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Da-P086 **MÖSSBAUER STUDIES OF Fe/MgO SYSTEM** 김철성, 이상원, 정광덕[1](*국민대학교 물리학과. [1]한국과학기술연구원.*) Fe/MgO samples were prepared by an impregnation of MgO with aqueous iron nitrate solutions, followed by drying at 373 K and subsequent calcination in air for 5 hours at 733 K. The samples were designed as Fe (weight percentage)/MgO. The removal capacity of the Fe/MgO is proportional to the iron concentrations in the Fe/MgO. All of samples were indicated the doublet (2 line) pattern at room temperature, but, with increasing Fe concentration, the sextet (6 line) pattern started to appear and to increase from 24.5 % for 6 wt % to 91.1 % for 30 wt % at 14 K. Hyperfine field also increased from 386 to 446 kOe for A-site and from 454 to 491 kOe for B-site. It is considered that the ultrafine particles of the sextets can be mainly attributed to the spinel formation ($MgFe_2O_4$) from the observation of the A-site and B-site. In Fe(6 wt %)/MgO that removal capacity is maximized, reaction time increased, relative area of sextet increaed in the Mössbauer spectra at 13 K bacause of increasing of the agglomeration of the paramagnetic Fe^{3+} cations. However, in the Mössbauer spectra at room temperature, the only doublet pattern indicated. It is considered that the superparamagnetic phase and paramagnetic phase coexist in the Fe/MgO samples. Isomer shifts at room temperature and 13 K are in the range of 0.26 - 0.43 mm/s, which means that of the valence state of iron ions is ferric (Fe^{3+}).