

## **Performance of cow dung reinforced biodegradable poly (lactic acid) biocomposites for structural applications**

### **ABSTRACT**

In this work, performance of cow dung (CD) reinforced poly(lactic acid) (PLA) biocomposites was investigated for the potential use in load bearing application. CD of average 4 mm size was blended with PLA at different CD ratios (0–50 wt%) and their effects on the biocomposite properties were studied. The results showed an improvement in the flexural properties, while the tensile and impact strength dropped by 20 and 28% with the addition of 50% CD. The decline in the tensile and impact strength was due to micro-cracking and voids formation at higher CD content. Also, the incorporation of CD slightly decreased the thermal stability of the biocomposite. However, dynamic mechanical properties of the biocomposites generally improved. SEM analysis of tensile and impact fractured surfaces indicated that the CD had a reasonable adhesion with matrix. Moreover, the SEM micrographs of soil burial studies showed an accelerated degradation of higher CD wt% biocomposites.

**Keyword:** Cow dung; Poly(lactic acid); Biocomposite; Mechanical properties; Thermal properties; Dynamic properties; Soil burial