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Nanostructuring of thin gold films by femtosecond laser-induced melt dynamics ARSENIY KUZNETSOV, JURGEN KOCH, BORIS CHICHKOV, Laser Zentrum Hannover e.V. — Femtosecond laser irradiation of thin gold films with fluences close to the ablation threshold induces formation of various nanostructures on the film surface [1-3]. These structures are formed due to laser-induced melting of gold and redistribution of the melted material from the edges into the center of the irradiated region. Shape of the created structures can be controlled by varying the laser intensity distribution on the gold film surface. It is shown that the sizes of the produced structures can be below than 100 nm. In this paper, a study of laser-induced molten material dynamics is presented. Analysis of the structural shapes produced with different laser intensity distributions and dynamical reflection measurements allow clarifying mechanisms of the structure formation. Possible applications of this nanostructuring method are discussed.

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