

Challenge to Nanospinics

Sung-Chul Shin

Dept. of Physics and Center for Nanospinics
of Spintronic Materials, KAIST

The term *nanospinics* is coined to describe the research on spin-dependent phenomena in nanomagnetic systems. Today we are gradually moving from the age of charge engineering in semiconductors to the age of spin engineering in magnetic materials. Truly we stand on the verge of a spintronics revolution, where spin-dependent new phenomena will be not only explained but exploited in novel devices. Thus upcoming challenges in magnetism research include the manipulation of new magnetic materials and structures at the exchange-interaction scales, and to understand and utilize the implication of this novel phenomena. To play a leading role in the research field of *nanospinics* our center, **CNSM**, was launched 3 years ago, with a financial support through Creative Research Initiatives Program of the Korean Ministry of Science and Technology.

In this talk, I will present the highlights of the novel phenomena discovered in nanothin film systems during the 1st phase research of the Center, which include spin reorientation transition, reversible spin switching, and contrastive domain reversal behavior. This talk will also cover the fundamental issues, together with challenging approaches, to be investigated in the 2nd phase of the Center.