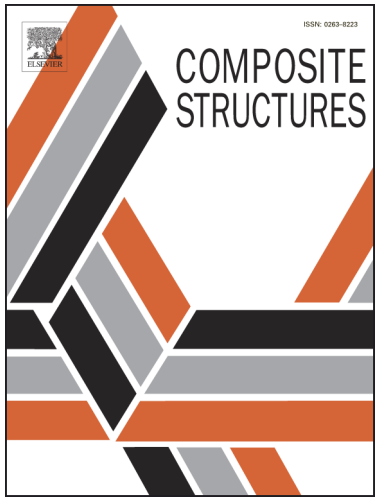

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Abstract

Present study deals the surface morphology and structural composition analysis of alkali (NaOH) treated 2.5% 5.0% and 7.5wt. % Ensete stem fiber obtained from the Ethiopian *Ensete ventricosum* plant. Treated Ensete fibers reinforced unsaturated polyester (UP) composites were characterized in terms of tensile, flexural, surface morphology and dynamic mechanical properties. Mechanical test results revealed that 5.0 wt.% alkali treated Ensete fibers/UP composites showed 14.5% and 43.5% increase in flexural strength and Young's modulus respectively, with relative to untreated Ensete fibers/UP composites. Storage and loss modulus value also highest for 5.0 wt.% alkali treated Ensete fibers/UP composites. Moreover, a positive shift in glass transition temperature (Tg) of composites after alkali treatment and tensile fracture surface morphology indicates better interfacial interaction in treated Ensete fibers/UP composites. Overall we concluded that 5.0 wt.%