Bimodal size distribution function in nanoparticles ensemble, formed under the laser irradiation of the surface of solid

Diploma thesis abstract

Defect-Deformational (DD) model of formation of nanoparticle ensemble on the surface of solids under multipulse laser irradiation is developed. The second (short wave) maximum in dependence of the growth rate of surface DD grating on its wave number is obtained by going out beyond the usual Kirchoff approximation in calculation of the surface strain arising under the bending of the surface defect-enriched layer ("the film"). The theory of bimodal nanoparticles size distribution is developed that expresses it via the bimodal growth rate of the DD gratings with the allowance for the substrate reaction to the bending of the surface layer. The obtained theoretical results correspond to experimental data on the bimodal size distribution function in nanoparticles ensemble formed under the multipulse laser irradiation (ablation) of the surface of metals.

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