

Effect of Reaction Temperature on Zeolite Synthesised from Oil Palm Ash

Abstract

The zeolite synthesis using silica extracted from oil palm ash (OPA) was carried out under hydrothermal conditions by activation with sodium hydroxide (NaOH) solution. The parameters involved in this study were reaction temperatures (40, 60, 80, and 100 °C), while the solid/liquid ratio, alkali concentration, and reaction time used were 0.2:1, 2 M, and 12 h, respectively. The properties of zeolites synthesised were characterised using X-ray fluorescence (XRF) and X-ray diffraction (XRD). Cation exchange capacity (CEC) values of the zeolite produced were also determined. Phase analysis by XRD shows that zeolite gismondine ($\text{CaAl}_2\text{Si}_2\text{O}_8 \cdot 4(\text{H}_2\text{O})$) was produced after hydrothermal activation of treated OPA.

Keywords

Hydrothermal; Palm ash; Silica; Zeolite