【P-07】

Structures and Properties of hard Multilayered TiN/BON Thin Films Prepared by PAMOCVD Method

D.-C. Lim, G. C. Chen. S.-B. Lee, and J.-H. Boo
Department of Chemistry, Sungkyunkwan University, Suwon 440-746, Korea

Hard multilayered TiN/BON thin films have been deposited on steel in the deposition temperature range of RT~500℃ by low frequency R.F. derived plasma assisted MOCVD. Trimethylborate(TMB) and Tetrakisdimethylamidotitanium(TDMAT) precursors were used to grow multilayered TiN/BON thin films. We used Ar gas for a plasma source and N_2 gas as a reactive and additional nitrogen source. The as-grown films were analyzed with XRD, XPS, RBS, SEM, TEM, I-V/C-V, 4-point probe characteristics, and Knoop microhardness tester. We have mainly investigated the relationship between hardness and structures of layer and layer by the effects of deposition time, substrate temperature and N_2 flow rate. We found that the microhardness were strongly depended on nitrogen flux, film thickness and structures of layer and layer. We obtained the TiN/BON bilayer with 30 GPa. The microhardness was increased with increasing the nitrogen contents and film thickness in the film layers.