NEW METHOD OF SYNTHESIS OF ALUMINIUM-PILLARED MICA FROM SYNTHETIC Na-2-MICA

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The pillared clay minerals are effective materials for adsorption process and are recognized for their applications mainly in the catalysis area. The development of new materials adsorbents with properties that promote the slow release of herbicides and pesticides, have been gaining increasing importance because this will allow for to reduce the impact on the environment. The Aluminum-pillared materials have a high geometric compatibility between the pores of the structure and the dimensions of active component of the herbicide and specific interactions that will be useful in prevent the leaching of herbicides in the soil[1-4]. In this work, pillared-micas were obtained, for the first time, from Na-2-Mica. This mica has outstanding physical-chemical properties and high potential of functionalization through the pillaring process. The materials were characterized by XRD, FTIR, SEM/EDX and N₂ Isotherm. The new method was tested, including previous modification of Na-2-Mica with octylammonium cations, followed by the exchange with the Keggin’s cation taking into account a theoretical metal charge between 10 to 58 meq.Al³⁺/g mica. The concentration of AlCl₃·6H₂O and NaOH was 0.4 M and was used a constant hydrolysis ratio of 2.4. In the aging step, the mixture was kept under heating at 80 °C for 4h under hydrothermal treatment. The calcination was carried out at 400 °C for 2 h at a heating rate of 1 °C/min in air. The aluminum-pillared mica obtained has a structure that remained swelling after the heat treatment reaching a basal spacing of up to 1.94 nm similar to pillars from the Keggin’s polycation[5]. The pillared-mica obtained showed an increase in their surface area until 79 m²/g. The high density of hydroxyl group in the intercalated mica allows using them as starting material for the tiol grafting of those advanced micas which will enhance their adsorption capacity of harmful contaminants [6].

**Keywords:** Aluminium-Pillared, Na-2-Mica, Slow release formulation (SRF)

**References:**


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