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**Nanocomposite Nitrid Thin films for hard coatings : Applications in wear and corrosion resistance**CHALA ABDELOUAHAD<sup>1</sup>, CHAHINEZ SIAD<sup>1</sup>, NADJETTE BELHAMRA<sup>1</sup><sup>1</sup>University of Biskra, Biskra, Algeria

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New simple and duplex coatings were elaborated by triode sputtering and ionic nitriding, imposed to low alloy steel and characterized by the mean of various experimental techniques (EDS, XPS, XRD, SEM, TEM, FTIR, ...). Their ability to protect substrate against corrosion and wear has been evaluated. These deposits are either CrN or ZrN monolayer, or nanocomposite deposits formed by the dispersion of BN into ZrN matrix.

The experiments show the good physical, chemical and mechanical properties of the films. The tribological analysis permitted us to define the optimal conditions of triode sputtering and the ionic nitriding ones used in the duplex treatments. A great amelioration in the tribological properties was observed and was explained by the good stress repartition into the layers.

Simples and duplex treatments was imposed to low alloy steel cutting tools. Their application in peeling of wood and corrosion shows their efficiency.

**Keywords**

nanocomposite

tribology

peeling

corrosion

thin films