

## **The effect of curing temperature on physical and chemical properties of geopolymers**

### **Abstract**

Fly ash-based geopolymers required heat to increase the geopolymerization process in order to obtain higher compressive strength. As such, geopolymer samples were prepared using different curing temperatures (room temperature, 50 °C, 60 °C, 70 °C, 80 °C), in which sodium silicate and NaOH were used as alkaline activators. The samples were cured for 24 hours in the oven and tested on the seventh day. The result revealed that the maximum compressive strength (67.04 MPa) was obtained at a temperature of 60 °C. However when the geopolymers sample cured at temperature more than 60 °C, the compressive strength decreased. From the FTIR spectra, the higher content of Si on sample cured at 60 °C also contributed to higher compressive strength. Moreover, SEM analysis showed a denser matrix as well as less unreacted fly ash of the sample cured at 60 °C compared to other temperatures.

**Keywords;** Fly ash; Geopolymer; Curing temperature; Compressive strength; FTIR; SEM