

CHROMIUM AND ALUMINIUM NITRIDE THIN FILMS DEPOSITED BY HiPIMS

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ABSTRACT. CrN is an excellent wear and corrosion resistant material. There is much interest in the research community to develop CrN thin films for coating tools for metal and wood machining operations [1,2]. Chromium nitride was widely studied and developed by classical magnetron sputtering [3] and more recently for further improvements by HiPIMS [4, 5].

In this work, we varied different process parameters but we choose to focus on the short durations, typically between 10 and 50 μ s and also the peak current. Annealing tests were carried out up to 1200K in order to study the thermal stability of Cr and CrN films under different atmospheres. Finally, another material Aluminum nitride had been deposited by DC and HiPIMS magnetron sputtering.

According to the results obtained for these materials, a comparison between DC and HiPIMS will be made and the advantages and drawbacks of both techniques will be discussed.