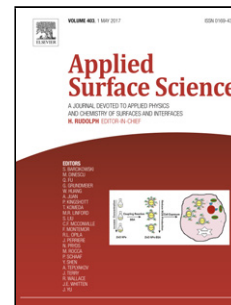


Accepted Manuscript

Title: Fabrication of transparent superhydrophobic glass with fibered-silica network

Author: Feng Zhang Zhenwu Shi Yingjie Jiang Chengyun Xu
Zhuhui Wu Yanyan Wang Changsi Peng



PII: S0169-4332(17)30580-9
DOI: <http://dx.doi.org/doi:10.1016/j.apsusc.2017.02.207>
Reference: APSUSC 35316

To appear in: *APSUSC*

Received date: 5-11-2016
Revised date: 21-2-2017
Accepted date: 23-2-2017

Please cite this article as: F. Zhang, Z. Shi, Y. Jiang, C. Xu, Z. Wu, Y. Wang, C. Peng, Fabrication of transparent superhydrophobic glass with fibered-silica network, *Applied Surface Science* (2017), <http://dx.doi.org/10.1016/j.apsusc.2017.02.207>

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.

Fabrication of transparent superhydrophobic glass with fibered-silica network

Feng Zhang^{a,b}, Zhenwu Shi^{a,b,*}, Yingjie Jiang^{a,b}, Chengyun Xu^{a,b}, Zhuhui Wu^{a,b}, Yanyan Wang^{a,b}, Changsi Peng^{a,b,*}

^a College of Physics, Optoelectronics and Energy & Collaborative Innovation Center of Suzhou Nano Science and Technology, Soochow University, Suzhou 215006, China

^b Key Lab of Advanced Optical Manufacturing Technologies of Jiangsu Province & Key Lab of Modern Optical Technologies of Education Ministry of China, Soochow University, Suzhou 215006, China

*Corresponding author: zwshi@suda.edu.cn, changsipeng@suda.edu.cn

Abstract

In this paper, silica shell was deposited on the soot film via chemical vapor deposition. Through calcination process at 500°C with the assistance of O₂ airflow, the soot film was removed and novel robust fibered-silica network film was decorated onto glass substrate. After modification with fluorosilane, the water contact angle (WCA) was 166° and sliding angle (SA) was 1° for the fibered-silica network film. The average transmittance of the as-prepared glass was over 88% in visible wavelength. The film showed strong robustness for heavy water droplets, acid/alkali corrosion, salt solution immersion and thermal treatment. Moreover, water droplets were unstable and could remove contaminants when falling off the surface, which is defined as self-cleaning.

Keywords: superhydrophobic, transparent, self-cleaning, soot film, fibered-silica

1. Introduction

Functional surfaces with extreme wettability can cause special interfacial

Download English Version:

<https://daneshyari.com/en/article/5351481>

Download Persian Version:

<https://daneshyari.com/article/5351481>

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