URN etd-0407109-183708-599
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Statistics This thesis had been viewed 36 times. Download 0 times.
Department
Year 2006
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Physical property and prepared of Ni / V2O3 nanocomposite alloying
Date of Defense 0000-00-00
Page Count 0

Keyword
Ferromagnetism
Antiferromagnetism
Exchange bias
Coercivity

Abstract 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 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 Ni-V2O3 nanocomposite powders were synthesized by modified Pechini process. From X-ray diffraction experiments confirm the phases of the samples are Ni and V2O3 only, and discovered the Ni grain size not that change with concentration, but that V2O3 grain size and higher annealing temperature. Relatively produces gives birth the complex changeable relations, also directly affects the magnetic characteristic, therefore that has the research of the value. By the data, V2O3 accounted for the antiferromagnetism not only to improve the coercivity (HC) but also to affect the saturated magnetization (MS).
Key word: Ferromagnetism、Antiferromagnetism、Exchange bias、Coercivity
Advisory Committee Chun-Rong Lin - advisor

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Date of Submission 2007-08-20