

A study of PP/natural fiber composites using thermoplastic lignin-polyester and nanoclay

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We investigated the jute-fiber/polypropylene (PP) composite system by incorporating lignin-based polyester and montmorillonite nanoplatelets through extrusion and injection molding processes. The modulus of PP/jute/LigPS composite was increased due to its compatibilizing effect in the PP-jute interface. When LigPS was incorporated into PP/jute composites in 5 ~ 10 wt%, for example, the modulus was increased by 25 %. When the montmorillonite nanoclay was added and exfoliated in the PP/jute composites by 5 wt%, the modulus was substantially increased by 50%. As a novel green composite system, the lignin polymer and MMT nanoplatelets demonstrated that the biodegradability and the mechanical performance of PP/jute composites could be desirably tailored for various eco-friendly composite applications.