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Angular dependence of linear and nonlinear magneto-optical properties of magnetic films Y. H. HYUN, S. H. LEE, Y. P. LEE, q-Psi and Dept. of Physics, Hanyang Univ., Seoul, Korea, K. W. KIM, Dept. of Physics, Sunmoon Univ., Asan, Korea — The magnetic properties of Ni and Fe films were studied by measuring the linear and the nonlinear magneto-optical properties. The linear and the nonlinear magneto-optical Kerr-effect (MOKE) measurements were employed to understand the bulk magnetism and the surface and interfacial magnetism, respectively. The linear MOKE is an important probe for studying magnetic thin films and the nonlinear MOKE is a very sensitive tool for investigating the surface and the interface magnetisms of magnetic thin films, which enable us to elucidate the skin-depth effect. For analyses of these magnetic films, the optical and the magneto-optical properties were simulated. The linear-MOKE simulation was performed in the polar and the longitudinal modes to obtain the Kerr rotation and ellipticity of the linear and the nonlinear MOKE. The linear and the nonlinear MOKE measurements were carried out in the longitudinal mode. To determine the skin-depth effect, each sample was made with different thickness and the angular dependence of MOKE signals was obtained and compared with that of the simulated one.

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