

Accepted Manuscript

Resistivity switching in activated carbon fibers

Mateusz Kempieński

PII: S0167-577X(18)31140-6

DOI: <https://doi.org/10.1016/j.matlet.2018.07.099>

Reference: MLBLUE 24665

To appear in: *Materials Letters*

Received Date: 15 June 2018

Revised Date: 22 July 2018

Accepted Date: 23 July 2018

Please cite this article as: M. Kempieński, Resistivity switching in activated carbon fibers, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.07.099>

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.



Resistivity switching in activated carbon fibers

Mateusz Kempinski^{a,b,*}

*^aFaculty of Physics and ^bNanoBioMedical Centre, Adam Mickiewicz University in Poznań,
Umultowska 85, 61-614, Poznań, Poland.*

Abstract

This work presents the effect of switching of resistivity of activated carbon fibers, obtained with a combination of adsorption of specific molecules and application of external electric field. Observed resistivity jumps were due to the ordering of dipolar guest molecules which acted as a gating factor for transport of charge carriers within the granular fiber structure. Presented research shows that the control of electrical transport in porous carbon systems is possible by means of structure, host-guest interactions and temperature, combined with external stimulation. As such it is important for fundamental understanding of electronic properties of graphene-based systems, and for their adsorption-related applications, for example energy generation and storage. Resistivity switching might prove useful for tuning of carrier transport in nanoelectronic units (single-electron transistors, spin valves) or for enhancing the performance of molecular sensors.

Keywords

Carbon materials, electrical properties, charge carrier transport, localization, adsorption, electron paramagnetic resonance

Download English Version:

<https://daneshyari.com/en/article/8012408>

Download Persian Version:

<https://daneshyari.com/article/8012408>

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