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IOP Conference Series: Materials Science and Engineering • Open Access • Volume 368, Issue 1 • 13 June 2018 • Article number 012005 • Wood and Biofiber International Conference 2017, WOBI 2017 • Selangor • 21 November 2017 through 23 November 2017 • Code 137454

Document type

Conference Paper • Bronze Open Access

Source type

Conference Proceedings

ISSN

17578981

DOI

10.1088/1757-899X/368/1/012005

Publisher

Institute of Physics Publishing

Sponsors

Original language

English

Volume Editors

Jawaid M., Mazlan N.

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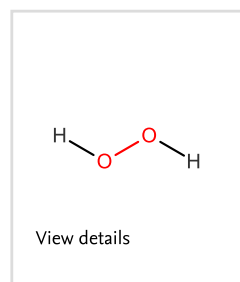
Abstract

Global concern on petroleum based plastics which is non-degradable in our environment has led researchers to develop biodegradable plastics. However, biodegradable plastics have poor barrier properties because of their hydrophilic character of biopolymers. It is known that incorporation of nanocellulose extracted from plant sources to improve barrier properties of biocomposites because of its nanoscopic structure. This study aims to develop biodegradable film based from PVA/ Starch and nanocellulose from sugarcane bagasse . Investigation on the effect of sugarcane bagasse nanofibre (SCB-NF) content, PVA content, starch content and water content to the water absorption property of polyvinyl alcohol (PVA)/ Starch (S) composites reinforced with sugarcane bagasse nanofibre (SCB-NF) was carried out using Design Expert Version 9.0 with a two-level factorial design (2-FI). Composition of SCB-NF, PVA, Starch and water content was varied from the range of 1 to 9%, 3-8 gram, 1-4 gram, and 80 to 100mL. The nanofibre content was found to have significant effect ($p=0.0099$) on the water absorption of biocomposite film, which is in parallel to the theory of nanofillers to decrease water absorption of biocomposite . As expected, the individual and interaction effects of the compositions can have effect on the water absorption of the biocomposite because of the chemical bonds interaction that they form during the synthesis of biocomposite film. © Published under licence by IOP Publishing Ltd.

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