Journal of
Materials Engineering and Applications

Abstract

Effect of silica and lignocellulosic additives on the formation and the distribution of meso and macropores in foam metakaolin-based geopolymer filters for dyes and wastewater filtration

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Abstract:

This work investigates how silica and lignocellulose additives affect the production of metakaolin based-geopolymer foam filters. Lignocellulosic material from wood powder sawdust (S), silica from rice husk ash (RHA), calcined (Sa) and uncalcined (Sab) sand were separately used together with high amorphous silica fume (FS) (foaming agent) and integrated into the matrix (metakaolin and solution). The different geopolymer pastes were cured at 70 °C to enhance the pore formation. Results presented the geopolymer foams filter as sponge-like composites having 58-68 % of porosity with 1-4 MPa of compressive strength. RHA and Sa lead to materials with more meso and macropores. Sawdust based-geopolymer (the hardest foam) containing channel pores predominated by coarse pores exhibited a flow rate of 4 mL/min. The absence of the bands of MB from FT-IR spectra and UV spectra (663 nm) of MB filtrate (totally blue discoloured) indicated that, geopolymers foams filters designed are suitable for dyes and wastewater filtration.

Biography:

Martine YOUMOUE is finalysing her p.hD program at the University of Dschang, Cameroon. She is supervised by prof Ignas TONLE KENFACK at the University at the Dschang and Prof Elie KAMSEU at MIPROAMALO (Local Material Promotion Authorithies) Cameroon. After many internships at MIPROMALO, she obtained AUF (Agence Universitaire de la Francophonie) doctorate scholarship, which allowed her to do three visits (five months each) at IRCER (Institut de Recherche sur les Ceramiques), Limoges, France. Those internships were supervised by Prof Sylvie Rossignol. Martine YOUMOUE has three papers in her active (one published in Ceramic International, one accepted in Ceramic and Modern Technology, and the current work accepted for publication in SN Applied Science).

Recent Publications:

1. Martine Youmoue , et al Int J Mol Sci 2019
2. Martine Youmoue , et al;J Clin Oncol. 2014

Citation: Martine Youmoue; Effect of silica and lignocellulosic additives on the formation and the distribution of meso and macropores in foam metakaolin-based geopolymer filters for dyes and wastewater filtration;Materials Technology 2020;April 15,2020;Miami, USA