MA 16: Invited Talks Ebels / Manosa

Time: Wednesday 14:00–15:00 Location: H10

Invited Talk MA 16.1 Wed 14:00 H10

Out of plane steady-state precession for the 'perpendicular polarizer-planar free layer' spin torque oscillator — •Ursula Ebels[1], Dimitri Houssameddine[1], Bertrand Delaet[2], Bernard Rodmacq[1], Ioana Firastrau[2,3], Fabienne Ponthenier[2], Magali Brunet[2], Christophe Thirion[1], Jean-Philipe Michel[1], Liliana Prejbeanu-Buda[1], Marie-Claire Cyrille[2], and Bernard Dieny[2] — [1]SPINTEC URA 2512, C.E.A/DRFMC - C.N.R.S, CEA-Grenoble, 17 rue des Martyrs, 38054 Grenoble, France — [2]LIMN/DIHS/LETI CEA-Grenoble, 17 rue des Martyrs, 38054 Grenoble, France — [3]TRANSILVANIA University of Brasov, 29 Bulevardul Eroilor, R-500036 Brasov, Romania

The possibility to excite large angle steady-state precessions of the free layer magnetisation in spin valves or magnetic tunnel junctions, using a spin polarised DC current, has recently attracted much attention. These steady state precessions, in combination with the magnetoresistance of such devices, open new applications of spin electronics materials such as wide band tuneable radio frequency (RF) oscillators. While previous spin transfer oscillators (STO) were based on in-plane magnetized structures, here we present the realization of an STO that contains a perpendicular polarizer combined with an in-plane magnetized free layer. The static and dynamic transport experiments validate the theoretical predictions for this configuration which will be of interest for the design of STOs having improved output signals and being operated in zero fields and at currents close to the threshold current Ic.

Invited Talk MA 16.2 Wed 14:30 H10

Multifunctional Ni-Mn-based shape memory alloys — •Lluis Manosa[1], Xavier Moya[1], Antoni Planes[1], Seda Aksoy[2], Thorsten Krenke[2], Mehmet Acet[2], and Eberhard Wassermann[2] — [1]Departament d'Estructura i Constituents de la Materia, Facultat de Fisica, Universitat de Barcelona — [2]Experimentalphysk, Duisburg-Essen University

A relevant functional property is the capability of changing shape by application of a magnetic field. This is the magnetic shape memory property which has been reported for several magnetic alloys undergoing martenstic transiti-ons. Such a property relies on a high magnetic anisotropy of the martensitic phase along with a high mobility of mar-tensitic interfaces which results in a re-orientation of martensitic domains under the application of a magnetic field. The most promising magnetic shape memory compounds belong to the Ni-Mn-X family whereby the Ni-Mn-Ga is the prototypical magnetic shape memory alloy. In the recent years, studies for X=Sn,In and Sb have revealed the exis-tence of new properties: magnetic superelasticity, giant magnetocaloric effect (conventional and inverse) and giant magnetoresistance, all of them related to the modification in the coupling between structure and magnetism linked to the martensitic phase change. Typically several of these effects are encountered in a single alloy so that these materials can be considered as being multifunctional. In my talk I will review some of the most elevant features of the coupling between magnetism and structure in the Ni-Mn-X alloy family, and the functional properties derived from such a coupling will be discussed.