

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Size effect on GdMn_2O_5 nanoparticles CHENG-YU WENG, CHUN CHUEN YANG, WEI-LUEN HUANG, ZHE-AN JIAN, Department of Physics, Chung Yuan Christian University, YANG YUAN CHEN, Institute of Physics, Academia Sinica, DEPARTMENT OF PHYSICS, CHUNG YUAN CHRISTIAN UNIVERSITY COLLABORATION, INSTITUTE OF PHYSICS, ACADEMIA SINICA COLLABORATION — We fabricated six difference sizes of GdMn_2O_5 nanoparticles/nanobrick by hydrothermal method. Purity and particle size were determinate by x-ray diffraction and TEM/SEM images. Two Mn antiferromagnetic ordering peaks at around 38 and 40 K were observed in ac magnetic susceptibility experiments, where as particle size is larger than 60 nm. Curie-Weiss fitting revealed that the Néel temperatures are increased with increasing size. Similar phenomena were also found in the saturate magnetic moments obtaind from M-H experiments at 5 K. No hysteresis loops were found in any particle size. We believe these magnetic behaviors are correlated with size confinement effects. The estimated magnetic correlation length of Mn is in between 60 and 84 nm.

Cheng-Yu Weng
Department of Physics, Chung Yuan Christian University

Date submitted: 30 Nov 2010

Electronic form version 1.4