

## Accepted Manuscript

Title: Flexible starch-polyurethane films: Effect of mixed macrodiol polyurethane ionomers on physicochemical characteristics and hydrophobicity

Authors: N.L. Tai, Raju Adhikari, Robert Shanks, Peter Halley, Benu Adhikari



PII: S0144-8617(18)30673-8  
DOI: <https://doi.org/10.1016/j.carbpol.2018.06.019>  
Reference: CARP 13693

To appear in:

Received date: 13-1-2018  
Revised date: 2-6-2018  
Accepted date: 4-6-2018

Please cite this article as: Tai, N.L., Adhikari, Raju., Shanks, Robert., Halley, Peter., & Adhikari, Benu., Flexible starch-polyurethane films: Effect of mixed macrodiol polyurethane ionomers on physicochemical characteristics and hydrophobicity. *Carbohydrate Polymers* (2018), <https://doi.org/10.1016/j.carbpol.2018.06.019>

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.

Flexible starch-polyurethane films: Effect of mixed macrodiol polyurethane ionomers on physicochemical characteristics and hydrophobicity

N. L. Tai<sup>1,2</sup>, Raju Adhikari<sup>2</sup>, Robert Shanks<sup>1</sup>, Peter Halley<sup>3</sup>, Benu Adhikari<sup>1,2\*</sup>

<sup>1</sup>School of Science, RMIT University, Melbourne, VIC 3083, Australia

<sup>2</sup>CSIRO Materials Science and Engineering, Clayton South, VIC 3169, Australia

<sup>3</sup>School of Chemical Engineering, University of Queensland, St Lucia, QLD 4072, Australia

\*Corresponding author: phone: +61 3 99259940, fax: +61 3 99253747, email: benu.adhikari@rmit.edu.au

## Highlights

- Films were produced by blending anionic poly(ether-ester)urethane (AEEPU) and starch
- Molecular entanglement and hydrogen bonding occurred between starch & AEEPU
- Miscibility and compatibility between starch & AEEPU were significantly high
- Flexibility, hydrophobicity and transparency of these films were close to that of LDPE
- Starch-AEEPU films can be used in packaging applications as an alternative of LDPE

## Abstract

One of the most critical limitations in synthesizing starch-polyurethane (PU) hybrid materials is their microphase separation caused by physical incompatibility. This paper reports that the physical incompatibility and microphase separation between starch and PU can be overcome by using specifically designed anionic poly(ether-ester) polyurethane (AEEPU).

Download English Version:

<https://daneshyari.com/en/article/7781764>

Download Persian Version:

<https://daneshyari.com/article/7781764>

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