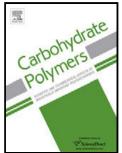
Accepted Manuscript

Title: Light-induced Surface Graft Polymerizations Initiated by An Anthraquinone Dye on Cotton Fibers

Author: Jingyuan Zhuo Gang Sun



 PII:
 S0144-8617(14)00562-1

 DOI:
 http://dx.doi.org/doi:10.1016/j.carbpol.2014.05.084

 Reference:
 CARP 8951

To appear in:

Received date:	14-3-2014
Revised date:	7-5-2014
Accepted date:	19-5-2014

Please cite this article as: Zhuo, J., and Sun, G.,Light-induced Surface Graft Polymerizations Initiated by An Anthraquinone Dye on Cotton Fibers, *Carbohydrate Polymers* (2014), http://dx.doi.org/10.1016/j.carbpol.2014.05.084

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.

ACCEPTED MANUSCRIPT

1	Light-induced Surface Graft Polymerizations Initiated by An
2	Anthraquinone Dye on Cotton Fibers
3	Jingyuan Zhuo, Gang Sun*
4	Division of Textiles and Clothing
5	University of California, Davis, CA 95616
6	ABSTRACT
7	Anthraquinone and its derivatives could serve as photo-sensitizers and generate radicals and
8	reactive oxygen species in polymers under exposure of UVA or day light. Such a property was
9	utilized in development of novel light-induced surface radical graft polymerizations on cotton
10	fibers that were dyed with an anthraquinone derivative, 2-ethylanthraquinone. Several functional
11	monomers were directly grafted onto the dyed cotton fibers upon UVA exposure. The chemical
12	and morphological structures and thermal properties of the grafted fibers were confirmed and
13	characterized by Fourier transform infrared spectrometer (FTIR), scanning electron microscope
14	(SEM) and thermal gravimetric analysis (TGA). Reaction conditions including concentrations of
15	the photosensitizer, the amount of monomers, as well as UVA irradiation time could influence
16	grafting efficiencies. More interestingly, the surface graft polymerization did not significantly
17	change the light active functions of the agent, evidenced by the light-active antimicrobial
18	functions of the grafted fibers.
19	Keywords: Anthraquinone compounds; Light-induced grafting; Free-radical polymerization; Vat
20	dye; Cotton fabric; Antimicrobial function.

* Corresponding author: Phone: 530-752-0840; E-mail: gysun@ucdavis.edu

Download English Version:

https://daneshyari.com/en/article/7791130

Download Persian Version:

https://daneshyari.com/article/7791130

Daneshyari.com