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Generalized Ellipsometry on Ferromagnetic Sculptured Thin Films. DANIEL SCHMIDT, TINO HOFMANN, University of Nebraska-Lincoln, KAH MOK, HEIDEMARIE SCHMIDT, Forschungszentrum Dresden-Rossendorf, RALF SKOMSKI, EVA SCHUBERT, MATHIAS SCHUBERT, University of Nebraska-Lincoln — We present and discuss generalized ellipsometry and generalized vector-magneto-optic ellipsometry investigations on cobalt nanostructured thin films with slanted, highly-spatially coherent, columnar arrangement. The samples were prepared by glancing angle deposition. The thin films are highly transparent and reveal strong form-induced birefringence. We observe giant Kerr rotation in the visible spectral region, tunable by choice of the nanostructure geometry. Spatial magnetization orientation hysteresis and magnetization magnitude hysteresis properties are studied using a 3-dimensional Helmholtz coil arrangement allowing for arbitrary magnetic field direction at the sample position for field strengths up to 0.4 Tesla. Analysis of data obtained within this novel vector-magneto-optic setup reveals magnetization anisotropy of the Co slanted nanocolumns supported by mean-field theory modeling.

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