

## **Fire resistance evaluation of lightweight geopolymer concrete system exposed to elevated temperatures of 100-800 °C**

### **Abstract**

This paper reports the fire resistance property of a lightweight aggregate geopolymer concrete (LWAGC) material synthesized by the alkali-activation of locally source fly ash (FA) after exposed to elevated temperatures ranged of 100 °C to 800 °C. The results illustrates that the concrete gained a compressive strength after exposing to elevated temperatures of 100, 200 and 300 °C. Afterward, the strength of the LWAGC is started to deteriorate after exposing to elevated temperatures ranged of 400 °C to 800 °C, due to the difference in thermal expansion between the geopolymeric paste and LWA as well as to the evaporation of the structural water which increased the thermal shrinkage.

**Keywords;** Compressive Strength, Elevated Temperatures, Geopolymer, Lightweight Geopolymer Concrete