Abstracts of

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- 이용자 중심의 열린 하나로 -

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장 소 : 한국원자력연구소 국제원자력교육훈련센터(INTEC)
주 최 : 한국원자력연구소
후 원 : 과학기술부, 한국원자력학회, 한국물리학회
       한국분석과학회, 대한금속재료학회, 대한핵의학회

한국원자력연구소
Korea Atomic Energy Research Institute
We found the structure of the Sr$_2$Fe$_{1-x}$Cr$_x$MoO$_6$ to be tetragonal, with lattice constants $a_0=5.5789$ and $c_0=7.9129$. The magnetoresistance magnitude ($Δρ/ρ_0$) was 14.9 % and 1.4 % at 77 K and 300 K, respectively, under the applied field with 1 T. The Curie temperature of the Cr doped sample ($T_C = 415$ K) was slightly smaller than that of the pure sample ($T_C = 425$ K). Neutron diffraction patterns of Sr$_2$Fe$_{1-x}$Cr$_x$MoO$_6$ (x=0.0, 0.1) have been taken at various temperatures ranging from 10 to 473 K. The crystal symmetry is cubic ($Fm3m$) in the paramagnetic phase (above $T_C$), but changes into tetragonal ($I4/mmm$) in the ferrimagnetic phase (below $T_C$). Mössbauer spectra of the Sr$_2$Fe$_{0.95}$Cr$_{0.05}$MoO$_6$ have been taken at various temperatures ranging from 15 to 415 K. As the temperature increased towards $T_C$, the Mössbauer spectra showed line broadening and 1, 6 and 3, 4 line width differences because of anisotropic hyperfine field fluctuation. The Mössbauer spectra indicated that an anisotropic field fluctuation of $+H$ ($P_+ = 0.85$) was greater than $-H$ ($P_- = 0.15$). We calculated the temperature dependence of anisotropy energy from its relaxation rate. The field fluctuation frequency factor and the anisotropy energy were calculated as 8.2 Γ/h and 143.52 erg/cm$^3$, respectively, using the relatively accurate data for $T = 260$ K that is associated with the large line broadening. We interpreted of effect of Cr ($t^3_{2g}$) doping as a decrease in the anisotropy energy.