

## **EFFECT OF MECHANICAL TREATMENT ON MORPHOLOGY, THERMAL AND MECHANICAL PROPERTIES OF SUGAR CANE BAGASSE-LDPE COMPOSITES**

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### **ABSTRACT**

Sugar cane bagasse-low density polyethylene composites with different mechanically treated sugar cane bagasse were prepared by a melt compounding method. The effect of the different treatments using supermasscolloider (SMC) at low content of sugar cane bagasse (SB) on the morphology, mechanical properties and thermal behaviour was investigated. Scanning electron microscopy (SEM), X-ray diffraction (XRD) and Fourier transform-infrared spectroscopy (FTIR) indicated that the dispersion, crystallinity and bonding of SB fibres depend on number of the treatments. The high modulus of SB generally improved tensile modulus of LDPE linearly and is proportional to SMC treatments. All composites show that the elongation at break was fairly constant within experimental error. Thermal stability decreased in the presence of SB and linearly increased in respect to the treatment times. The melting temperature decreased at lower passes, however at higher passes there was a marginal change.

**Keywords:** *Sugar cane bagasse; supermasscolloider; polymer composites*