

Abstract Submitted  
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**Structural properties of nanometric and micrometric TiCN/TiNbCN superlattices**<sup>1</sup> JULIO CAICEDO, Thin Films Group - Universidad del Valle Colombia, LUIS YATE, Universitat de Barcelona. Martí i Franquès 1, E-08028 Barcelona, Catalunya, Spain, JUAN RAMÍREZ, MARIA ELENA GÓMEZ, Thin Films Group - Universidad del Valle Colombia, ARTURO LOUSA, JOAN ESTEVE, Universitat de Barcelona. Martí i Franquès 1, E-08028 Barcelona, Catalunya, Spain, PEDRO PRIETO, Excellence Center for Novel Materials, Colombia — TiCN and TiNbCN systems have broadly been used as protective hard and anticorrosive coatings. [TiCN/TiNbCN]<sub>n</sub> multilayers were deposited on silicon substrates by two-target-r.f. magnetron sputtering with alternatively changing the sputtering plasma composition between pure Ti+C and Nb elements under a reactive mixture Ar/N<sub>2</sub>. TiCN/TiNbCN bilayer period varied from nanometric range (15 nm) to higher micrometric range (1.5 μm) values. Structural, morphological and stoichiometric of the coatings were analyzed by high-angle- and low-angle X-ray diffraction, X-ray photoelectron spectroscopy (XPS), secondary ion mass spectrometry (SIMS) and cross-sectional transmission electron microscopy (TEM). We determined multilayer period,  $\Lambda$ , and individual layer thicknesses. We found a cube-on-cube epitaxial growth structure and with epitaxial relationship between layers inside each columnar crystallite given by  $(111)[110]_{TiCN} // (111)[110]_{TiNbCN}$ .

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