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Mechanical Properties of Gracilaria Lichenoides Reinforced Bioplastic Film (Conference Paper) (Open Access)

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Abstract

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In this study, the mechanical properties of gracilaria lichenoides with additional of plasticizer and filler were evaluated. For samples with the addition of 5.5% of plasticizer, produced low tensile strength and this results is vice versa with elongation at break results. The tensile strength of the bioplastic continuously decreases from 14.8 to 2.7MPa as the plasticizer increases up from 1.5% to 5.5%. This phenomenon was analyses under scanning electron microscope (SEM), it shows that, the formation of pores and crystal agglomeration at sample with 5.5% glycerin. To alter these flaws, squid bone is introduce as filler to the bioplastic . Based on the analysis, additional of 6% filler content did alter the tensile strength up to 8 MPa with 3% of the elongation at break. © Published under licence by IOP Publishing Ltd.

Indexed keywords

Engineering controlled terms: Fillers, Manufacture, Mechanical properties, Plasticizers, Reinforced plastics, Scanning electron microscopy

Engineering uncontrolled terms: Bioplastics, Crystal agglomeration, Elongation at break, Filler contents, Gracilaria

Engineering main heading: Tensile strength

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1 Coupland, J.N., Shaw, N.B., Monahan, F.J., Dolores O'Riordan, E., O'Sullivan, M.
Modeling the effect of glycerol on the moisture sorption behavior of whey protein edible films
(2000) *Journal of Food Engineering*, 43 (1), pp. 25-30. Cited 113 times.
doi: 10.1016/S0260-8774(99)00129-6
View at Publisher

2 Ullah, A., Vasanthan, T., Bressler, D., Elias, A.L., Wu, J.
Bioplastics from feather quill
(2011) *Biomacromolecules*, 12 (10), pp. 3826-3832. Cited 50 times.
doi: 10.1021/bm201112n
View at Publisher

3 Nizar Machmud, M., Reza, F., Rohana, A., Coco, K.
(2013) *J. Sci. Eng.*, pp. 81-88.

4 Sundaram, J., Durance, T.D., Wang, R.
Porous scaffold of gelatin-starch with nanohydroxyapatite composite processed via novel microwave vacuum drying
(2008) *Acta Biomaterialia*, 4 (4), pp. 932-942. Cited 65 times.
doi: 10.1016/j.actbio.2008.01.019
View at Publisher

5 Zhang, Q., Liu, L., Ren, L., Wang, F.
(2008) *Journal of Applied Polymer Science*, 64, pp. 2057-2263.

6 Bartczak, Z., Argon, A.S., Cohen, R.E., Weinberg, M.
Toughness mechanism in semi-crystalline polymer blends: II. High- density polyethylene toughened with calcium carbonate filler particles

(1999) *Polymer*, 40 (9), pp. 2347-2365. Cited 415 times.
doi: 10.1016/S0032-3861(98)00444-3

View at Publisher

7 Zhang, S., Cao, X.Y., Ma, Y.M., Ke, Y.C., Zhang, J.K., Wang, F.S.
The effects of particle size and content on the thermal conductivity and mechanical properties of Al_2O_3/high density polyethylene (HDPE) composites

(2011) *Express Polymer Letters*, 5 (7), pp. 581-590. Cited 57 times.
http://www.expresspolymlett.com/letolt.php?file=EPL-0002172&mi=c
doi: 10.3144/expresspolymlett.2011.57

View at Publisher

8 Cides L.C.S., Arauacute;jo A.A.S., Filho M., amp; Matos., 2006 84 pp 441

9 Castelló, M.L., Dweck, J., Aranda, D.A.G.
Thermal stability and water content determination of glycerol by thermogravimetry

(2009) *Journal of Thermal Analysis and Calorimetry*, 97 (2), pp. 627-630. Cited 25 times.
doi: 10.1007/s10973-009-0070-z

View at Publisher

10 Sudip, M., Biswanath, M., Apurba, D., Mukhopadhyay Sudit, S.
(2012) *Journal of Minerals & Materials Characterization & Engineering*, 11 (1), pp. 55-67. Cited 2 times.

11 Norazowa, I., Wan, M.Z.W.Y., Maizatulnisa, O., Khalina
(2011) *Journal of Polymer Reinforced Plastics and Composites*, 30 (5), pp. 381-388.

12 Jones, A., Zeller, M.A., Suraj, S.
(2013) *Progress in Biomaterials*, 2 (1), p. 12. Cited 8 times.

13 Cadman, J., Chen, Y., Zhou, S., Li, Q.
(2012) *Mater. Sci. Eng. C-Biomimetic Supramol.*