Influence of Substrate Type on Structure of C-Pd Thin Films

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Summary: In this paper we present studies of an influence of a substrate type on the structure of C-Pd thin films obtained by two stages method. In the first stage physical vapor deposition process (PVD) was utilized to produce films composed of Pd nanocrystallites embedded in carbonaceous matrix. Fullerenes C_{60} and palladium acetate Pd $(CH_3COOH)_2$ were used as precursors of the films. In the second stage films from PVD were modified in chemical vapor deposition method applying temperature and vapor of xylene. We used Si wafers (type n and/or p), Si wafers covered by diamond like carbon (DLC) films, Al_2O_3 plates, ceramics membranes with different sizes of pores (~80 nm and 300 nm) as substrates in PVD process. The films obtained on various types of substrates were characterized by SEM, AFM, TEM. We observe that the surface of substrates (smooth, rough, membrane) have an influence on a type of C-Pd structures formed on these substrates.

Keywords: carbonaceous-palladium films, PVD/CVD method, DLC films,

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