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Enhance in the magneto-optical properties of magnetic grating JINBAE KIM, GEON JOON LEE, YOUNGPAK LEE, Quantum Photonic Science Research Center and BK21 Program Division of Advanced Research and Education in Physics, Hanyang University, Seoul, Korea, JOO YULL RHEE, BK21 Physics Research Division and Institute of Basic Science, Sungkyunkwan University, Suwon, Korea, CHONG SEUNG YOON, Division of Advanced Materials Science, Hanyang University, Seoul, Korea — The magneto-optical properties of one-dimensional magnetic grating structure of Co_2MnSi film were investigated. By using the interference pattern of two femtosecond-laser beams, a selective-area annealing of the as-deposited Co_2MnSi film was performed and one-dimensional magnetic grating structures were fabricated. The atomic-force-microscopy image showed regularly-spaced alternating lines with a periodicity of 2 μm. The corresponding magnetic-force-microscopy image also revealed periodic patterns of two different magnetic states in the sample. The longitudinal Kerr rotations of the zeroth- and the first-order diffracted beams were measured. The longitudinal Kerr rotation of the first-order diffracted beam is nearly 18 times larger than that of the zeroth-order beam.

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