

Nano Effects of Nitrogen Ion Implantation on TiN Hard Coatings Deposited by Physical Vapour Deposition and Ion Beam Assisted Deposition

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Abstract : In this paper, we present the results of a study of TiN thin films which are deposited by a Physical Vapour Deposition (PVD) and Ion Beam Assisted Deposition (IBAD). In the present investigation the subsequent ion implantation was provided with N^{5+} ions. The ion implantation was applied to enhance the mechanical properties of surface. The thin film deposition process exerts a number of effects such as crystallographic orientation, morphology, topography, densification of the films. A variety of analytic techniques were used for characterization, such as scratch test, calo test, Scanning electron microscopy (SEM), Atomic Force Microscope (AFM), X-ray diffraction (XRD) and Energy Dispersive X-ray analysis (EDAX).

Keywords : coating, super hard, ion implantation, nanohardness

Conference Title : ICNMM 2016 : International Conference on Nanostructured Materials and Nanotechnology

Conference Location : Miami, United States

Conference Dates : March 24-25, 2016