



2015, pag. 73 – 83

Nanoindentation Measurements of Cu Films with Different Thicknesses Deposited on a Single Crystalline Si Substrate

Constantin Pyrtsac

https://doi.org/10.1007/978-94-017-9697-2_8

Abstract

Thin films of various types are key components of modern microelectronics. By use of the dynamic nanoindentation method, Cu/Si structures with different thicknesses of the Cu film ($t = 85, 470$ and $1,000$ nm) were investigated. It is shown that the film thickness and the wide range of maximum loads applied are some of the main factors influencing the deformation peculiarities and mechanical properties (Young's modulus E and hardness H) of the film/substrate structures.

References

1. Read DT, Volinsky AA (2007) Micro- and Opto-electronic materials and structures: physics, mechanics, design, reliability, packaging, vol 1, A135
2. Oliver WC, Pharr GM (1992) J Mater Res 7:1564
3. Shugurov AR, Panin AV, Oskomov KV (2008) PSS 50:1050
4. Shikimaka O et al (2010) 5th International conference on materials science and condensed matter physics. Book of abstracts, Chisinau, 13–17 Sept 2010, p 127