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Thermoinduced Magnetization in NiO Nanoparticles GREGORY BROWN, Oak Ridge National Laboratory — The low-temperature magnetic susceptibility for model NiO nanoparticles is calculated using the Monte Carlo method, and three different behaviors are seen. With uncompensated spins present, the susceptibility diverges as $T \rightarrow 0$. For cube- shaped nanoparticles, a temperature-dependent thermoinduced magnetization is observed. For spherical and octahedral nanoparticles, a temperature-independent susceptibility associated with the spin-flop configuration is observed. Calculations for arbitrary values of the uniaxial anisotropy indicate that thermoinduced magnetization can be observed for all geometries in materials with strong enough anisotropy. This work was sponsored by the LDRD program of ORNL, by the DOE-OS through the Offices of BES, Division of MSE and ASCR, MICS Division. The Ψ–Mag tool set was developed as part of a BES sponsored Computational Material Science Network project. ORNL is managed by UT-Battelle, LLC under Contract No. DE-AC05-00OR22725.

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