Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Observation of Magnetic Memory Effect and Photo-induced Magnetism in $Y_{0.33}Sr_{0.67}CoO_{3-\delta}$ M. IZUMI, Y.F. ZHANG, S. SASAKI, Tokyo University of Marine Science and Technology, O. YANAGISAWA, Yuge National College of Maritime Technology — We prepared the $Y_{0.33}Sr_{0.67}CoO_{3-\delta}$by the conventional solid state method which sintered under the O_2 flow. The sample was finally annealed under the oxygen and nitrogen atmosphere. A DC magnetization jump was found about 200 K with a large thermal hysteresis at 0.01 T indicating a kind of magnetic memory effect. The magnetization jump comes from the inter-spin state transition on Co^{3+} ion from low to intermediate spin state. The magnetic memory effect gradually disappears with the magnetic field increase and the jump temperature (T_J) shifts to low temperature. Annealed samples indicate high T_J, T_C and the magnetization coming from the oxygen content difference. Under the irradiation of a pulsed near-infrared laser (λ = 1050 nm), the T_J shifts to low temperature and the magnetization below T_J decreases. Photo-induced effect is weakened with the magnetic field. Laser irradiation may suppress spin-state transition of the part Co^{3+} ions.

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Date submitted: 26 Nov 2005 Electronic form version 1.4