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MSJ Special Meetings on Magnetic Devices and Materials with Optical Functions
Magnetics Laboratory Seminar, Toyohashi University of Technology

Special Lecture on Integrated Optical Devices

Magnetic oxide films for integrated magnetooptical isolators

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Professor of MIT

date/time

July 18, Wednesday
3:00pm-

place

C-204, Toyohashi Tech

Magnetooptical isolators, which act as diodes for light, are essential components in optical circuits. However, it has proven difficult to fabricate isolators monolithically on silicon substrates because the most common near-IR magnetooptical material, garnet, does not grow well on silicon. In this seminar we will first discuss the structure and magnetic properties of alternative magnetooptical materials: perovskite films grown on buffered silicon using pulsed laser deposition. These materials, $Sr(Ti,M)O_3$, with M = Fe, Co, etc., are magnetic at room temperature when grown with an oxygen deficiency and show strong magnetoelastic anisotropy. The magnetooptical figure of merit of $Sr(Ti,Fe)O_3$ can be improved by substituting Ga for Ti, reducing the population of Fe^{2+}. We will then discuss the growth of Ce-substituted garnet films on silicon, and demonstrate an efficient, low-footprint integrated isolator based on a ring resonator.

For the detail, contact to Dr. M. Inoue (inoue@ee.tut.ac.jp) , Toyohashi Tech