

Synthesis and Characterization of Mesostructured Titanium-pillared Hydrotalcite

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Hydrotalcite is, in its natural form, a hydroxycarbonate of magnesium and aluminum, belonging to the class of anionic clays, with the formula $[\text{Mg}_6\text{Al}_2(\text{OH})_{16}]^{2+} \cdot \text{CO}_3^{2-} \cdot 4\text{H}_2\text{O}$, and a layered structure.

$\text{Mg}(\text{OH})_2$ brucite material has been used, in which the M^{2+} cations are partially substituted by M^{3+} cations. The substitution creates a positive net charge counterbalanced by the presence of anions located in the interlamellar region. The exchange capacity of LDH materials, defined by the trivalent to divalent cation ratio, is usually two to three times greater than that of cations in smectite clay minerals.

The purpose of this study designs mesostructured materials through titanium anions pillaring and forms functional pillars within the hydrotalcite structure. The samples obtained were characterized using analyzer such as X-ray diffraction (XRD), FT-IR, Zeta Potential, BET and Thermo gravimetric analysis (TGA), and TEM.