
TiN ions implantation on SS316L targets by a 4kJ plasma focus facility

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Abstract

The present work reports the results of TiN-ions implantation on the SS316L samples by a 4 kJ plasma focus device (PF). The thickness of coated layer on the surface of treated samples obtained by RBS analysis is about 15-20 μm . The XRD results reveal the formation of nanocrystalline titanium nitride coating on the surface of substrate. The results of SEM indicate changes in surface morphology before and after potentiostatic test. The ICR results showed that the conductivity of samples increased after coating because of high electrical conductivity of TiN layer. The ICR increased after the potentiostatic test because of change in passive layer composition. The electrochemical results show that the corrosion resistances have been improved significantly when TiN films are deposited on the SS316L substrate. The corrosion potential (E_{corr}) of SS316L implanted with Ti-N ions increases compared with that of the bare SS316L and corrosion currents decrease in TiN implanted samples.

Keywords: plasma focus device, TiN ions deposition, SS316L, SEM, XRD, ICR

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