AIP Conference Proceedings
Volume 1985, 13 July 2018, Article number 050004
2017 National Symposium on Polymeric Materials, NSPM 2017; Faculty of Applied Sciences (FSG)Shah Alam, Selangor; Malaysia; 21 October 2017 through 22 October 2017; Code 137894

Bio-polymer chitosan and corn starch with extract of hibiscus rosa-sinensis (hibiscus) as PH indicator for visually-smart food packaging (Conference Paper)

Othman, M.[a], Yusup, A.A.[a], Zakaria, N.[b], Khalid, K.[c]

[a]Department of Manufacturing and Materials Engineering, International Islamic University Malaysia (IIUM), Jalan Gombak, Kuala Lumpur, 53100, Malaysia
[b]Faculty of Biocomposite Technology, UniversitiTeknologi MARA, Shah Alam, Selangor, 40450, Malaysia
[c]Agri-Nanotechnology Program (BT04), Biotechnology and Nanotechnology Research Center (BT), Malaysian Agricultural Research and Development Institute (MARDI), MARDI Headquarters, Persiaran MARDI-UPM, Serdang, Selangor, 43400, Malaysia

Abstract

View references (10)

This study is focusing on the presence of pigments called anthocyanin in hibiscus, can be used as pH indicator as the pigments react with OH^- ions before changing its color depending on the acidity or alkalinity of the surroundings. Hence, a system for pH monitoring based on chitosan, corn starch and phytochemical extract from Hibiscus rosa-sinensis (hibiscus), all inexpensively obtained from renewable sources is developed. Chitosan, corn starch and hibiscus extract were used to produce biopolymer pH indicator for smart food packaging. The system is then characterized by using FT-IR, as well as light microscopy. In order to validate the use of this system as a meat spoilage detection sensor, application tests were conducted with chicken breasts. The results show that the system has good optical and morphological properties and is very sensitive to pH variations. During the application test, the s ystem visually indicated pH changes. This shows a clear response to pH variation of the samples. Therefore, it has potential to be used as a visual indicator of the storage and consumption conditions of food. © 2018 Author(s).

ISSN: 0094243X
ISBN: 978-073541701-4
Source Type: Conference Proceeding
Original language: English

DOI: 10.1063/1.5047198
Document Type: Conference Paper
Volume Editors: Romli A.Z.,Dahan R.M.,Ibrahim N.N.I.N.,Saad S.Z.,Kamarun D.,Mohamed R.
Sponsors:
Publisher: American Institute of Physics Inc.

References (10)

View in search results format >

All Export Print E-mail Save to PDF Create bibliography

1 Feliciano, L.
(2016) *Color Changing Plastics for Food Packaging*

2 Baston, O., Tofan, I., Stroia, A.L., Moise, D., Barna, O.
(2008) *REFRIGERATED CHICKEN MEAT FRESHNESS. CORRELATION between EASILY*, pp. 37-43.
The Annals of the University Dunarea de Jos of Galati

3 Silva-Weiss, A., Bifani, V., Ihl, M., Sobral, P.J.A., Gómez-Guillén, M.C.
Structural properties of films and rheology of film-forming solutions based on chitosan and chitosan-starch blend enriched with murta leaf extract

(2013) *Food Hydrocolloids*, 31 (2), pp. 458-466. Cited 45 times.
doi: 10.1016/j.foodhyd.2012.11.028

View at Publisher

4 Maitra, J., Shukla, V.K.
Cross-linking in Hydrogels - A Review
(2014) *American Journal of Polymer Science*, pp. 25-31. Cited 45 times.

5 Stefani, R., Pertuzatti, P., Vinhal, G., Pereira, M., Karina
(2015) *Smart Biopolymers in Food Industry*

6 Silva-Pereira, M.C., Teixeira, J.A., Pereira-Júnior, V.A., Stefani, R.
Chitosan/corn starch blend films with extract from Brassica oleraceae (red cabbage) as a visual indicator of fish deterioration (Open Access)

(2015) *LWT - Food Science and Technology*, 61 (1), pp. 258-262. Cited 37 times.
http://www.elsevier.com/inca/publications/store/6/2/2/9/1/0/index.htt
doi: 10.1016/j.lwt.2014.11.041

View at Publisher

7 Maciel, V.B.V., Yoshida, C.M.P., Franco, T.T.
Chitosan/pectin polyelectrolyte complex as a pH indicator (Open Access)

(2015) *Carbohydrate Polymers*, 132, art. no. 10036, pp. 537-545. Cited 38 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/405871/description#description
doi: 10.1016/j.carbpol.2015.06.047

View at Publisher

8 Surmei, E., Usturoi, M.
(2012) *Studies on Freshness of Refrigerated Poultry Meat.*

9 Russel, M.S.
(2009) *Understanding Poultry Products Spoilage.*
(November 13). The Resource for Poultry, Pig, Feed Professionals: WATTAgNet
http://www.wattagnet.com/articles/4207-understanding-poultry-products-spoilage

View all related documents based on references

Find more related documents in Scopus based on:

Authors >