Seminar

Institute for Plasma Research

Title : Wetting properties of polytetrafluoroethylene (PTFE/Teflon) thin films deposited on glass substrates through RF Magnetron Sputtering

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Date : 23rd January 2018 (Tuesday)

Time : 10.45 AM

Venue : Seminar Hall, IPR

Abstract :

Polytetrafluoroethylene (PTFE/Teflon) is one of the promising go-to material for applications demanding superhydrophobicity (water contact angle > 150o). This is due to the nature of the C-F bond which makes it chemically inert, highly insoluble and thermally stable over a wide range of temperature. A number of chemical and physical methods have been utilized by research groups and industrial houses worldwide to make functional coatings using PTFE for various applications. Along with PTFE, the surface roughness developed on account of the process undertaken plays a key role to enhance the hydrophobic capacity of the coating. To date, only few research groups have successfully obtained superhydrophobic coatings of PTFE using RF Magnetron Sputtering. The said technique presents itself as a fast and simple process when compared to different chemical process such as chemical vapour deposition, chemical etching or highly sophisticated methods like soft lithography. In the foregoing talk, I shall first discuss about the concept of superhydrophobicity, role of surface roughness and various applications where these coatings are beneficial. Following this brief introduction, I shall put forth fresh results obtained from our lab which show the effect of various process parameters such as pressure, power, the time of deposition, target to substrate distance and the annealing conditions on the hydrophobic nature of the developed coating.