First-order-reversal-curves (FORCs) are an elegant, nondestructive tool for characterizing the magnetic properties of materials comprised of fine (micron- or nano-scale) magnetic particles. FORC measurements and analysis have long been the standard protocol used by geophysicists and earth and planetary scientists studying the magnetic properties of rocks, soils, and sediments. FORC can distinguish between single-domain, multi-domain, and pseudo single-domain behavior, and it can distinguish between different magnetic mineral species\(^1\). More recently, FORC has been applied to a wider array of magnetic material systems because it yields information regarding magnetic interactions and coercivity distributions that cannot be obtained from measurements of a material’s major hysteresis loop alone. In this presentation, we will discuss the FORC measurement and analysis technique and present room temperature FORC results for a periodic array of Ni nanowires and FeNi/IrMn exchange biased magnetic multilayer thin films. We will also present high temperature FORC results for two magnetic nanoparticle materials: CoFe nanoparticles dispersed in a SiO\(_2\) matrix, and FeCo-based nanocrystalline amorphous/nanocomposites.

**Keywords:** First-Order-Reversal-Curves, FORC, Nanoscale Magnetic Materials

**References:**


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