

Poster Presentation

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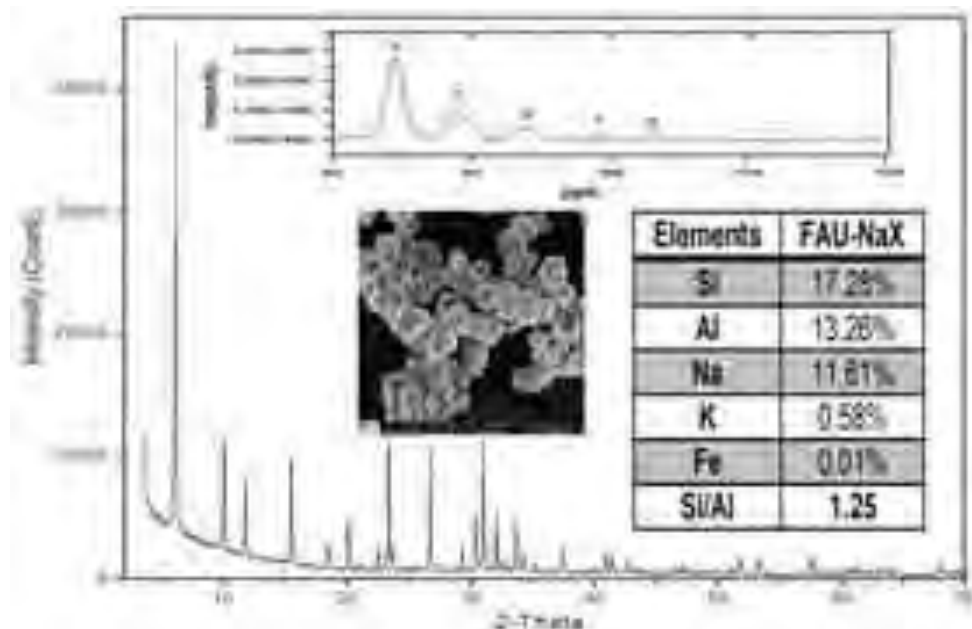
Synthesis and crystallographic characterization of FAU-NaX Zeolite

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Zeolites are aluminosilicates with many applications such as ionic exchangers used for the removal of heavy metals (Cd²⁺) and NH₄⁺ presents in residual water and in farm soil, in air purification and separation of gases like SO₂, NO and CO₂, in heterogeneous catalysis and as a catalytic support. In the following paper the NaX zeolite was hydrothermally synthesized in an alkaline environment from silicate extracted from rice chaff ashes and post-combustion aluminum solubilized with NaOH 3M, which were mixed with a relation Si/Al of 2.4 in the reaction crude, then a maturation was made at 25°C for 24 hours and 16 hours of aging at 90°C. The obtained product was characterized by X-Ray Powder Diffraction Samples, Magnetic Nuclear Resonance of ²⁹Si, Scanning Electron Microscopy, Thermogravimetric Analysis, Differential Scanning Calorimetry and X-Ray Fluorescence (Figure 1). The analysis evidenced the presence of only one crystalline phase corresponding to the NaX zeolite with a relation Si/Al of 1.25. The calculation of the diffraction maxima was performed with Powder X program. The indexing of the diffraction pattern was done using DIVCOL06 program for the twenty (20) first reflections. The determination of the space group was made using the CHEKCELL program. Finally, with all of the reflections was made the refinement of the unit cell constants using the NBS*AIDS83 program. As a result, it was obtained that the NaX crystallized zeolitic phase in a orthorhombic system with a space group Pbcm (No. 57) and cell parameters a=24,975(5) Å, b=17,642(3), c=4,414(8) Å, V=1945,29(2) Å³ y Z=1, with figure of merit M20=21,8 y F30= 34,6 (0,0108, 80).

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