Investigating the Flexural Properties of Uniaxial Composites Made from Acid Treated Hemp Bast Fiber and Epoxy

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This work was carried out to investigate the effect of acid surface treatment on the flexural properties of a uniaxial composite made from 50% volume fraction of epoxy and hemp bast fiber. Hemp bast fibers were treated for five minutes with two separate solutions of 5% acetic and hydrochloric acid with the objective of surface microstructure modification and removing impurities to promote better epoxy bonding. Fiber surface morphologies were observed under SEM. Fibers were fabricated into cylindrical uniaxial composites using a novel small batch pultrusion process. Results from 4 point bend testing show hemp fiber reinforcement of epoxy improves flexural strength. However, both acid surface treatments degraded composite strength relative to untreated hemp.

Awards Won: