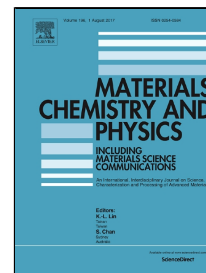


Accepted Manuscript

Mechanical Performance and Flame Retardancy of Rice Husk/Organoclay-reinforced Blend of Recycled Plastics

Ruey Shan Chen, Sahrim Ahmad



PII: S0254-0584(17)30423-6

DOI: 10.1016/j.matchemphys.2017.05.054

Reference: MAC 19730

To appear in: *Materials Chemistry and Physics*

Received Date: 17 March 2017

Revised Date: 16 May 2017

Accepted Date: 29 May 2017

Please cite this article as: Ruey Shan Chen, Sahrim Ahmad, Mechanical Performance and Flame Retardancy of Rice Husk/Organoclay-reinforced Blend of Recycled Plastics, *Materials Chemistry and Physics* (2017), doi: 10.1016/j.matchemphys.2017.05.054

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Mechanical Performance and Flame Retardancy of Rice Husk/Organoclay-reinforced Blend of Recycled Plastics

Ruey Shan Chen^{1,*} and Sahrim Ahmad¹

¹School of Applied Physics, Faculty of Science and Technology, National University of Malaysia, 43600 Bangi, Selangor, Malaysia.

* Corresponding Author: rueyshanchen@hotmail.com; 6014-9388795

Abstract:

The use of natural fibers and nano-sized fillers to reinforce polymers has been tremendously exploited, however, the properties enhancements imparted by a single type of fillers is still in the unsatisfactory level. This research work was aimed to fabricate a novel bionanocomposites using hybrid reinforcements of natural fibers and nanofillers to promote their synergy effects in comprehensive improvements in the recycled polymeric matrix along with maintaining environmental appeal. The compatibilizing effect in organoclay reinforced recycled HDPE/PET blend and its rice husk (RH) incorporated nanocomposite with polyethylene-grafted maleic anhydride (PE-g-MA) or/and ethylene-glycidyl methacrylate (E-GMA) was evaluated. The increase in mechanical properties of compatibilized blend and RH nanocomposite achieved up to 40% and 34%, respectively. Another high improvement of flame-retarding effect was reported where the burning rate was reduced by 29-37% via compatibilization of blend matrix. These effects were evidence for the enhanced matrix-filler interfacial bonding and relative intercalation of clay in matrix. The schematic modeling for the components interaction in the bio-nanocomposite system has postulated. It can be concluded that clay/recycled polymer blend with hybrid compatibilizers was appeared to be

Download English Version:

<https://daneshyari.com/en/article/5447806>

Download Persian Version:

<https://daneshyari.com/article/5447806>

[Daneshyari.com](https://daneshyari.com)