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**POROUS FLY ASH-BASED GEOPOLYMER COMPOSITE FIBER AS AN
ADSORBENT FOR REMOVAL OF HEAVY METAL IONS FROM
WASTEWATER**

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Abstract

This paper describes a simple and effective process for fabricating geopolymer-polymer composite fiber. The fiber is synthesized by mixing geopolymer powder with Polyethersulfone (PES) - *N*-Methyl-2 pyrrolidone (NMP) solution and the slurry was extruded then transformed into a fiber by phase inversion method. The fiber is constructed of PES and fly ash-based geopolymer (FAG) particles with porous structure. Analysis of the pore structure of fiber revealed that BET surface area is 168.30 m²/g. In addition, the adsorption capacity of heavy metal ions on geopolymer composite fiber follows the order of Pb²⁺ > Cu²⁺ > Cd²⁺ > Ni²⁺. This work provides a convenient, low-cost and environmental friendly adsorbent for removing heavy metal ions from waste water.

Keywords: porous materials, geopolymer, fiber, adsorption

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