Abstract Submitted
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Magnetic Relaxation and Coercivity of Finite-size Single Chain Magnets[1] THOMAS GREDIG, MATTHEW BYRNE, Department of Physics and Astronomy, California State University Long Beach, Long Beach, CA 90840, ALESSANDRO VINDIGNI, Laboratory for Solid State Physics, ETH Zurich, CH-8093 Zurich, Switzerland — The magnetic coercivity of hysteresis loops for iron phthalocyanine thin films depends on the iron chain length and the measurement sweep speed below 5 K. The average one-dimensional (1D) iron chain length in samples is controlled during deposition. These 1D iron chains can be tuned over one order of magnitude with the shortest chain having 100 elements. We show that the coercivity strongly increases with the average length of the iron chains, which self-assemble parallel to the substrate surface. Magnetic relaxation and sweep speed data suggest spin dynamics play an important role. Implementing Glauber dynamics with a finite-sized 1D Ising model provides qualitative agreement with experimental data. This suggests that iron phthalocyanine thin films act as single chain magnets and provide a solid test system for tunable finite-sized magnetic chains.

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