

## INFLUENCE OF REPETITIVELY-PULSED PLASMA IMMERSION LOW ENERGY ION IMPLANTATION TO TIN COATING PROPERTIES FORMATION

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Application of high frequency short pulse plasma immersion low energy ion implantation for titanium nitride coating deposition using vacuum arc metal plasma and hot-cathode gas-discharge plasma on R6M5 alloy was investigated.

Using of negative repetitively pulsed bias with amplitude of 2 kV, pulse duration 5  $\mu$ s and pulse frequency 100 kHz leads to 6.2 fold decrease of vacuum arc macroparticle surface density for macroparticles with diameter less than 0.5  $\mu$ m. Ion sputtering reduces the coating deposition rate approximately by 30 %.

It was found that with bias amplitude range from 1.1 to 1.4 kV and pulse duration 5  $\mu$ s yields to formation of coatings with average hardness 26 GPa and local values up to 40 GPa. This paper presents the results of experimental studies of adhesion, tribological properties and surface morphology of deposited TiN coatings.

***Keywords:*** titanium nitride coating, vacuum arc, negative high-frequency short-pulsed bias.