

Accepted Manuscript

Title: Interactions between microfibrillar cellulose and carboxymethyl cellulose in an aqueous suspension

Authors: Deepa Agarwal, William MacNaughtan, Tim J. Foster



PII: S0144-8617(17)31503-5
DOI: <https://doi.org/10.1016/j.carbpol.2017.12.086>
Reference: CARP 13148

To appear in:

Received date: 18-10-2017
Revised date: 8-12-2017
Accepted date: 31-12-2017

Please cite this article as: Agarwal, Deepa., MacNaughtan, William., & Foster, Tim J., Interactions between microfibrillar cellulose and carboxymethyl cellulose in an aqueous suspension. *Carbohydrate Polymers* <https://doi.org/10.1016/j.carbpol.2017.12.086>

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.

Interactions between microfibrillar cellulose and carboxymethyl cellulose in an aqueous suspension

Deepa Agarwal, William MacNaughtan, and Tim J. Foster*

Division of Food Sciences, School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, LE12 5RD, UK.

*Corresponding author e-mail: tim.foster@nottingham.ac.uk

Highlights

- CMC improves redispersibility and reduces aggregation of MFC microfibrils
- NMR relaxation measurements give an insight into the mechanisms of redispersibility
- Polymer aggregation dominates the T_2 value and NMR behaviour of suspensions
- Improved re-dispersion is correlated with higher shear viscosity and increased T_2
- Unique microstructures relevant to foods have been created

Abstract

New microstructures with interesting, unique and stable textures, particularly relevant to food systems were created by redispersing Microfibrillar cellulose (MFC). This paper reports the interactions between microfibrillar cellulose and carboxymethyl cellulose (CMC) in redispersed aqueous suspensions ~~and the effects of formulation~~, by using rheological measurements on variable ratios of MFC/CMC and correlating these with apparent water mobility as determined by time domain NMR. MFC is a network of cellulose fibrils produced by subjecting pure cellulose pulp to high-pressure mechanical homogenisation. A

Download English Version:

<https://daneshyari.com/en/article/7783754>

Download Persian Version:

<https://daneshyari.com/article/7783754>

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