

## **Study on refractory materials application using geopolymer processing**

### **Abstract**

Geopolymer is cementitious binders that do not require the presence of ordinary Portland cement (OPC). Class F fly ash with geopolymer formulations prepared with an alkaline activator (mixture of Na<sub>2</sub>SiO<sub>3</sub> and NaOH solutions) has been applied as protective coating material that suitable for refractory materials application. Geopolymer coating samples were cured at 70°C for 24 hours before sintered using temperature range from 600°C to 1500°C in order to increase strength and improve thermal properties. Geopolymer coating samples cures to a glassy texture and effectively used to create a resistant surface. Fly ash geopolymer coating was improved the compressive strength of the coatings materials as high as 40 MPa.

### **Keywords**

Fly ash; Geopolymer; Refractory application