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Magnetic Relaxation in Iron Chains of Phthalocyanine Thin Films[1] THOMAS GREDIG, DANIEL JAVIER, MATHEW WERBER, MATTHEW BYRNE, California State University Long Beach — Self-assembled iron chains are formed in metallo-organic thin films based on the small iron phthalocyanine molecule. The chains are grown parallel to the substrate and the mean chain length is controlled via deposition parameters from 30 – 300 nm. The strong intra-chain coupling with weak inter-chain coupling leads to ferromagnetic behavior below the critical temperature. After application of a magnetic saturation field, the remanent magnetic moment is not stable when measured over time scales of 10^4 s. The magnetic relaxation can be fit to a stretched exponential function, which yields the mean relaxation time and a stretch exponent. The temperature-dependent peak of the relaxation time occurs at lower temperatures for shorter iron chains that also have smaller coercivities. This means that by templating iron phthalocyanine thin films both magneto-crystalline anisotropy and inter-grain interactions can be selected.

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