

Nanostructured surfaces

Nanostructuring of the Metal Surfaces by Femtosecond Laser Pulses

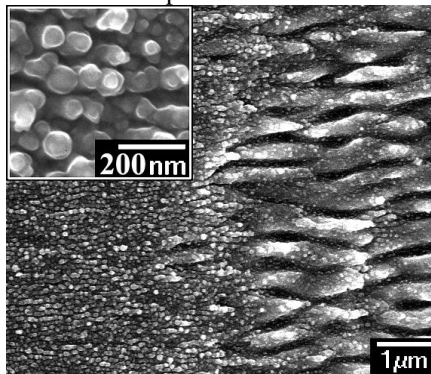
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One of the bright consequences of the power femtosecond laser pulse irradiation of the metal surface is micro-, nanostructuring of the surface, see. e.g. [1, 2].

The sample surfaces were irradiated with Ti:sapphire amplification femtosecond laser system on the wavelength 820 nm, time duration 140 fs with the repetition rate 1 KHz, fluence at the sample surface was $1,4 \cdot 10^{12}$ W/cm². The targets were Mo, W and Ag foils of 50 μ m thickness. A detailed study of the morphology of the treated surface was performed with a scanning electron



microscope JEOL JXA-8200.

Two types of structures were discovered: quasiperiodic grids oriented perpendicular to the electric field vector with the distance between grooves close to λ_{exit} , and smaller structures of typical size 20÷100 nm (Fig.1). The same nanostructures were discovered in quasiperiodic fringes and between them.

The origin of the low scale relief is open now and could be related to the specific

Fig. 1. SEM image of Mo surface

destruction mechanism of the target material.

1. *Volkov S. N., Kaplan A. E., Miyazaki K.* Evanescent field at nanocorrugated dielectric surface //Appl. Phys. Lett.-2009.- 94, 041104.

2. *Buividas R., Rosa L., Sliupas R., Kudrius T., Slekys G., Datsyuk V., Juodkasis S.* **Mechanism of fine ripple formation on surfaces of (semi)transparent materials via a half-wavelength cavity feedback** // Nanotechnology.-2011.- 22, 055304.