" Thermospin effects in magnetic multilayers"

M. R. Ibarra

(www.unizar.es/ibarra)

Institute of Nanoscience of Aragón
Laboratory of Advanced Microscopies
Condensed Mater Physics Department
University of Zaragoza (Spain)

In this talk, I report relevant physical phenomena in the field of spintronics that may influence the field of energy conversion. Charge and spin, constitute attributes of electrons that mediate new discovering in metallic and magnetic materials. The discovering of the Inverse Spin Hall Effect in metals with strong spin orbit coupling allowed the detection of the existence of the spin currents. These dissipationless spin currents can be present in metal and in ferromagnetic insulator. The recent discovery of the Spin Seebeck and Spin Peltier effects, open a new field of research that involves new physic for energy conversion. Here I will show evidence of how these effects are amplified in multi-layered systems in which the existence of Non-Magnetic metal/Ferromagnet interfaces, give rise to a strong enhancement of the spin Seebeck effect in Fe_3O_4/Pt multiple-bilayers due to the magnon spin currents conversion in electron spin currents and vice-versa through the heterostructure.