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Ferromagnetism in Organic Iron Phthalocyanine Thin Films

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University of California, San Diego — Organic iron phthalocyanine (FePc) thin films were deposited with the planar molecule either parallel or perpendicular to the substrate. Hysteretic ferromagnetic loops are observed below 5 K, lower than the previously found 15 K temperature for short range ordering in bulk powder samples [1]. An induced molecular magnetic anisotropy is found based on ac-susceptibility measurements with the magnetic field parallel and perpendicular to the substrate. The molecular plane spacing, as determined from X-ray diffraction, is correlated with the magnetic susceptibility. This indicates that the molecular spacing, controllable by appropriate substrate and growth temperature selection, is an important parameter for the magnetic properties of FePc. Work supported by AFOSR-MURI. [1] M. Evangelisti, J. Bartolome, L. J. de Jongh, and G. Filoti, Phys. Rev. B **66**, 144410 (2002).

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