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Structure-Controlled Coercivity of Low-Dimensional Metallo-Organic Thin Films[1] THOMAS GREDIG, MATTHEW BYRNE, BRIAN CACHA, JACOB KALMANIR, MATHEW WERBER, California State University Long Beach, CA — Metallo-organic thin films based on iron phthalocyanine were prepared to form self-assembled structures. Based on the substrate, the metal-ion chains can be grown perpendicular or parallel to the substrate. Individual iron chains are separated by 1.3 nm and interact weakly at low temperatures. The magnetic response of these structurally templated thin films is studied for a fixed film thickness and varied deposition temperatures. The magnetic hysteresis loops are wasp-shaped and mark long-range ferromagnetic interaction below a temperature of 4.5 K. The hysteresis loop coercivity can be correlated with the grain size of the iron phthalocyanine thin film. The enhanced coercivity is attributed to longer iron chains that are formed in larger grains.

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