Accepted Manuscript

Title: Structural and electrical characterization of diamond films deposited in nitrogen/oxygen containing gas mixture by linear antenna microwave CVD process

Author: Marian Vojs Marian Varga Oleg Babchenko Tibor Ižák Miroslav Mikolášek Marián Marton Alexander Kromka



PII:	S0169-4332(14)01217-3
DOI:	http://dx.doi.org/doi:10.1016/j.apsusc.2014.05.176
Reference:	APSUSC 27995
To appear in:	APSUSC
Received date:	30-1-2014
Revised date:	15-5-2014
Accepted date:	25-5-2014

Please cite this article as: M. Vojs, M. Varga, O. Babchenko, T. Ižák, M. Mikolášek, M. Marton, A. Kromka, Structural and electrical characterization of diamond films deposited in nitrogen/oxygen containing gas mixture by linear antenna microwave CVD process, *Applied Surface Science* (2014), http://dx.doi.org/10.1016/j.apsusc.2014.05.176

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.

ACCEPTED MANUSCRIPT

Structural and electrical characterization of diamond films deposited in nitrogen/oxygen containing gas mixture by linear antenna microwave CVD process

Marian Vojs^{1, 2}, Marian Varga¹, Oleg Babchenko¹, Tibor Ižák¹, Miroslav Mikolášek², Marián Marton², Alexander Kromka¹

¹Institute of Physics, Academy of Sciences of the Czech Republic, Cukrovarnicka 10, CZ

16253 Praha 6, Czech Republic

²Slovak University of Technology, Faculty of Electrical Engineering and Information

Technology, Institute of Electronics and Photonics, Ilkovičova 3, 812 19 Bratislava, SR

Corresponding author email: marian.vojs@stuba.sk

Tel: +421-2-602 91 365

Fax: +421-2-654 23 480

Abstract

In this paper we demonstrate the large area deposition of n-type conductive nanocrystalline diamond thin films on p-type Si substrates. We show that adding N₂ into $CH_4/H_2/CO_2$ gas mixture allows a wide controlling of diamond film morphology from micro- to nanocrystalline, blockstone-like or porous-like morphology potentially suitable for various applications. Moreover, after adding we found that the diamond films revealed a deep level with activation energy of 0.44 ± 0.03 eV.

Keywords: pulsed linear antenna microwave chemical vapor deposition, nanocrystalline diamond, Raman Spectroscopy, Admittance Spectroscopy, n-type conductive NCD

1. Introduction

Download English Version:

https://daneshyari.com/en/article/5349881

Download Persian Version:

https://daneshyari.com/article/5349881

Daneshyari.com