

A review on potentiality of nano filler/natural fiber filled polymer hybrid composites

Abstract

The increasing demand for greener and biodegradable materials leading to the satisfaction of society requires a compelling towards the advancement of nano-materials science. The polymeric matrix materials with suitable and proper filler, better filler/matrix interaction together with advanced and new methods or approaches are able to develop polymeric composites which shows great prospective applications in constructions and buildings, automotive, aerospace and packaging industries. The biodegradability of the natural fibers is considered as the most important and interesting aspects of their utilization in polymeric materials. Nanocomposite shows considerable applications in different fields because of larger surface area, and greater aspect ratio, with fascinating properties. Being environmentally friendly, applications of nanocomposites offer new technology and business opportunities for several sectors, such as aerospace, automotive, electronics, and biotechnology industries. Hybrid bio-based composites that exploit the synergy between natural fibers in a nano-reinforced bio-based polymer can lead to improved properties along with maintaining environmental appeal. This review article intended to present information about diverse classes of natural fibers, nanofiller, cellulosic fiber based composite, nanocomposite, and natural fiber/nanofiller-based hybrid composite with specific concern to their applications. It will also provide summary of the emerging new aspects of nanotechnology for development of hybrid composites for the sustainable and greener environment.

Keyword: Nanofillers; Natural fibers; Polymers; Nanocomposites; Hybrid composites