

Accepted Manuscript

Title: Room temperature gas sensing properties of ultrathin carbon nanotube films by surfactant-free dip coating

Author: Carlo Piloto Francesca Mirri E. Amram Bengio
Marco Notarianni Bharati Gupta Mahnaz Shafiei Matteo
Pasquali Nunzio Motta



PII: S0925-4005(15)30775-9
DOI: <http://dx.doi.org/doi:10.1016/j.snb.2015.12.051>
Reference: SNB 19452

To appear in: *Sensors and Actuators B*

Received date: 18-8-2015
Revised date: 1-12-2015
Accepted date: 13-12-2015

Please cite this article as: C. Piloto, F. Mirri, E.A. Bengio, M. Notarianni, B. Gupta, M. Shafiei, M. Pasquali, N. Motta, Room temperature gas sensing properties of ultrathin carbon nanotube films by surfactant-free dip coating, *Sensors and Actuators B: Chemical* (2015), <http://dx.doi.org/10.1016/j.snb.2015.12.051>

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.

Room temperature gas sensing properties of ultrathin carbon nanotube films by surfactant-free dip coating

Carlo Piloto¹, Francesca Mirri², E. Amram Bengio², Marco Notarianni^{1,3}, Bharati Gupta¹, Mahnaz Shafiei¹, Matteo Pasquali² and Nunzio Motta^{1*}

¹Institute for Future Environments and

School of Chemistry, Physics, and Mechanical Engineering,

Queensland University of Technology, Brisbane, QLD 4001, Australia

²Rice University, Chemical and Biomolecular Engineering, Houston, TX 77005,
United States

³Plasma-Therm LLC, 10050 16th St North, St. Petersburg, FL 33716 United States

*Corresponding author: n.motta@qut.edu.au

Abstract

Large-scale production of reliable carbon nanotubes (CNTs) based gas sensors involves the development of scalable and reliable processes for the fabrication of films with controlled morphology. Here, we report for the first time on highly scalable, ultrathin CNT films, to be employed as conductometric sensors for NO₂ and NH₃ detection at room temperature. The sensing films are produced by dip coating using dissolved CNTs in chlorosulfonic acid as a working solution. This surfactant-free approach does not require any post-treatment for the removal of dispersants or any CNTs functionalization, thus promising high quality CNTs for better sensitivity

Download English Version:

<https://daneshyari.com/en/article/7144366>

Download Persian Version:

<https://daneshyari.com/article/7144366>

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