

Solid State Phase Transitions in the Fatty Acids derivatives of Magnesium Aluminum Double Hydroxides

이용석 · 강준건 · 형경우 · 김창은[†]
전주대학교 화학과 · 연세대학교 세라믹공학과[†]

Layered double hydroxides (LDH) are antitypes of 2:1 aluminosilicates. We have prepared and characterized a series of intercalation compounds of long-chain fatty acids for some magnesium aluminum double hydroxides, $[Mg_{1-x}Al_x(OH)_2](A^{n-})_{x/n} \cdot yH_2O$ with $A^{n-} = Cl^-, NO_3^-,$ and CO_3^{2-} . For these compounds the solid state phase transitions have been studied by X-ray diffraction, differential scanning calorimetry and IR spectroscopy. At room temperature the guest molecules exist as the carboxylic acid form with bilayer structure and the average tilt angle of the hydrocarbon part is more than 55 degree from the layer surface. Thus these compounds have been expected to comply with the Type I transition (the transition accompanied with the decrease of interlayer distance on heating). Really their interlayer distances decrease with temperatures and the bilayer films become disordered due to the conformational change of hydrocarbon part and the flipping of polar heads.