

Accepted Manuscript

Full Length Article

Metal-Organic Framework Superhydrophobic Coating on Kevlar Fabric with Efficient Drag Reduction and Wear Resistance

Deke Li, Zhiguang Guo

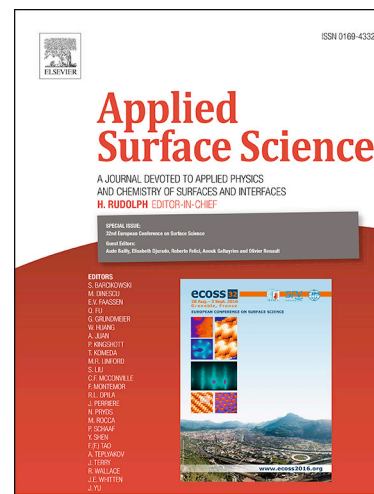
PII: S0169-4332(18)30690-1
DOI: <https://doi.org/10.1016/j.apsusc.2018.03.030>
Reference: APSUSC 38778

To appear in: *Applied Surface Science*

Received Date: 18 January 2018
Revised Date: 16 February 2018
Accepted Date: 4 March 2018

Please cite this article as: D. Li, Z. Guo, Metal-Organic Framework Superhydrophobic Coating on Kevlar Fabric with Efficient Drag Reduction and Wear Resistance, *Applied Surface Science* (2018), doi: <https://doi.org/10.1016/j.apsusc.2018.03.030>

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.



Metal-Organic Framework Superhydrophobic Coating on Kevlar Fabric with Efficient Drag Reduction and Wear Resistance

Deke Li,^{ac} Zhiguang Guo^{*ab}

^a State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, People's Republic of China. *E-mail:* zguo@licp.cas.cn; *Fax:* +86-931-8277088; *Tel:* +86-931-4968105

^b Hubei Collaborative Innovation Centre for Advanced Organic Chemical Materials and Ministry of Education Key Laboratory for the Green Preparation and Application of Functional Materials, Hubei University, Wuhan 430062, People's Republic of China

^c University of Chinese Academy of Sciences, Beijing 100049, People's Republic of China

Abstract: Superhydrophobic layers are extremely essential for protecting material surface in various applications. In this study, a stable superhydrophobic mixed matrix surface with a 152.2° contact angle can be fabricated through the technology of layer-by-layer hot-pressing (HoP), and then modified by 1H,1H,2H,2H-perfluorooctyltriethoxysilane (PFOTES) on the ZIF-8@Kevlar fabric surface. The morphology and chemical composition were analyzed by the means of SEM, XRD and FTIR. The obtained superhydrophobic coatings showed excellent antiwear performance and drag reduction under desired working conditions. Moreover, we successfully applied superhydrophobic F-ZIF-8@Kevlar fabric in the alcohol adsorbent with high removal capacity, and it can be reused for several times without serious efficiency loss.

Keywords: ZIF-8; Kevlar, superhydrophobic; wear resistance; drag reduction

Download English Version:

<https://daneshyari.com/en/article/7834663>

Download Persian Version:

<https://daneshyari.com/article/7834663>

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