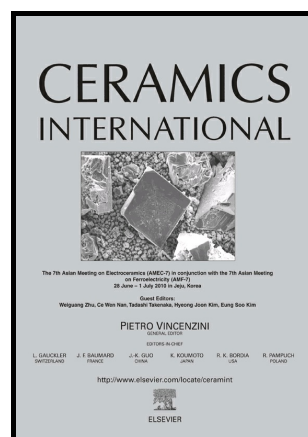


Author's Accepted Manuscript

Facile construction of silica-based surface coating onto polypropylene microporous film through dopamine-assisted hydrolysis of tetraethoxysilane

Yongsheng Zhao, Lianmeng Si, Wanbing Dang, Zhaoqing Lu



www.elsevier.com/locate/ceri

PII: S0272-8842(18)30556-X
DOI: <https://doi.org/10.1016/j.ceramint.2018.03.009>
Reference: CER117646

To appear in: *Ceramics International*

Received date: 5 February 2018
Revised date: 1 March 2018
Accepted date: 1 March 2018

Cite this article as: Yongsheng Zhao, Lianmeng Si, Wanbing Dang and Zhaoqing Lu, Facile construction of silica-based surface coating onto polypropylene microporous film through dopamine-assisted hydrolysis of tetraethoxysilane, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.03.009>

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 galley proof before it is published in its final citable 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.

Facile construction of silica-based surface coating onto polypropylene microporous film through dopamine-assisted hydrolysis of tetraethoxysilane

Yongsheng Zhao^{1,2}, Lianmeng Si¹, Wanbing Dang¹, Zhaoqing Lu^{*1,2}

1. College of Bioresources Chemical and Materials Engineering, Shaanxi Province Key Laboratory of Paper-making Technology and Specialty Paper, Shaanxi University of Science and Technology, Xi'an, 710021, China
2. State Key Laboratory of Pulp and Paper Engineering, South China University of China, Guangzhou, 510640, China

Corresponding Author: Y.Zhao, yongshengzhao123@163.com

Z.Lu, luzhaoqing@sust.edu.cn

Abstract

Surface modification with silica-based coating is widely used to attain high performance and construct special functions for thin films. In this paper, dopamine (DA) and tetraethoxysilane (TEOS) were used as initial building blocks to construct a biomimetic hydrophilic and mechanical robust silica-based coating onto polypropylene (PP) microporous film. It was found that the final DA/TEOS coating can be steadily immobilized onto PP film and greatly improve the hydrophilic property of PP film as evidenced by the decreased contact angle. Furthermore, the coating structures were comparatively investigated through one-step synthesis and two-step synthesis of DA and TEOS with a fixed ratio. Interestingly, the one-step synthesized coating possesses a loosely-packed layer with dispersed SiO₂ nanoparticles within polydopamine matrix while the two-step synthesized coating

Download English Version:

<https://daneshyari.com/en/article/7886943>

Download Persian Version:

<https://daneshyari.com/article/7886943>

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