

# Accepted Manuscript

Full Length Article

A New Approach For Durable Multifunctional Coating of PET Fabric

Nabil.A. Ibrahim, Basma M. Eid, Heba M. Khalil, Alsaid A. Almetwally

PII: S0169-4332(18)30976-0

DOI: <https://doi.org/10.1016/j.apsusc.2018.04.022>

Reference: APSUSC 39021

To appear in: *Applied Surface Science*

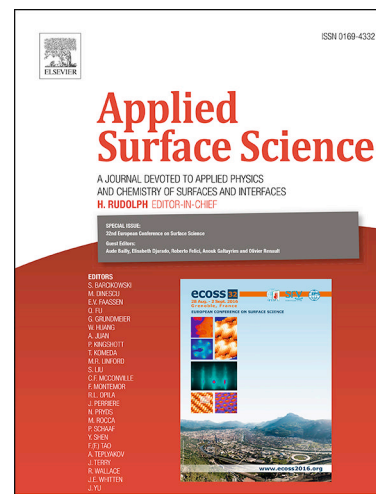
Received Date: 11 October 2017

Revised Date: 13 March 2018

Accepted Date: 3 April 2018

Please cite this article as: Nabil.A. Ibrahim, B.M. Eid, H.M. Khalil, A.A. Almetwally, A New Approach For Durable Multifunctional Coating of PET Fabric, *Applied Surface Science* (2018), doi: <https://doi.org/10.1016/j.apsusc.2018.04.022>

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.



## A New Approach For Durable Multifunctional Coating of PET Fabric

Nabil. A. Ibrahim<sup>1\*</sup>, Basma M. Eid<sup>1</sup>, Heba M. Khalil<sup>2</sup>, Alsaied A. Almetwally<sup>1</sup>

<sup>1</sup>Textile Research Division, National Research Centre, Scopus affiliation ID 60014618, El-Behouth St., Dokki, Giza, Egypt

<sup>2</sup>Faculty of Applied Arts, Printing, Dyeing and Finishing Department, Helwan University, Cairo, Egypt

### Abstract

This new approach aims to impart durable multifunctional properties to polyester fabric surface via pre-modification with sodium hydroxide followed by subsequent coating with proper active ingredients such as SiO<sub>2</sub>, TiO<sub>2</sub>, ZnO and ZrO<sub>2</sub> nanoparticles using gelatin as a green binding agent. The obtained results signify that the enhancement in the imparted functional properties like antibacterial, UV- blocking, self-cleaning capability and softness properties is governed by type of binding agent, i.e. gelatin > polyacrylate as well as kind of included metal oxide nanoparticles (MO-NPs) into the coating paste. FTIR, SEM and EDS analysis confirm the surface modification and functionalization of PET fabric surface. The obtained multifunctional coatings exhibit a remarkable washing durability even after 15 washing cycles.

Keywords: Polyester; Surface modification; Post-coating with MO-NPs; Green binder; Durable multifunctional coating.

---

\* Corresponding author, Fax: +202 333 70931  
E-mail address: nabibrahim49@yahoo.co.uk (N. A. Ibrahim).

Download English Version:

<https://daneshyari.com/en/article/7833720>

Download Persian Version:

<https://daneshyari.com/article/7833720>

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