Interfacial effects between ferromagnetic thin films and functional substrates

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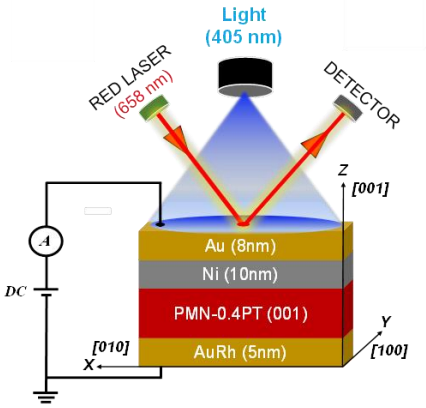

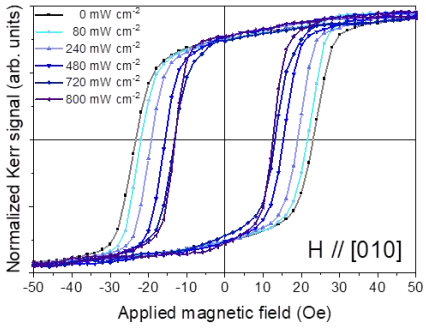

The research project is mainly focused on the growth and characterization of ferromagnetic thin films grown on functional substrates at MINT laboratory, at CNR - Istituto Officina dei Materiali in Trieste. The aim of the study is to experimentally analyze the interfacial effects between the magnetic layer and the substrate in presence of external stimuli. In particular, piezoelectric and ferroelectric substrates will be investigated, either from commercial suppliers or grown in laboratory. The magnetic properties will be analyzed as a function of external stimuli such as temperature, electric field application, illumination under visible light, mechanical pressure. In these conditions, the aim is to evaluate how the structural, electric, photovoltaic and piezoelectric properties of the substrate influence and modify the magnetic response of the interfacial thin films. Regarding the films themselves, both magnetostrictive metallic films and complex oxides will be taken into account, with the aim of determining the ruling mechanisms present at the interface.

The candidate will develop during the PhD thesis the competences in magnetic thin film growth and in characterizing the obtained heterostructures by means of magneto-optical, structural, and electrical measurements. In addition, the candidate will participate to spectroscopic measurements via synchrotron light, both at Elettra Sincrotrone in Trieste (once Elettra 2.0 upgrade will be concluded) and via granted beamtime at different European synchrotrons.

A curious approach, positive team attitude and scientific rigor are particularly appreciated.