

Low energy ion beam for nanostructuring of Cu/PTFE surface for water harvesting

Interaction of low energy ions often leads to self-organized regular nanostructure on the surfaces. However, their arrangements, surface roughness depends largely on material properties, ion energy, and ion angle of interaction with the surface and ion dose. In the recent time these artificially produced nanostructures have potentially been utilised for tailoring surface wettability, magnetism and optical properties of the bulk material. In the current work, we shall show how low energy ion can remarkably change surface wettability of PTFE polymer surface. Just in 10s of second exposure time, it becomes superhydrophobic due to the formation of freely standing Nanostructures [1, 2]. Using the fast CCD camera we have investigated the bouncing dynamics of water droplets and effect of surface properties on the bouncing dynamics. Later the PTFE surface is tested for the self-cleaning applications [2]. PTFE films were compared with bulk PTFE surface after ion irradiation. It was found that PTFE films make nanoripple like structures and shows the anisotropic wettability behaviour [1-2]. Later these patterns are utilized for water harvesting application.

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