

## LASER SPUTTERING OF TiB<sub>2</sub> THIN FILMS DEPOSITED ON Al BASED SUBSTRATE

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Any type of incident beam may be used to study the interaction phenomena with solids. The most commonly used are charged and uncharged particle beams. Laser sputtering occurs due to the photon beam interaction with solid and involves different processes that can be responsible for material removal: thermal sputtering, hydrodynamical sputtering, exfoliation and electronic sputtering /1/. These processes depend on beam intensity, wave length of radiation, pulse duration as well as on the target characteristics.

In this work some results of laser sputtering of titandiborade (TiB<sub>2</sub>) thin films are presented. The layer was deposited, on aluminum based substrate, by e-beam evaporation. The surface bombardment was performed with a single-pulse focused Nd:YAG laser beams. The collector set-up allows the bombardment with a zero angle of incidence. SEM analyses of the morphological features have shown that the energy deposition over the spot area was non-uniform.

The investigation of the morphological changes induced during the interaction of the laser beam with thin film have shown a strong dependence on the laser beam power density and the parameters which define the thin film properties /2/. The damage threshold is a function of film thickness and increases with increase in the thickness. For the single laser pulses, exfoliation was main effect which defines the laser sputtering. Laser bombardment with 10-100 pulses has shown that melting and vaporization were dominant, hence thermal sputtering and hydrodynamical sputtering were the processes that contribute to material removal /3/.

The sputtering yield is a function of laser beam power density. It increases with increase in the laser beam power density, reaches a maximum value and then decreases as a result of plasma screening of the target.

/1/. J. Rothenberg and R. Kely, Nuc. Instr. Meth. B 1 (1984) 291

/2/. M. Nenadović, T. P. Mihać and Z. Lj. Rakočević, Thin Solid Films 218 (1992) 247

/3/. B. Gaković T. Nenadović, . Rakočević, N. Bibić S. Jovičević, Zbornik matice srpske, 85 (1994) 53