

Accepted Manuscript

Novel nanocellulose/conducting polymer composite nanorod films with improved electrochromic performances

Sihang Zhang, Runfang Fu, Sheng Wang, Yingchun Gu, Sheng Chen

PII: S0167-577X(17)30767-X
DOI: <http://dx.doi.org/10.1016/j.matlet.2017.05.044>
Reference: MLBLUE 22619

To appear in: *Materials Letters*

Received Date: 23 February 2017
Revised Date: 21 April 2017
Accepted Date: 10 May 2017

Please cite this article as: S. Zhang, R. Fu, S. Wang, Y. Gu, S. Chen, Novel nanocellulose/conducting polymer composite nanorod films with improved electrochromic performances, *Materials Letters* (2017), doi: <http://dx.doi.org/10.1016/j.matlet.2017.05.044>

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.



Novel nanocellulose/conducting polymer composite nanorod films with improved electrochromic performances

Sihang Zhang^a, Runfang Fu^a, Sheng Wang^b, Yingchun Gu^a, Sheng Chen^{a,*}

^aFunctional Polymer Materials Laboratory, College of Light Industry, Textile and Food Engineering,

Sichuan University, Chengdu 610065, China

^bInstitut für Katalysatorforschung und -Technologie (IKFT), Karlsruher Institut für Technologie (KIT),

Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

Abstract Novel nanocellulose(NC)/conducting polymer(CP) composite nanorod films have been successfully prepared by *in situ* polymerization. The nanocomposite films showed remarkable enhancement of film forming properties and electrochromic behaviors. The electrochromic properties were improved significantly because of the porous spaces among the NC/CP nanorods, which facilitated the diffusion of electrolyte ions. And the nanocomposite structure also offered larger surface areas for redox reactions. The excellent electrochromic performances of the NC/CP composite nanorod films make them be the promising candidates in electrochromic materials.

Keywords Electrochromism; Nanocellulose; Conducting polymers; Nanocomposites; Thin film.

1. Introduction

Conducting polymers (CPs) are attractive candidates for a great variety of applications, including supercapacitor, batteries, chemical and biological sensors, electrical conductors, tissue engineering scaffolds, antistatic coatings and electrochromic devices[1], owing to its relative ease and low cost for synthesis, tunable electrochromic properties and excellent environmental stability[2]. Among these applications, CPs have been extensively explored to develop electrochromic materials due to their

* Corresponding author.
E-mail address : chensheng@scu.edu.cn

Download English Version:

<https://daneshyari.com/en/article/5463394>

Download Persian Version:

<https://daneshyari.com/article/5463394>

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