

Author's Accepted Manuscript

Architecture and Properties of a Novel Two-Dimensional Carbon Material-Graphtetrayne

Juan Gao, Jiaofu Li, Yanhuan Chen, Zicheng Zuo, Yongjun Li, Huibiao Liu, Yuliang Li



PII: S2211-2855(17)30684-5
DOI: <https://doi.org/10.1016/j.nanoen.2017.11.005>
Reference: NANOEN2306

To appear in: *Nano Energy*

Received date: 9 August 2017
Revised date: 16 October 2017
Accepted date: 3 November 2017

Cite this article as: Juan Gao, Jiaofu Li, Yanhuan Chen, Zicheng Zuo, Yongjun Li, Huibiao Liu and Yuliang Li, Architecture and Properties of a Novel Two-Dimensional Carbon Material-Graphtetrayne, *Nano Energy*, <https://doi.org/10.1016/j.nanoen.2017.11.005>

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 galley proof before it is published in its final citable 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.

Architecture and Properties of a Novel Two-Dimensional Carbon Material-Graphtetrayne

Juan Gao^{a,b}, Jiaofu Li^{a,b}, Yanhuan Chen^{a,b}, Zicheng Zuo^a, Yongjun Li^{a,b}, Huibiao Liu^{a,b}, Yuliang Li^{a,b}*

^aCAS Key Laboratory of Organic Solids, Beijing National Laboratory for Molecular Sciences (BNLMS), CAS Research/Education Center for Excellence in Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190 (P. R. China)

^bUniversity of Chinese Academy of Sciences, Beijing 100049 (P. R. China)

Corresponding author.: liuhb@iccas.ac.cn

Abstract:

A novel 2D carbon allotrope-Graphtetrayne (GTY), features four acetylene linkages between the pairs of benzene rings to form 30-C hexagons was synthesized by a facile synthesized route of Sonagashira cross-coupling reaction of hexaethynylbenzene and diiodobutadiyne. This all-carbon material shows a distinct structural feature, rich triple bonds and super large cavities structures, which not only has high chemical activity, but also show the high stability. GTY displays excellent semiconductor property of conductivity of 3×10^{-4} S/m at room temperature. GTY films were controlled grown on surface of copper with large areas and controlled thickness, as an efficient Li storage material for the fabrication of high-performance Li-ion batteries. The measured maximum Li storage capacity of GTY reached as high as 947 mA·h/g, this is due to high chemical activity and super large porous for high efficient ion transport.

Graphic abstract

Download English Version:

<https://daneshyari.com/en/article/7953030>

Download Persian Version:

<https://daneshyari.com/article/7953030>

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