Accepted Manuscript

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PII: S0257-8972(18)30987-3
DOI: doi:10.1016/j.surfcoat.2018.09.010
Reference: SCT 23783

To appear in: *Surface & Coatings Technology*

Received date: 3 July 2018
Revised date: 4 September 2018
Accepted date: 5 September 2018

Please cite this article as: Chengzhu Shen, Guolin Song, Guoyi Tang , A facile modification method of activated carbon by spark discharge of atmospheric pressure plasma jets to improve its adsorption performance of methylene blue. Sct (2018), doi:10.1016/j.surfcoat.2018.09.010

A facile modification method of activated carbon by spark discharge of atmospheric pressure plasma jets to improve its adsorption performance of methylene blue

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Abstract

In this study, spark discharge of atmospheric pressure plasma jets (SDAPPJs) was employed to modify activated carbon (AC) prepared from coconut shells. The physical and chemical properties of AC were tailored by SDAPPJs treatment to enhance the adsorption performance. The pristine AC and its modified samples were characterized by N_2 isotherms, X-ray photoelectron spectroscopy (XPS), fourier transform infrared spectroscopy (FT-IR) and scanning electron microscopy (SEM) in terms of micro structure, chemical composition, morphology, and etc. The methylene blue (MB) removal capability of these AC samples from aqueous solution was investigated by UV-vis spectrophotometer to determine the influences of the modification on the adsorption performance. The results show that