

Effect of [C2mim][OTf] ionic liquid on tensile properties of HDPE/KCF biocomposites: a primary research

ABSTRACT

In this primary research, 1-ethyl-3-methylimidazolium trifluoromethanesulfonate ionic liquid ([C2mim][OTf]) was added to the high-density polyethylene/kenaf core fiber (HDPE/KCF) biocomposites by using an internal mixer at 150°C, followed by compression molding at the same temperature. The [C2mim][OTf] contents were varied from 0 to 10wt.%. The tensile properties of the prepared biocomposites have been determined by using a universal testing machine. The tensile results of the HDPE/KCF biocomposites indicated that the tensile strength and tensile modulus have decreased with the addition of [C2mim][OTf]. However, the presence of [C2mim][OTf] has significantly increased the tensile extension at break of the biocomposites. This research concluded that the addition of [C2mim][OTf] at the lower content ($\approx 10\text{wt.}\%$) could act as a plasticizer for improving the flexibility of HDPE/KCF biocomposites.

Keyword: Ionic liquid; Tensile properties; Kenaf; Biocomposite