

Accepted Manuscript

Biomass-derived, activated carbon-sulfur composite cathode with a bifunctional interlayer of functionalized carbon nanotubes for lithium-sulfur cells

M. Manoj, C. Muhamed Ashraf, M. Jasna, K.M. Anilkumar, B. Jinisha, V.S. Pradeep, S. Jayalekshmi

PII: S0021-9797(18)31177-9
DOI: <https://doi.org/10.1016/j.jcis.2018.09.096>
Reference: YJCIS 24147

To appear in: *Journal of Colloid and Interface Science*

Received Date: 27 June 2018
Revised Date: 24 September 2018
Accepted Date: 27 September 2018

Please cite this article as: M. Manoj, C. Muhamed Ashraf, M. Jasna, K.M. Anilkumar, B. Jinisha, V.S. Pradeep, S. Jayalekshmi, Biomass-derived, activated carbon-sulfur composite cathode with a bifunctional interlayer of functionalized carbon nanotubes for lithium-sulfur cells, *Journal of Colloid and Interface Science* (2018), doi: <https://doi.org/10.1016/j.jcis.2018.09.096>

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.



Biomass-derived, activated carbon-sulfur composite cathode with a bifunctional interlayer of functionalized carbon nanotubes for lithium-sulfur cells.

Manoj M^a, Muhamed Ashraf C^b, Jasna M^c, Anilkumar K M^d, Jinisha B^a, Pradeep V S^{a,e}, S Jayalekshmi^{a,f}

^aDivision for Research in Advanced Materials, Department of Physics, Cochin University of Science and Technology, Kochi, Kerala, India 682 022

^bDepartment of Applied Chemistry, Cochin University of Science and Technology Kochi, Kerala, India 682 022

^cNanophotonics and Optoelectronic Devices Laboratory, Department of Physics, Cochin University of Science and Technology, Kochi, Kerala, India 682 022

^dDepartment of Physics, MSM College, Kayamkulam, Kerala, India

^eEmpa, Swiss Federal Laboratories for Material Science and Technology, Laboratory for High Performance Ceramics, Ueberlandstrasse 129, Duebendorf, 8600 Switzerland

^fCentre of Excellence in Advanced Materials, Cochin University of Science and Technology, Kochi, Kerala, India 682 022

Corresponding Author: jayalekshmi@cusat.ac.in

ABSTRACT

Lithium-sulfur (Li-S) cells are emerging as the dominant constituents of the next generation battery technology, offering high theoretical capacity around 1675 mA h g⁻¹ and the additional advantages of low cost and non-toxic nature. Activated carbon, derived from natural resources is being extensively investigated for applications as electrode materials in high power supercapacitors and for making composite electrodes for designing high energy density electrochemical cells. The present work is aimed at introducing the potential of the composite cathode of sulfur with the biomass-derived, steam activated carbon (AC) along with the free-standing and flexible film of carbon nanotubes as the interlayer for designing efficient Li-S cells. The composite obtained by impregnating sulfur particles into the pores of coconut shell derived

Download English Version:

<https://daneshyari.com/en/article/11020924>

Download Persian Version:

<https://daneshyari.com/article/11020924>

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