

## Hydrothermal Synthesis of Octahedral Molecular Sieve from Mn Oxide Residues

**Authors :** Irlana C. do Mar, Thayna A. Ferreira, Dayane S. Rezende, Bruno A. M. Figueira, José M. R. Mercury

**Abstract :** This work presents a low-cost Mn starting material to synthesis manganese oxide octahedral molecular sieve with  $Mg^{2+}$  in the tunnel (Mg-OMS-1), based on the Mn residues from Carajás Mineral Province (Amazon, Brazil). After hydrothermal and cation exchange procedures, the Mn residues transformed to a single phase, Mg-OMS-1. The raw material and the synthesis processes were analyzed by means of X-ray diffraction (XRD), Scanning electron microscopy (SEM) and Infrared spectroscopy (FTIR). The tunnel structure was synthesized hydrothermally at 180 °C for three days without impurities. According to the XRD analysis, the formation of crystalline Mg-OMS-1 was identified through reflections at 9.8°, 12° and 18° (2 $\theta$ ), as well as a thermal stability around 300 °C. The SEM analysis indicated that the final product presents good crystallinity with a homogeneous size. In addition, an intense and diagnostic FTIR band was identified at 515  $cm^{-1}$  related to the  $MnO_6$  octahedral stretching vibrations.

**Keywords :** Mn residues , Octahedral Molecular Sieve, Synthesis, Characterization

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