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Abstract
In 1956, Meiklejohn and Bean observed that field cooled, partially oxidized, Co particles exhibited hysteresis loops displaced along the magnetic field axis.They attributed this phenomenon to the exchange interaction at the interface between the ferromagnetic (FM) Co core and the antiferromagnetic (AFM) CoO shell.

The study of FM–AFM exchange interactions in fine particle systems has recently found interesting applications to improve the performance of permanent magnetic materials (by means of an enhancement of the coercivity which typically accompanies the hysteresis loop shift) or to combat the superparamagnetic limit in magnetic recording media . Hence, in fine particle systems exchange bias studies may be particularly interesting not only for the loop shift itself, but also for other exchange bias related phenomena .

In this study,the different nickel-iron mol ratio NiO–NiFe2O4 composite powders were synthesized by modified Pechini process.From X-ray diffraction experiments confirm the phases of the samples are NiO and NiFe2O4 only, and the grain sizes of the samples increase with higher annealing temperature.VSM measurements in the room temperature,show the sample NiFe2O4/(NiO+NiFe2O4) with 7.70% NiFe2O4 and heat treatment temperature at 700 ℃、1hr, has the highest coercivity HC=735Oe.
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