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Magnetocrystalline and Shape Anisotropy in Mn_{12}-acetate Micro-Crystals[1] DONGMIN SEO, WINFRIED TEIZER, Department of Physics, Texas A&M University, College Station, TX 77843-4242, USA, HANHUA ZHAO, KIM DUNBAR, Department of Chemistry, Texas A&M University, College Station, TX 77842-3012, USA — We have aligned micro-crystals of Mn_{12}-acetate in a solvent bath by applying an external magnetic field H = 0.5 T at room temperatures. Various states ranging from randomly-oriented to well-oriented state of the same suspension sample have been prepared by applying an external magnetic field 0 T $\leq$ H $\leq$ 1 T at room temperature. DC magnetization has subsequently been measured for these states and alignment behavior was studied as a function of the field. For T $<$ 50 K, the well-aligned state shows a higher magnetization than the randomly-oriented state of the sample. However, for T $>$ 100 K, where the alignment occurs, no significant difference in magnetization was observed between the different states. The observed magnetization difference below 50 K comes from the magnetocrystalline anisotropy. And, shape anisotropy of the micro-crystals may be the main origin of the observed alignment.

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