



Starch based bionanocomposites: Preparation and characterisation

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Abstract

Biopolymers produced from various natural botanical resources such as starch, protein and cellulose are regarded as an attractive alternative to petroleum based plastics since they are abundant, renewable, inexpensive, and environmentally friendly. The present work describes the preparation and characterisation of starch based bionanocomposite films using glycerol as plasticiser. Starch based biodegradable polymers have great commercial potential for bio-plastic, but some of the properties like brittleness, low heat distortion temperature, high gas permeability, low melt viscosity for further processing, etc. restrict their use in a wide- range of applications. With the aim of improving thermomechanical properties, decreasing water sensitivity of polymers and to preserve the biodegradability, nano fillers are being used as reinforcing agents. The prepared nanocomposite films were characterized to understand their mechanical, hydrophilicity, antibacterial and biodegradability properties. This work provided a green approach for the preparation of biodegradable materials based on naturally occurring biopolymers.

Biography

Siji K Mary, is working as an Assistant Professor in the Research and Post Graduate (DST- FIST sponsored) Department of Chemistry, Bishop Moore College, Mavelikara, Kerala, India. She is also a part time Research Fellow at MG University, Kottayam and her research area include polymer nanocomposites. She has completed Master of Science in Analytical chemistry from Kerala University in 2002. She has successfully completed a UGC minor research project entitled "Preparation of starch nanocrystals from various sources" and also has one ongoing minor project funded by UGC.

Publications in Peer Reviewed Journals

- Book Chapter - "Starch based Bionanocomposites - Processing Techniques." *Bio Polymer Nanocomposites*. Wiley Publication. 2013.
- Book Chapter "Aging, biodegradation and recycling of biocomposites" *Handbook of Biopolymer-Based Materials. From Blends and Composites to Gels and Complex Networks* Wiley Publication 2013.