

Porous and Dense Geopolymers Prepared from Waste Fly Ash for Eco-friendly Environmental Materials. -Their Preparation and Applications-

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Geopolymer is alumino-silicate material and can be applied for many applications as ceramics which are easily prepared. This is due to that geopolymers have several attractive properties of high strength, low permeability, high acid and hazardous resistance materials, adsorbents and immobilization of toxic materials [1, 2]. Therefore, geopolymer is an effective manner to process and reuse silicates, aluminates or alumino silicates in mineral waste. This paper presents synthesis of the dense and the porous structures of geopolymers by using fly ash and industrial waste as the raw materials. Here, aluminum hydroxide waste (Al-waste) and fly ash were used to synthesis the dense geopolymers for cement materials [3]. The Al-waste based geopolymer influenced the geopolymer strength, when sodium hydroxide (NaOH) concentration was changed at different curing temperatures. When preliminary treatment of microwave oven heating was implemented in lower NaOH paste of geopolymer, the successful synthesis of geopolymer cement was obtained [4]. In addition, porous fly ash geopolymers was achieved using a household microwave oven. The geopolymer paste was cured within 1 min by using a microwave oven at different output power. Porous geopolymers were formed immediately at 850 W power of the microwave oven.

References

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