

Abstract Submitted
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Structural properties of nanometric HfN/VN superlattices¹ P. PRIETO, Excellence Center for Novel Materials, M. VILLAREAL, C. ESCOBAR, J.C. CAICEDO, G. CABRERA, Thin Film Group, Universidad del Valle, L. YATE, J. ESTEVE, A. LOUSA, Department de Fisica Aplicada i optica, Universitat de Barcelona — HfN and VN systems have broadly been used as protective hard and anticorrosive coatings. [HfN/VN]_n multilayered were deposited on silicon substrates by two target-r.f. magnetron sputtering with alternatively changing the sputtering plasma composition between pure Hf and V elements under a reactive mixture Ar/N₂. HfN/VN bilayer period varied from nanometric range (15 nm) to higher nanometric range (600 nm) values. Structural, morphological and stoichiometric of the coatings were analyzed by high angle and low-angle X-ray diffraction, X-ray photo electron spectroscopy (XPS), secondary ion mass spectrometry (SIMS), atomic force microscopy (AFM) and cross sectional transmission electron microscopy (TEM). We determined multilayer period, Λ , and individual layer thicknesses. We found a cube-on-cube epitaxial growth structure with an epitaxial relationship between layers inside each columnar crystallite given by $(111)[100]_{HfN} // (200)[100]_{VN}$.

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