

In this study, disposed coal fly ash samples from Zimbabwe were used in synthesis of zeolites. The method of direct hydrothermal treatment with sodium hydroxide at different concentrations (2, 2.5, 3.5 and 4.5 moldm⁻³) at a constant temperature of 100°C and activation time of 24 h was applied. Characterisation of coal fly ash and confirmation of occurrence of the zeolite material was done using XRF, XRD, FTIR, and BET techniques. The zeolite materials formed were a mixture of zeolite Na-X (NaAlSi_{1.1}O₄·2.225H₂O), zeolite Na-A (Na₂Al₂Si_{3.3}O₈·8.867H₂O), zeolite NaP1 (Na₆Al₆Si₁₀O₃₂H₂O) and zeolite hydroxysodalite (Na_{1.08}Al₂Si_{1.68}O_{7.44}·1.8H₂O). The variety and yield of zeolites formed depend on the concentration of sodium hydroxide used.