

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Enhanced magneto-optical effect in one-dimensional spin photonic crystals J.B. KIM, G.J. LEE, Y.P. LEE, q-Psi and BK21 Program Division of Advanced Research and Education in Physics, Hanyang University, Seoul, Korea, J.Y. RHEE, BK21 Physics Research Division and Institute of Basic Sciences, Sungkyunkwan University, Suwon, Korea, C.S. YOON, Division of Advanced Materials Science, Hanyang University, Seoul, Korea, K.W. KIM, Dept. of Physics, Sunmoon University, Asan, Korea — Spin photonic crystals (SPCs) are very interesting for information technology which requires advanced solutions for heavy communication traffic, high-density storage, and high-speed computing. By using external magnetic field, for instance, the optical properties of SPCs can be tuned. By using the interference pattern of two femtosecond-laser beams, a selective-area annealing of the as-deposited Co_2MnSi film was achieved and one-dimensional SPCs were fabricated. The atomic-force-microscopy results confirmed that regularly-spaced alternating lines with a periodicity of $2\ \mu\text{m}$ were produced, and the magnetic-force-microscopy studies revealed the same periodic patterns of magnetic domains. The longitudinal Kerr rotations of the p-polarized zeroth-order and first-order diffracted beams were measured. The longitudinal Kerr rotation of the first-order diffracted beam turns out to be nearly 28 times larger with respect to the zeroth-order one.

YoungPak Lee
q-Psi and BK21 Program Division of Advanced Research and Education
in Physics, Hanyang University, Seoul, Korea

Date submitted: 02 Dec 2007

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