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**Effect of nitrogen plasma afterglow on the surface charge effect resulted during
XPS surface analysis of amorphous carbon nitride thin films**

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Abstract

The aim of this paper is to investigate the relationship between the micro structure and the surface charge effect resulted during XPS surface analysis of amorphous carbon nitride thin films prepared by laser ablation method.

The study results show that the charge effect coefficient (**E**) is not just a correction factor. We found that the changes in this coefficient value due to incorporation of nitrogen atoms into the carbon network are related to the spatial configurations of the sp^2 bonded carbon atoms, order degree and sp^2 clusters size. In addition, results show that the curve **E** vs. $C(sp^3)-N$ is a characteristic curve of the micro structure. This means that using this curve makes it easy to sorting the samples according to the micro structure (hexagonal rings or chains).

Key Words: Laser Deposition; Carbon nitride; Charge effect; X-ray photo- electron spectroscopy.

1. Introduction

Amorphous carbon nitride phase $a-CN_x$ is the non-crystalline form of carbon nitride characterized by the fact that a portion of its carbon atoms have the sp^2 -hybrid pattern known as graphite-like phase, while the other portion have the sp^3 -hybrid pattern known

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