EFFECT OF LIGHT ON MAGNETIC STATE OF THE MANGANITE $Pr_{0.6}La_{0.1}Ca_{0.3}MnO_3$ THIN FILMS

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9.7 cm

Effect of illumination of He-Ne ($\lambda = 633$ nm) and Ar ($\lambda = 488$ nm) lasers on magnetization of manganite $Pr_{0.6}La_{0.1}Ca_{0.3}MnO_3$ epitaxial thin films was studied by means of SQUID magnetometer equipped with Fiber Optic Sample Holder. It has been found that the magnetization of the films increases under illumination in a magnetic field near the field of phase transition from antiferromagnetic (AFM) to ferromagnetic (FM) state. The obtained experimental results allow to conclude that visible light stimulates this phase transition. The increase of magnetization is apparently related to a partial transformation of AFM phase into FM one and a formation of ferromagnetic clusters within the AFM state. A relaxation of the photoexcited state was not detected for one hour. Light-induced state of the manganite is stable or long-lived metastable one.

13.4 cm

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