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Nanocomposites and Nanostructures based on Plasma PolymersHynek Biederman¹¹Charles University in Prague, MFF, Praha, Czech Republic

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Nanocomposite metal/plasma polymer films have been deposited since seventies of the last century using sputtering or thermal evaporation of a metal simultaneously with a plasma polymerization process. The main attention was paid to fluorocarbon and hydrocarbon plasma polymers as matrices for the incorporation of metal such as Au and Ag. Main deposition techniques are reviewed and basic optical, electrical properties, composition and structure of the nanocomposite films are summarized. In addition RF magnetron co-sputtering of a polymer such as polytetrafluoroethylene, polyethylene or polypropylene and SiO₂ or TiO₂ is also mentioned. Nanostructuring of a fluorocarbon plasma polymer by changing deposition parameters including deposition system geometry is revealed and the application in terms of superhydrophobic coating is mentioned. Preparation of nanostructured films by glancing angle deposition (GLAD) technique is discussed and recent results are presented. Cluster sources, namely the gas aggregation cluster source based on a planar magnetron in a compact and simple form is described and its performance for preparation of nanocomposite and nanostructured metal/plasma polymer films is discussed.

KeywordsPlasma polymer
thin film
sputtering