

عنوان مقاله:

Optical properties of diamond-like carbon nano-film deposited by RF- PECVD

محل انتشار:

کنفرانس بین المللی مهندسی معدن، فلزات و مواد (سال: 1394)

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خلاصه مقاله:

Diamond-like carbon (DLC) nano-films were deposited on glass substrates by RadioFrequency Plasma Enhanced Chemical Vapor Deposition method (RF-PECVD) using methane (CH_4) and hydrogen (H_2) gases. X-ray diffraction (XRD) and Raman spectroscopy were used to characterize the structure of the DLC films. The optical properties of the DLC films were investigated by UV-VIS-NIR spectrophotometer and ellipsometer. In amorphous carbons ID/IG is a measure of the size of the sp^2 phase organized in rings. If ID/IG is negligible, then the sp^2 phase is mainly organized in chains, or, even if rings are present, the bonds are not fully delocalized on the rings. XRD showed that the DLC film included amorphous structure and the Raman spectroscopy showed that the ratio of the D and G peaks (ID/IG) is negligible (0.87). This was confirmed by XRD results. The optical results indicated that refractive index and band gap of the DLC thin film were 1.9 and 1.45 eV, respectively.

کلمات کلیدی:

DLC, PECVD, Nano-film, Optical properties

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