

## **Microstructure study on volcano ash geopolymer aggregate at different sintering temperature**

### **Abstract**

Recent research shows that the by-product materials such as fly ash can be used as raw material in producing aggregates and lightweight aggregates. The usage of this material can improve the quality of the aggregates produced compared to conventional in term of structurally strong, physically stable, durable, and environmentally inert. However, volcano ash also has a potential to be used as artificial geopolymer aggregate due to high Si and Al contents. This volcano ash is almost dominated by quartz phase and sulfur. Volcano ash has plate-like structure. The structure of original volcano ash shows more layer stick together to form the bigger structure due to the existence of water. More large pores can be clearly observed at sintering temperature of 1000 °C and contribute to less density and have potential to be used as lightweight artificial geopolymer aggregate.

**Keywords;** Artificial Geopolymer Aggregate, Geopolymer, SEM, XRD, XRF