



## Synthesis of Hydroxy-sodalite from Fine Fractions of Sandy Clay Loam Soil (Natural Aluminosilicate)

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**Abstract :** Hydroxy-sodalite zeolites of different morphologies were synthesized using fine fractions of sandy clay loam soil (Natural aluminosilicate) by alkaline fusion method prior to conventional alkaline hydrothermal reaction (90°C for 24 hours). Mineralogical, textural properties and elemental analysis of the products were probed by employing x-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy coupled with energy dispersive spectroscopy (SEM-EDS), BET surface area and the cation exchange capacity (CEC). XRD and FTIR analysis confirmed the formation of Hydroxy-sodalite particles under all the experimental conditions. The BET surface area and total pore volume of the Hydroxy-sodalite formed varied from (31 – 51) m<sup>2</sup> / g and (0.17 – 0.21) cm<sup>3</sup> / g respectively. Cation exchange capacity as high as 203.06 meq / 100 g (low Si/Al ratio ≈ 1.02) was obtained at an optimum condition of NaOH / raw material ratio of 1.2 and a fusion temperature of 600°C.

**Keywords :** Sandy clay loam soil, Hydroxy-sodalite, synthesis, alkaline fusion.

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