

Investigation of degradation of a multilayer coating Al-MgF₂ after exposure of vacuum ultraviolet radiation

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In this work the source of VU radiation is erosion-type magnetoplasma compressor [1]. The studies were carried out for 3 samples with a coating (dimensions 40 × 15 mm) of Al (100 nm)–MgF₂ (30 nm) deposited on sital, which were installed at a distance of 45 mm from the axis of the magnetoplasma compressor (similarly [2]). The discharge was carried out in 3 various gases—neon, argon, air to control the spectral composition of the radiation [3]. Changes of the reflectance of the samples (Cary 7000 Universal Measurement Spectrophotometer), roughness and 2D and 3D profiles of the samples (probe nanolaboratory INTEGRA) were studied. The thickness and depth of cracks and the size of spots were measured using digital microscope and profilometer.

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[1] Kozlov N P and Protasov Y S 1978 *Phys. Lett. A.* **67** 191–193

[2] Pavlov A V S T S S A S T V D 2022 *Polymers* **14** 3940

[3] Kamrukov A S K N P P Y S S S G 1989 *High Temp.* **27** 141–155