

Accepted Manuscript

Letter to the Editor

Carbon nanodots with strong nonlinear optical response

Dezhi Tan, Yuya Yamada, Shifeng Zhou, Yasuhiko Shimotsuma, Kiyotaka Miura, Jianrong Qiu

PII: S0008-6223(13)01211-6

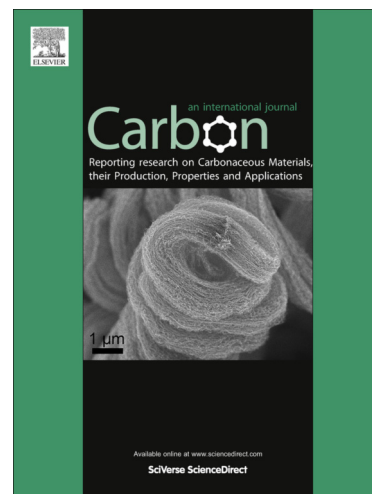
DOI: <http://dx.doi.org/10.1016/j.carbon.2013.12.056>

Reference: CARBON 8637

To appear in: *Carbon*

Received Date: 14 November 2013

Accepted Date: 19 December 2013



Please cite this article as: Tan, D., Yamada, Y., Zhou, S., Shimotsuma, Y., Miura, K., Qiu, J., Carbon nanodots with strong nonlinear optical response, *Carbon* (2013), doi: <http://dx.doi.org/10.1016/j.carbon.2013.12.056>

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.

Carbon nanodots with strong nonlinear optical response

Dezhi Tan^a, Yuya Yamada^b, Shifeng Zhou^c, Yasuhiko Shimotsuma^b, Kiyotaka Miura^b, Jianrong Qiu^{a,c,*}

^a State Key Laboratory of Silicon Materials, Department of Materials Science and Engineering, Zhejiang University, Hangzhou, Zhejiang, 310027, P. R. China.

^b Department of Material Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, 615-8510, Japan.

^c State Key Laboratory of Luminescence Materials and Devices and the Institute of Optical Communication Materials, South China University of Technology, Guangzhou, Guangdong, 510640, P. R. China.

Abstract The carbon nanodots (CNDs) were synthesized by a simple method of femtosecond laser ablation of bagasse in ethanol. Strong optical limiting effects of as-prepared CNDs to 800 nm femtosecond laser pulses were observed with the threshold of 74 mJ/cm². The strong two photon absorption of CNDs is responsible for the optical limiting response. The nonlinear coefficient was determined by the open-aperture Z-scan technique.

Luminescent carbon nanodots (CNDs) with the size in the range 1-10 nm stand for a new class of carbon-based nanomaterials and have attracted tremendous interest due to their unique properties [1]. CNDs with tunable band gap, stable photoluminescence (PL), easy functionality, excellent biocompatibility, and lower cytotoxicity offer excellent potential candidates for various applications [1,2]. Unfortunately, though extensive efforts have been devoted to the synthesis and optical property investigations of CNDs, the research of the nonlinear optical (NLO) response to ultra-fast

* Corresponding authors: Fax: +8657188925079, E-mail address: qjr@zju.edu.cn (J. R. Qiu).

Download English Version:

<https://daneshyari.com/en/article/7854680>

Download Persian Version:

<https://daneshyari.com/article/7854680>

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