

Effect of heat treatment on thermal diffusivity of Zn/Al layered double hydroxide synthesized using photoflash technique

ABSTRACT

Thermal diffusivity of zinc-aluminum layered double hydroxides was synthesized at different molar ratio of zinc and aluminum salts in the pH=7 and measured by using polyvinylidene difluoride (PVDF) by photoflash technique. The samples were prepared using $Zn(NO_3)_2$ and $Al(NO_3)_3$ solutions by drop wise addition of NaOH solution with vigorous stirring under nitrogen atmosphere. The samples then heat treated by control an electrical furnace from 200 to 600 °C for 5 hours. Thermal diffusivity was increased for all samples after sintering. The samples were studied by powder x-ray diffraction method, Fourier transform infrared (FTIR), scanning electron microscope (SEM) and thermal diffusivity. Our results indicate the very different role of sintering in the structure and thermal diffusivity of samples.

Keyword: Heat treatment; Photoflash; Polyvinylidene difluoride; Thermal diffusivity; Zn/Al layered double hydroxide