Studies of aluminum oxide thin films deposited by laser ablation technique

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Résumé en anglais	This paper presents the structural and optical investigations of the aluminum oxide nanocrystalline thin films. Investigated films were fabricated by laser ablation technique in high vacuum onto quartz substrates. The films were deposited at two different temperatures of the substrates equal to room temperature and 900 K. X-ray Diffraction spectra proved nanocrystalline character and the corundum phase of the film regardless on the substrate temperature during the deposition process. Values of the refractive indices, extinction and absorption coefficients were calculated by using Transmission and Reflection Spectroscopy in the UV–VIS–NIR range of the wavelength. Coupling Prism Method was used for films thickness estimations. Experimental measurements and theoretical calculations of the Third Harmonic Generation were also reported. Obtained results show that the lattice strain may affect obtained values of the third order nonlinear optical susceptibility.
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Liens

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