



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

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#### 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 N<sub>2</sub> into CH<sub>4</sub>/H<sub>2</sub>/CO<sub>2</sub> 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

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