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Linear and nonlinear magneto-optical properties of Fe/Au multilayered films and Fe-Au alloy films Y. H. HYUN, Y. P. LEE, q-Psi and Dept. of Physics, Hanyang Univ., Seoul, Korea, K. W. KIM, Dept. of Physics, Sunmoon Univ., Asan, Korea, R. YANG, Q. Y. JIN, Dept. of Optical Science & Engineering, Fudan Univ., Shanghai, China — In this study, the magnetic and the magneto-optical properties of Fe/Au multilayered films (MLF) and Fe-Au alloy films were comparatively studied to elucidate the peculiar magneto-optical properties of Fe/Au MLF. (3.0 nm Fe / t_{Au})$_{20}$ MLF (where t_{Au} = 1.0, 2.0, 2.5 and 3.0 nm) and $Au_{1-x}Fe_x$ ($0 < x < 1$) alloy films of about 100 - 150 nm in thickness were prepared by rf-sputtering onto glass substrates at room temperature. The structures of these films were studied by x-ray diffraction. The magnetic properties were investigated by using a vibrating sample magnetometer. The magneto-optical properties of Fe-Au alloys and Fe/Au MLF were measured by using magneto-optical Kerr effect (MOKE) and magnetization-induced second-harmonic generation (MSHG). The MOKE was obtained in the equatorial mode, and the MSHG measurements were performed in the longitudinal mode. The MSHG results were analyzed in connection with the MOKE and the VSM results.

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