TEMPERATURE-INDUCED PHASE TRANSITIONS IN Co-DOPED YIG FILMS

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9.7 cm

YIG:Co films grown by liquid phase epitaxy on the (001) plane of GGG substrate were investigated within the temperature range 10-300K. Torque anisometry study showed [1] the temperature-induced spin-reorientation phase transitions. At temperature lowering following easy magnetization axes (EMA) orientation were distinguished: (i) at room temperature - four EMA inclined from [111] directions to the film plane; (ii) two EMA were near [110] and [1$\bar{1}$0] directions; (iii) two EMA were near [100] and [010]; (iv) one EMA were near the [001] direction at the helium temperature. Domain structure were visualized by means of a magneto-optical Faraday microscopy technique supported by digital images processing. Temperature ranges of different magnetic phases (connected with EMA) existence was studied. Observed magnetic phase transitions are connected with strongly anisotropic cobalt ions.

The work was partially supported with the Polish grant No. 2P03B 061 14.

[1] M. Tekielak, W. Andra, A. Maziewski, J. Taubert, J.Phys.IV France 7,C1-461(1997)

13.4 cm

Subject category :

5. Phase Transitions and Critical Phenomena

Presentation mode :
poster

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