

Corrosion study on TiCrN coatings deposited on 316L by RF magnetron sputtering

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Abstract : Titanium-Chromium-nitride (TiCrN) coatings are widely used for cutting tools because of high hardness and superior resistance to a corrosion. Titanium-Chromium-nitride coatings on 316L stainless steel can be used to extend their life cycle. TiCrN coating was prepared by RF magnetron sputtering, and their corrosion resistance was investigated. TiCrN coatings were successfully prepared by reactive RF magnetron sputtering method, on 316L stainless steel substrate. potentiodynamic polarisation test was conducted in an aerated (3.5% weight) NaCl solution. During the test, the TiCrN coatings show the lowest corrosion current density and the highest polarization resistance. Consequently, it was found that the 316L stainless steel coated with the TiCrN coating had an improvement in corrosion resistance in 3.5% NaCl solution at room temperature.

Keywords : Corrosion behavior, RF magnetron sputtering, 316L stainless steel, TiCrN, coatings