

## MAGNETIC PROPERTIES OF LOW DIMENSIONAL SYSTEMS BASED ON AMORPHOUS Co-Si ALLOYS: MULTILAYERS AND NANOSTRUCTURES

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Co<sub>x</sub>Si<sub>1-x</sub> ferromagnetic alloys present a crystalline to amorphous transition as the Si content is increased, so that, for  $x < 0.76$  the alloy has an amorphous structure [1]. In this work, this kind of amorphous alloy has been used to prepare and analyze low dimensional magnetic systems. In particular, when amorphous single Co<sub>x</sub>Si<sub>1-x</sub> films are grown by co-sputtering they present a well defined uniaxial anisotropy [1]; this main characteristic results in a rich variety of magnetic behaviors observed in low dimensional systems based on the single films, such as multilayers, ordered nanowires, and films with nanostructured surfaces by the fabrication of arrays of antidots. Among these magnetic behaviors, some of the more relevant are the presence of an antiferromagnetic coupling that is able to switch from the parallel to the antiparallel configuration in Co<sub>x</sub>Si<sub>1-x</sub>/Si multilayers [2] at very low fields, a very small dispersion of effective anisotropy axis in amorphous Co<sub>x</sub>Si<sub>1-x</sub> nanowires in comparison with similar polycrystalline ones [3], and pinning effects for the domain wall movement in Co<sub>x</sub>Si<sub>1-x</sub> films with arrays of antidots fabricated by electron beam lithography [4]. Work supported by Spanish CICYT under grants FIS2005-07392 and NAN2004-09087.

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