

Bio-nanocomposites from natural fibre derivatives: manufacturing and properties

ABSTRACT

Bionano-materials are playing an important role in a number of applications due to their inherent eco-friendly advantages since the last few decades. These materials are being explored as the potential alternatives to traditional synthetic materials for diverse applications with particular emphasis as green reinforcement and offer a number of advantages including considerable toughness, flexibility, easy processing, and recyclability. Indeed, nano-sized materials often display an out-standing equilibrium between toughness and strength and frequently enhanced characteristics of their individual components. The effect of different manufacturing conditions and different surface modification techniques for the bionano-materials as well as their polymer composites is discussed in details. Indeed, bionano-material-reinforced polymer composites are emerging very rapidly as the potential substitute to the metal- or ceramic-based materials in applications including automotive, aerospace, marine, sporting goods, and electronic industries.

Keyword: Nanotechnology; Biomass; Biodegradable; Renewable resources