Abstract

In the last decade, short natural fibre-reinforced thermoplastic composites have gained various focusses, due to their potential performances in various engineering applications. However, natural fibre fabrics have the potential to provide better strength and stiffness to polymer composites. Further, the hybridization of natural fibre fabrics with synthetic fibres such as glass would improve the mechanical properties and retain the environmentally friendly nature of the resulting composites, making them suitable for use in structural applications. The study mainly emphasizes on improving the properties of woven bamboo thermoplastic composites through hybridization with glass fibres. High quality bamboo-glass hybrid thermoplastic composites, based polypropylene matrix, were fabricated using the compression moulding method. Their mechanical properties were evaluated for the effect of glass hybridization and stacking of plies arrangement. For the evaluation of the interfacial bonding and failure behaviour of bamboo-glass hybrid composites, scanning electron micrographs of fractured specimens were used. The results indicate that the glass hybridization significantly affected the performances of bamboo-glass hybrid composites. The study of the interfacial bonding using the fractured specimens indicated a poor adhesion characteristic between the fibre and matrix. The micrographs also revealed that failure behaviour was mostly governed by extensive bamboo fibre pull out and breakage. © 2020 SERSC.