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PII: S0257-8972(13)00909-2
DOI: doi: 10.1016/j.surfcoat.2013.09.048
Reference: SCT 18897

To appear in: *Surface & Coatings Technology*

Received date: 16 October 2012
Accepted date: 24 September 2013

Please cite this article as: M. Shakerzadeh, Y. Ma, M. Tadayon, R. Ji, H.S. Tan, B.K. Tay, Thickness Dependency of the Structure and Laser Irradiation stability of Filtered Cathodic Vacuum Arc Grown Carbon Films for Heat Assisted Magnetic Recording Overcoat, *Surface & Coatings Technology* (2013), doi: 10.1016/j.surfcoat.2013.09.048

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Abstract:

The thickness dependency of the bonding structure and laser irradiation stability of filtered cathodic vacuum arc grown carbon films have been studied. When the thickness is lower than 10 nm, the bonding structure of the films strongly depends on the film thickness. Decreasing the film thickness increases the sp^2 content of the film which can be explained by the subplantation theory. The laser irradiation stability of the films is also related to the film thickness as well as the irradiation frequency and power. Higher irradiation power and frequencies result in more severe graphitization due to higher temperature and accumulative heating respectively. Thicker films are also shown to be more stable upon laser irradiation.

Keywords:

Amorphous Carbon, Overcoat, Bonding Structure, Laser Irradiation, Raman Spectroscopy

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