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H. Assaedi, F.U.A. Shaikh, I.M. Low

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Characterizations of flax fabric reinforced nanoclay-geopolymer compositesH. Assaedi^{1,2}, F.U.A. Shaikh³, I.M. Low^{1,*}

¹) Department of Imaging & Applied Physics, Curtin University, GPO Box U1987, Perth, WA 6845, Australia

²) Department of Physics, Umm Al-Qura University, P.O. Box 715, Makkah, Saudi Arabia.

³) Department of Civil Engineering, Curtin University, GPO Box U1987, Perth, WA 6845, Australia

*Corresponding author. j.low@curtin.edu.au; Tel.: +61 8 9266 7544; fax: +61 8 9266 2377.

Abstract

Geopolymer composites reinforced with flax fabrics (FF) and nanoclay platelets are synthesised and studied in terms of physical and mechanical properties. X-Ray Diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Scanning Electron Microscope (SEM) techniques are used for phase and microstructure characterisation. The nanoclay platelets are added to reinforce the geopolymer matrices at 1.0%, 2.0%, and 3.0% by weight. It is found that 2.0 wt.% nanoclay enhances the density, decreases the porosity and subsequently improves the flexural strength and toughness. The microstructural analysis results indicate that the nanoclay behaves not only as a filler to improve the microstructure of the binder, but also as an activator to support the geopolymeric reaction producing higher content of geopolymer gel. This enhances the adhesion

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