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ES-17. Anisotropy Relaxation of Non-Magnetic Indium Ion Doped Nickel Chromite. *S. Park*[1], H. Choi[1] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, South Korea*

Polycrystalline samples of the $NiCr_{1.9-x}In_xFe_{0.1}O_4$(x=0.0, 0.1) were prepared by a solid state reaction. The x-ray diffraction patterns of indium doped nickel chromites were indicated a cubic spinel structure at room temperature. As the indium ion doped nickel chromite sample, the lattice constant a_0 is increased from 8.320 to 8.342 Å, while the magnetic Néel temperature is decreased from 150 to 130 K. The nickel chromite has large coercivity by the

interaction between two Cr ions with the non-collinear spin state. The large coercivity of the $NiCr_{1.9}Fe_{0.1}O_4$ is gone downward with the non-magnetic indium ion doping. It is due to the non-collinear spin state reduced of octahedral-sites by indium ion doping. Mössbauer spectra of the $NiCr_{1.8}In_{0.1}Fe_{0.1}O_4$ were measured at various temperatures ranging from 4.2 to 290 K. The Mössbauer spectrum of indium doped sample was indicated the magnetic hyperfine fields of H_{hf} = 483 and 469 kOe and the isomer shifts δ = 0.30 and 0.31 mm/s at 4.2 K, respectively. The average value point for temperature dependence of the magnetic hyperfine fields agrees with low spin 1/2 curve obtained by the Brillouin function with molecular field theory. Mössbauer absorption lines are sharp below 90 K and become broader with increasing temperature. The Mössbauer line broadering and 1,6 and 3,4 absorption line-width difference due to the magnetic anisotropic relaxation effect. Mössbauer spectra analysis an anisotropic field fluctuation of $+H$ (P_+=0.8) was great than $-H$ (P_-=0.2). We calculated flip frequency factor f_0 at the Néel temperature and maximum effective anisotropy energy $K_{max.}$ at 100 K to be 8.95 $2\pi\Gamma/h$ and 259 erg/cm^3, respectively.