Poster Presentation

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Investigation of layered double hydroxides type ZnMgAl-carbonate and derivates.

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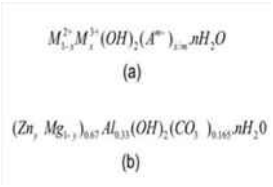
Layered double hydroxides (LDHs) or hydrotalite-like compounds belong to a class of synthetic two-dimensional inorganic materials with lamellar structures, where the hydroxyl-hydrated compounds are formed by chemical substitution of divalent ion of the brucite-like octahedral layers by trivalent ions [1]. The LDH are represented by the general formula, Figure a , where M2+, M3+ are divalent and trivalent cation and Am- is interlayer anion responsible by charge balancing, the range of divalent and trivalent ions (x) varies normally between 0.17 a 0.33. According Montanari and co-works [2] compounds type ZnAl-hydrotalcites (ZnAl-HT) have relevant industrial interest; however the scientific literature concerning this material as catalysts or catalyst precursor is scarce. Based on this fact, in the present communication we will present a studied on how the variation in percentage of Zinc in a ZnMgAl-HT catalyst precursor can influence the formation of mixed oxides after calcination. The ZnMgAl-HTs, Figure b , y=5, 10,15,20,25,50,75 and 100% were prepared by co-precipitation and urea method. Mg-Zn/Al mixed oxides were prepared from calcinations of hydrotalcites precursors at 500°C for 4 hours. The material synthesized were characterized by X-ray powder diffraction, the measurements were carried out in Bruker D8 DaVinci diffractometer, equipped with CuKα radiation , LynxEye linear Position Sensitive Detector, Ni-filter. Data was collect between 8 and 80° in 2θ with step size of 0.02° and the count time of 0.05 per step. Soller slit 2.5° of divergence and 0.2 mm primary slit were used. For the ZnMgAl-HT samples the measurements were performed at different temperatures, range 25-1200°C, heating rate 5°C/min. It was observed differences among XRD patterns for y greater than 25% of Zn in urea method at 500°C, and for co-precipitation method just for the substitution at 50 and 75% of Zn. These results suggested that the increase in Zn percentage change the structure of calcinated samples.

[1] *Vieira AC, Moreira RL, Dias A. Journal of Physical Chemistry C, 2009, 113 ,13358-13368.,* ***[2]*** *Montanari T, Sisani M, Nocchetti M, et al. Catalysis Today, 2010, 152,104-109.*



$M^{2+}_{1-x}M^{3+}_{x}(OH)_2(A^{m-})_{x/m}\cdot nH_2O$

(a)

$(Zn_y\ Mg_{1-y})_{0.67}Al_{0.33}(OH)_2(CO_3)_{0.165}\cdot nH_20$

(b)

Keywords: Layered double hydroxides, X-ray powder diffraction, Mixed Oxides