

Accepted Manuscript

Influence of frequency and C₂H₂ flow on growth properties of diamond-like carbon coatings with AlCrSi co-doping deposited using a reactive high power impulse magnetron sputtering

Wei Dai, Se-Hun Kwon, Qimin Wang, Jingmao Liu



PII: S0040-6090(17)30912-4
DOI: <https://doi.org/10.1016/j.tsf.2017.12.016>
Reference: TSF 36390
To appear in: *Thin Solid Films*
Received date: 29 August 2017
Revised date: 29 October 2017
Accepted date: 19 December 2017

Please cite this article as: Wei Dai, Se-Hun Kwon, Qimin Wang, Jingmao Liu , Influence of frequency and C₂H₂ flow on growth properties of diamond-like carbon coatings with AlCrSi co-doping deposited using a reactive high power impulse magnetron sputtering. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Tsf(2017), <https://doi.org/10.1016/j.tsf.2017.12.016>

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.

Influence of frequency and C₂H₂ flow on growth properties of diamond-like carbon coatings with AlCrSi co-doping deposited using a reactive high power impulse magnetron sputtering

Wei Dai^{a, b, *}, Se-Hun Kwon^{c, d}, Qimin Wang^{a, *}, Jingmao Liu^a

^aSchool of Electromechanical Engineering, Guangdong University of Technology,
Guangzhou 510006, PR China

^bInstitute of Materials Technology, Pusan National University, Busan 46241, Korea

^cSchool of Materials Science and Engineering, Pusan National University, Busan 46241, Korea

^dGlobal Frontier R&D Center for Hybrid Interface Materials, Pusan National University,
Busan 46241, Korea

* To whom correspondence should be addressed: popdw@126.com, Tel/Fax: +86-13022097190;

qmwang@gdut.edu.cn, Tel/Fax: +86-13802729261.

Abstract: In this paper, diamond-like carbon (DLC) coatings with AlCrSi co-doping were deposited by a reactive high power impulse magnetron sputtering (HiPIMS) with utilizing a gas mixture of Ar and C₂H₂ as the precursor. The doping contents of Al, Cr and Si in the coatings were controlled by adjusting the C₂H₂ flow fraction in the gas mixture. The influences of the HiPIMS frequency and C₂H₂ flow on the microstructure, composition, mechanical properties and tribological behaviors of the AlCrSi-DLC coatings were researched carefully by using scanning electron microscope, X-ray photoelectron spectroscopy, nano-indentation and ball-on-plate tribometer, respectively. The results show that the doping AlCrSi contents increased as the C₂H₂ flow fraction decreased, along with the obvious structural transformation of the coatings from amorphous feature to carbide composites. The high C₂H₂

Download English Version:

<https://daneshyari.com/en/article/8033028>

Download Persian Version:

<https://daneshyari.com/article/8033028>

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