

## Accepted Manuscript

Hydrophilicity modification of aramid fiber using a linear shape plasma excited by nanosecond pulse



Hao Yuan, Wenchun Wang, Dezheng Yang, Xiongfeng Zhou, Zilu Zhao, Li Zhang, Sen Wang, Jing Feng

PII: S0257-8972(18)30308-6  
DOI: doi:[10.1016/j.surfcoat.2018.03.057](https://doi.org/10.1016/j.surfcoat.2018.03.057)  
Reference: SCT 23237  
To appear in: *Surface & Coatings Technology*  
Received date: 10 July 2017  
Revised date: 19 March 2018  
Accepted date: 21 March 2018

Please cite this article as: Hao Yuan, Wenchun Wang, Dezheng Yang, Xiongfeng Zhou, Zilu Zhao, Li Zhang, Sen Wang, Jing Feng , Hydrophilicity modification of aramid fiber using a linear shape plasma excited by nanosecond pulse. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Sct(2017), doi:[10.1016/j.surfcoat.2018.03.057](https://doi.org/10.1016/j.surfcoat.2018.03.057)

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.

# Hydrophilicity modification of aramid fiber using a linear shape plasma excited by nanosecond pulse

Hao Yuan, Wenchun Wang\*, Dezheng Yang\*, Xiongfeng Zhou, Zilu Zhao, Li Zhang, Sen Wang, Jing Feng

*Key Lab of Materials Modification, Dalian University of Technology, Ministry of Education, Dalian, 116024, China*

\* Corresponding author.

*E-mail addresses:* [wangwenc@dlut.edu.cn](mailto:wangwenc@dlut.edu.cn) (W.C. Wang),

[yangdz@dlut.edu.cn](mailto:yangdz@dlut.edu.cn) (D.Z. Yang).

## Abstract

In this paper, a linear shape nanosecond pulsed dielectric barrier discharge is generated at atmospheric pressure for improving the hydrophilic property of aramid fibers. The discharge images, waveforms of voltage and current, and optical emission spectra of discharge are obtained to investigate plasma characteristics, and the water contact angles, scanning electron microscopy, and X-ray photoelectron spectroscopy are employed to estimate the modifying effects of plasma and investigate modification mechanisms. It is found that 75 s is an optimal treatment time in air under 2 mm discharge gap, 28 kV pulse peak voltage, and 100 Hz pulse repetition rate, and the energy density of discharge is about 2.1 J/cm<sup>2</sup>. The improvement of aramid fiber hydrophilicity is due to the increasing of surface roughness and the formation of

Download English Version:

<https://daneshyari.com/en/article/8023872>

Download Persian Version:

<https://daneshyari.com/article/8023872>

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