

Accepted Manuscript

Title: Antimicrobial cotton textiles with robust superhydrophobicity via plasma for oily water separation

Authors: Ming Zhang, Jiuyin Pang, Wenhui Bao, Wenbo Zhang, He Gao, Chengyu Wang, Junyou Shi, Jian Li



PII: S0169-4332(17)31310-7
DOI: <http://dx.doi.org/doi:10.1016/j.apsusc.2017.05.008>
Reference: APSUSC 35943

To appear in: *APSUSC*

Received date: 23-2-2017
Revised date: 29-4-2017
Accepted date: 2-5-2017

Please cite this article as: Ming Zhang, Jiuyin Pang, Wenhui Bao, Wenbo Zhang, He Gao, Chengyu Wang, Junyou Shi, Jian Li, Antimicrobial cotton textiles with robust superhydrophobicity via plasma for oily water separation, *Applied Surface Science* <http://dx.doi.org/10.1016/j.apsusc.2017.05.008>

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.

Antimicrobial cotton textiles with robust superhydrophobicity via plasma for oily water separation

Ming Zhang^a; Jiuyin Pang^b; Wenhui Bao^a; Wenbo Zhang^a; He Gao^a; Chengyu Wang^a;
Junyou Shi^b; Jian Li^{a*}

^aKey laboratory of Bio-based Material Science and Technology, Ministry of Education, Northeast Forestry University, Harbin 150040, China;

^bWood Material Science and Engineering Key Laboratory of Jilin Province, Beihua University, Jilin 132013, China.

*Corresponding authors. Tel (Fax): +86 451 82192399;

E-mail addresses: donglinjianli@163.com (J. Li); mattzhming@163.com (M. Zhang)

Research Highlights

- Cotton textile was treated via plasma technology and spraying technology.
- It has robust superhydrophobicity in both chemical and mechanical aspects for practical applications.
- Its dual roughness structure is composed by SiO₂/Ag NPs in the presence of polyurethane adhesive.
- Final product displays excellent oily water separation performance and antibacterial property.

Abstract

During these decades, functional materials are facing the severe challenge of their weak surface structure. To solve this problem, plasma technology and spraying technology were utilized to improve the bonding effect between cotton substrates and coating structures. Herein, silica/silver nanoparticles (SiO₂/Ag NPs) were prepared and introduced to the nano-/micro- structures on sample surface by spraying technology in the existence of polyurethane adhesive. Then the circles of spraying procedure containing adhesive and SiO₂/Ag NPs had been discussed. After further fluorination, the samples still displayed an excellent waterproof property even after abrasion test with sand paper and various washing test by its solvent--

Download English Version:

<https://daneshyari.com/en/article/5346867>

Download Persian Version:

<https://daneshyari.com/article/5346867>

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