UNIT CELL THICK FERRIMAGNETIC HEUSLER DOMAIN WALL MOTION USING CHEMICAL TEMPLATING LAYERS

seminar

March 18, 2019 | 3:00 pm
Lecture Hall | B 1.11

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ABSTRACT

In this presentation, is shown a novel chemical templating technique where bulk like magnetic properties in ultra-thin tetragonally distorted Heusler films can be achieved. The Mn3Z family of Heusler alloys is mainly investigated, with Z=Ge, Sn, Sb.

Nanowire racetracks are fabricated from these films and the current driven domain wall motion is demonstrated. The main mechanism of the domain wall motion is the volume spin transfer torque. Moreover, the domain wall motion shows contributions by chiral spin orbit torques when studied applying in-plane magnetic fields. A bulk in origin Dzyaloshinskii-Moriya interaction and a spin Hall effect deriving from the chemical templating layers are identified.

These results are the first demonstration of domain wall motion in ultra-thin Heusler alloys with complex and tunable magnetic properties. Since the Heusler properties are intimately connected to the atomic scale ordering of their constituent elements, this work is an important step to enable Heusler spintronics applications.

SPEAKER

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