

# Scopus

## Document details

< Back to results | 1 of 1

[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)

Advances in Polymer Technology  
2017

### Influence of filler loading and palm oil-based green coupling agent on torque rheological properties of polypropylene/cocoa pod husk composites

([Article in press](#) ?)

Koay, S.C.<sup>a</sup> [✉](#), Chan, M.Y.<sup>b</sup>, Pang, M.M.<sup>a</sup>, Tshai, K.Y.<sup>c</sup> [👤](#)

<sup>a</sup>School of Engineering Taylor's University Subang Jaya, Selangor Malaysia

<sup>b</sup>Centre of Engineering Programmes HELP College of Arts and Technology Kuala Lumpur Malaysia

<sup>c</sup>Faculty of Engineering The University of Nottingham Semenyih, Selangor Malaysia

#### Abstract

This research examined the torque rheological properties of cocoa pod husk (CPH)-filled polypropylene (PP) composites. Composites with varying filler loading ranging from 10 to 40 phr and formulation with or without palm oil-based green coupling agent (GCA-P) were analyzed using a Brabender Plastograph torque rheometer. The GCA-P synthesized from fatty acid of palm oil was used to enhance adhesion at the filler-matrix surface interfaces. The results reveal that PP/CPH composites containing 40 phr filler loading and GCA-P exhibited higher processing torque and power law index ( $n$ ). Higher melt viscosity was recorded at higher filler loading, owing to filler agglomeration and more effective filler-matrix adhesion in the presence of GCA-P. As a result, higher energy was required to compound PP/CPH composites, which could be attributed to the increase in activation energy ( $E_a$ ) at higher melt viscosity. © 2017 Wiley Periodicals, Inc.

#### Reaxys Database Information

[View Compounds](#)

#### Author keywords

Cocoa pod husk Composites Green coupling agent Palm oil Polypropylene Torque rheology

#### Indexed keywords

Engineering controlled terms: Activation energy Adhesion Composite materials Coupling agents Fatty acids  
Filled polymers Fillers Hardwoods Oil shale Palm oil Polypropylenes Rheology  
Torque Viscosity

Compendex keywords: Activation energies ( $E_a$ ) Filler loading Filler-matrix Melt viscosities Power law index  
Rheological property Surface interfaces Torque rheometer

Engineering main heading: Loading

#### Metrics

0 Citations in Scopus

0 Field-Weighted  
Citation Impact



#### PlumX Metrics

Usage, Captures, Mentions,  
Social Media and Citations  
beyond Scopus.

#### Cited by 0 documents

Inform me when this document  
is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

#### Related documents

Find more related documents in  
Scopus based on:

[Authors >](#) [Keywords >](#)

ISSN: 07306679  
CODEN: APTYD

DOI: 10.1002/adv.21883  
Document Type: Article in Press