

**Ti:Sa femtosecond laser application in ultrafast magneto-optical and magnetization-induced second harmonic generation techniques for studies of ultra-thin magnetic nano-structures**

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The work concerns application of titanium-sapphire femtosecond laser oscillator with 82-MHz repetition rate at 800 nm in measurements of ultrafast magneto-optical and magnetization-induced second harmonic generation (MSHG) effects. Time-resolved magneto-optical Kerr effect (TRMOKE) pump-probe method was used in investigation of ultrafast precession of magnetization in Fe/Au multilayers. Magnetization precession frequency, obtained as a function of magnetic field applied, allows determining saturation magnetization and damping factor. The MSHG effect has been used for study of ultra-thin garnet films. This method allows to determine crystallographic symmetry and hysteresis loops in an external magnetic field at  $2\omega$  laser induced frequency. The simultaneous measurements of linear and second order magneto-optical effects enable to investigate magnetic interfaces in the studied structures.

← 13.4 cm →

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9.7 cm