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Enhanced magneto-optical effect in two-dimensional spin photonic crystals JINBAE KIM, WONCHANG NAM, NISHAD DESHPANDE, XINGRI JIN, MINSOO SEO, SUNG-JAE LEE, YOUNGPAK LEE, Hanyang University, Korea, JOOYULL RHEE, Sungkyunkwan University, Korea, KIWON KIM, Sunmoon University, Korea — Patterned arrays of magnetic nanostructures have become one of the key issues in recent years because of their potential application to the information technology which utilizes optical and magnetic storage devices. In this study, we have successfully fabricated two-dimensional patterned arrays of Co by using the photolithography and the wet-etching process. The magnetic anisotropy, the magnetic domain structures, and the magnetization reversal process are investigated by means of magnetic-force microscopy and magneto-optical Kerr effect. The in-plane magnetization reversal process could be understood through a detailed investigation the field-dependent magnetic domain structures. The magneto-optical response is measured for both reflected and diffracted beams, and compared with the results of micromagnetic simulation.

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