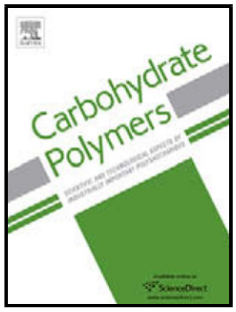

Title: Functional modification of cellulose fabrics with phthalocyanine derivatives and the UV light-induced antibacterial performance

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Functional modification of cellulose fabrics with phthalocyanine derivatives and the UV light-induced antibacterial performance

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Highlights

- Antibacterial cellulose fabric is developed by using Reactive Blue 21.
- The fabric won't cause health risk compared with semiconductor material.
- The fabric modified with copper phthalocyanine derivatives has photo-activity.

ABSTRACT
Cellulose fabrics were modified with a derivative of copper phthalocyanine (Reactive Blue C.I. 21) by dyeing method. The modified cellulose fabrics exhibited important photoactive property, such as the hydroxyl radicals-generating ability. The UV-Vis spectrum, exhaustion rate, fixation rate and grafting quantity of Reactive Blue 21 on the cellulose fabrics were measured and calculated. The chemical structure and morphology of the modified cellulose were characterized. The amount of the produced hydroxyl radicals was measured and the photoactive mechanism was discussed. The UV light-induced antibacterial performance of the modified materials was measured. The modified cellulose exhibited photo-induced antibacterial activity against both *Staphylococcus aureus* and *Escherichia coli*.
Keywords: Cellulose; Phthalocyanine; Hydroxyl radicals; Antibacterial

1. Introduction

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