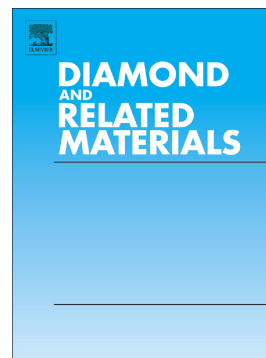


## Accepted Manuscript

Extensive growth of MWCNTs on copper substrates using various diffusion barrier layers

Muhammad Imran Shahzad, Krishna Rajan, Nadia Shahzad, Muhammad Arshad, Denis Perrone, Mauro Giorcelli, Alberto Tagliaferro



PII: S0925-9635(17)30488-0  
DOI: <https://doi.org/10.1016/j.diamond.2018.01.005>  
Reference: DIAMAT 7003  
To appear in: *Diamond & Related Materials*  
Received date: 6 September 2017  
Revised date: 8 December 2017  
Accepted date: 7 January 2018

Please cite this article as: Muhammad Imran Shahzad, Krishna Rajan, Nadia Shahzad, Muhammad Arshad, Denis Perrone, Mauro Giorcelli, Alberto Tagliaferro , Extensive growth of MWCNTs on copper substrates using various diffusion barrier layers. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Diamat(2017), <https://doi.org/10.1016/j.diamond.2018.01.005>

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 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.

# Extensive Growth of MWCNTs on Copper Substrates Using Various Diffusion Barrier Layers

Muhammad Imran Shahzad<sup>\*1,2</sup>, Krishna Rajan<sup>2,3</sup>, Nadia Shahzad<sup>2,4</sup>, Muhammad Arshad<sup>1</sup>,  
Denis Perrone<sup>3</sup>, Mauro Giorcelli<sup>2</sup>, and Alberto Tagliaferro<sup>2</sup>

<sup>1</sup>Nano Science & Technology Department (NS&TD), National Centre for Physics (NCP), QAU  
Campus, 44000-Islamabad, Pakistan.

<sup>2</sup>Department of Applied Science & Technology (DISAT), Politecnico di Torino, 10129-Torino, Italy.

<sup>3</sup>Center for Sustainable Future Technologies, Italian Institute of Technology (IIT), 10129-Torino,  
Italy

<sup>4</sup>US Pakistan Centre for Advanced Studies in Energy (USPCAS-E), National University of Sciences  
& Technology (NUST), 44000-Islamabad, Pakistan.

## **\*Corresponding Author:**

Muhammad Imran Shahzad, PhD

Email: imran-shahzad@live.com, Phone: +92 313 6961143, Fax: +92 051 2077389,

Nano Sciences & Technology Department (NS & TD), National Centre for Physics (NCP),

Quaid-e-Azam University Campus, Shahdara Valley Road, 44000-Islamabad, Pakistan.

Download English Version:

<https://daneshyari.com/en/article/7111014>

Download Persian Version:

<https://daneshyari.com/article/7111014>

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