling of the magnetization (QTM). The step height decreased with increasing sweep rate according the Landau-Zener tunnelling mechanism. In conclusion, the lanthanide double decker molecules are SMM with the highest blocking temperatures observed to date.

P. Mueller
Physikalisches Institut III, Universitaet Erlangen

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