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Oxidation Effects on the Magnetic Properties of Iron (II) Phthalocyanine Thin Films LESLIE DAVIS , THOMAS GREDIG, CSULB — Phthalocyanine is an aromatic organic molecule at the core of a wide range of applications such as gas sensors and pigment dyes. The study of iron (II) phthalocyanine (FePc) morphology, charge transport, optical and magnetic properties improve the quality of these devices. Using thermal evaporation in a high vacuum, 200 nm of FePc are grown on silicon substrates varying the deposition temperature from room temperature to 200°C. The vibrating sample magnetometer is used in conjunction with the physical property measurement system to measure the magnetic properties of the FePc thin films. Iron is known to oxidize after exposure to atmosphere. This process leads to changes in the magnetic properties, which are tracked over a time span of over five years. In FePc thin films, the coercivity depends on crystal size controlled via the deposition temperature. If the oxidation degradation process is a surface effect, then a reduction of the net magnetization signal is expected, while coercivity remains constant. A decrease in the saturation magnetization in FePc thin films over time is observed and coercivity remains unaffected. From this analysis, we conclude that atmospheric exposure impacts the magnetic properties of the layers closest to the surface.

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