



S1-1.9

Relaxation Parameters of Cu/substrate Type Coated Systems under Nanoindentation

D. Grabco¹, C. Pyrtsac^{1,2} and O. Shikimaka¹

¹*Institute of Applied Physics, MD-2028 Chisinau, Republic of Moldova*

²*Technical University of Moldova, MD-2004, Chisinau, Republic of Moldova*

In this work, we studied the relaxation parameters, h_{e-p} and h_{res} , of three composite structures Cu/LiF, Cu/MgO, and Cu/Si, which have different types of a chemical bond between the substrates (ionic (LiF), ionic-covalent (MgO), and covalent (Si)) and differ in hardness ($H_{Cu} = 0.6$ GPa, H_{LiF} , H_{MgO} and H_{Si} are 1.2, 7.5 and 8.2 GPa, respectively). For each type of substrates, coated systems (CSs) were fabricated with a following Cu film thickness: $t_1 = 85$; $t_2 = 470$ and $t_3 = 1000$ nm. The behavior of relaxation parameters was examined over a wide range of loads, $P=2-900$ mN, during nanoindentation. The elastic-plastic parameters were shown to depend on the CS type, as well as on the film thickness and the magnitude of the applied load.