Document details

‹ Back to results | 1 of 2 Next ›

AIP Conference Proceedings
Volume 2068, 6 February 2019, Article number 020007
International Conference on X-Rays and Related Techniques in Research and Industry 2018, ICXRI 2018; Grand Riverview HotelKota Bharu, Kelantan; Malaysia; 18 August 2018 through 19 August 2018; Code 144871

Effects of plasticizer on mechanical properties of durian skin fiber reinforced polylactic acid biocomposite (Conference Paper)

Rashid, S.M.S.A., Anuar, H., Apandi, S.N.E.M., Buys, Y.F., Hasan, N.A.

Department of Manufacturing and Materials Engineering, Kulliyyah of Engineering, International Islamic University Malaysia, Jalan Gombak, Kuala Lumpur, 53100, Malaysia

Abstract

View references (18)

This study focus on reinforcing of durian skin fiber (DSF) and polylactic acid (PLA) for food packaging. Epoxidized palm oil (EPO) was used as a plasticizer to enhance the properties of the biocomposite. The biocomposite was fabricated by extrusion and injection molding processes. The tensile properties of PLA/DSF with EPO improved by 9.3% and 70.0% for the tensile strength and elongation at break, respectively. The plasticized PLA/DSF biocomposite also showed improvement in impact properties by 37.0%. The SEM micrographs of plasticized PLA/DSF biocomposite revealed no gap between fiber and matrix suggesting good interfacial adhesion between DSF and PLA. In can be concluded that PLA/DSF biocomposite is suitable to be used for disposable food container material. © 2019 Author(s).

SciVal Topic Prominence

Topic: Natural fibers | Fibers | natural fibre

Prominence percentile: 99.670

ISSN: 0094243X
ISBN: 978-073541796-0
Source Type: Conference Proceeding
Original language: English
DOI: 10.1063/1.5089306
Document Type: Conference Paper
Volume Editors: Ahmad Z.A.,Mohamed J.J.,Sulaiman M.A.
Publisher: American Institute of Physics Inc.

References (18)

View in search results format ›

1 Manshor, R.M., Anuar, H., Wan Nazri, W.B., Ahmad Fitrie, M.I.
Preparation and characterization of physical properties of durian skin fibers biocomposite
(2012) *Advanced Materials Research*, 576, pp. 212-215. Cited 9 times.
http://www.scientific.net/AMR.576.212
ISBN: 978-303785498-3
doi: 10.4028/www.scientific.net/AMR.576.212
View at Publisher

2 Penjumras, P., Rahman, R.A., Talib, R.A., Abdan, K.
Mechanical properties and water absorption behaviour of durian rind cellulose reinforced poly(lactic acid) biocomposites

(2015) *International Journal on Advanced Science, Engineering and Information Technology*, 5 (5), pp. 343-349. Cited 11 times.
http://www.insightsociety.org/ojaseit/index.php/ijaseit/article/download/574/647
doi: 10.18517/ijaseit.5.5.574

View at Publisher

3 (2017) *Department of Agriculture, Malaysia Ministry of Agriculture and Agro-Based Industry*
Fruit Crops Statistic Malaysia.

4 Manshor, M.R., Anuar, H., Nur Aimi, M.N., Ahmad Fitrie, M.I., Wan Nazri, W.B., Sapuan, S.M., El-Shekeil, Y.A., (...), Wahit, M.U.
Mechanical, thermal and morphological properties of durian skin fibre reinforced PLA biocomposites

(2014) *Materials and Design*, 59, pp. 279-286. Cited 50 times.
doi: 10.1016/j.matdes.2014.02.062

View at Publisher

5 Yussuf, A.A., Massoumi, I., Hassan, A.
Comparison of polylactic Acid/Kenaf and polylactic Acid/Rise husk composites: The influence of the natural fibers on the mechanical, thermal and biodegradability properties

(2010) *Journal of Polymers and the Environment*, 18 (3), pp. 422-429. Cited 133 times.
doi: 10.1007/s10924-010-0185-0

View at Publisher

6 Rapa, M., Nita, R.N.D., Vasile, C.
Influence of plasticizers over some physico-chemical properties of PLA

(2017) *Materiale Plastice*, 54 (1), pp. 73-78. Cited 9 times.
http://www.revmaterialeplastice.ro/pdf/17%20RAPA%20M%201%2017.pdf

7 Taib, R.M., Ramarad, S., Ishak, Z.A.M., Todo, M.
Properties of kenaf fiber/polylactic acid biocomposites plasticized with polyethylene glycol

(2010) *Polymer Composites*, 31 (7), pp. 1213-1222. Cited 38 times.
http://www3.interscience.wiley.com.ezproxy.um.edu.my/cgi-bin/fulltext/122656010/PDFSTART
doi: 10.1002/pc.20908

View at Publisher

8 Martino, V.P., Ruseckaite, R.A., Jiménez, A.
Thermal and mechanical characterization of plasticized poly (L-lactide-co-D,L-lactide) films for food packaging

(2006) *Journal of Thermal Analysis and Calorimetry*, 86 (3), pp. 707-712. Cited 71 times.
doi: 10.1007/s10973-006-7897-3

View at Publisher