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Friction and wear behaviors of TiCN coating treated by R.F magnetron sputtering

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Abstract : Titanium carbonitride (TiCN) coatings combine high hardness and wear resistance, low friction, good corrosion resistance and high adhesion strength with substrate. These unique properties make TiCN coatings a good solution for the applications requiring high abrasion and wear resistance. In this study, we present the effect of the negative bias applied to the substrate on the microstructure, friction and wear behaviors of the TiCN coating. The elaboration of our films has been carried out by reactive magnetron sputtering (R.F) at 13,56MHz, using a gas mixture of methane, nitrogen and argon. The film deposition has been done on the XC38 steel substrates. The deposited layers were characterized by XRD analysis, potentiodynamic polarization and tribometer.

Keywords : Thin films, Magnetron, sputtering, Hard coating, TiCN, corrosion, friction and wear.