

MAGNETIC PROPERTIES OF $\text{CaMnO}_{3-\delta}$ AND $\text{La}_{1-x}\text{MnO}_{3+\delta}$ NANOPARTICLES

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9.7 cm

Magnetic properties of $\text{CaMnO}_{3-\delta}$ nanoparticles with particles size of 50 nm and of $\text{La}_{1-x}\text{MnO}_{3+\delta}$ nanoparticles with size of 20, 25 and 30 nm will be presented and compared. Especially interesting effect was noticed for 50 nm $\text{CaMnO}_{3-\delta}$ nanoparticles. They consist of antiferromagnetic (AFM) core and ferromagnetic (FM) shell. Observed asymmetric magnetization hysteresis loops were attributed to exchange-bias effect. This is the first observation of exchange bias effect in manganite nanoparticles with inverted AFM-core-FM-shell structure, as compared to the typical FM-core-AFM-shell structure. The effects of surface and exchange anisotropy will be discussed. For 20 nm $\text{La}_{1-x}\text{MnO}_{3+\delta}$ particles, the smallest nanoparticles studied, different metastable states with highly reduced FM phase and "negative ferromagnetism" developed after a series of quick coolings were observed. Peculiar magnetic memory effects will be presented.

13.4 cm

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