Opportunities for Biomass and Organic Waste Valorisation (Book)

Development of sustainable biobased polymer and bio-nanocomposite materials using nanocellulose obtained from agricultural biomass

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Abstract

Biobased polymer and bio-nanocomposites have provided significant improvement in material science, moving towards the development of green materials to replace petro-based materials. The present study investigated the value-added utilisation of agriculturalbiomass residues derived from sugar cane bagasse and maize stalks for the development of biobased polymer and bio-nanocomposite materials for specific applications. In this study, extraction of cellulose and nanocellulose of environmentally friendly polymeric materials and their composite peoducts were studied. The study showed that the incorporation of nanocellulose into biopolymer matrix could produce bio-nanocomposites for specific uses in various applications, mainly in the biomedical and green packaging sectors.