



Institute Seminar

Tuesday, 24 Sep 2013 11.30 am Venue - Fermion

Title

Local Control of Nanoscale Magnetic Properties by Interfacial Modification in Bilayer Magnetic Systems Induced by Ga⁺ Ion Irradiation

Speaker

Dr. D. Atkinson

Department of Physics, Durham University, UK

Abstract: The magnetic, electronic and structural properties of NiFe/Au bilayers were investigated as a function of the interfacial structure that was actively modified using focused Ga⁺ ion irradiation. Experimental work used MOKE, SQUID, XMCD and magnetoresistance measurements to determine the magnetic behavior in conjunction with grazing incidence x-ray reflectivity to understand the interfacial structure. Interfacial intermixing, induced by low-dose irradiation, is shown to lead to complex changes in the magnetic behavior that are associated with monotonic structural evolution of the interface. This behavior may be explained by changes in the local atomic environment within the interface region resulting in a combination of processes including the loss of moment on Ni and Fe, an induced moment on Au and modifications to the spin-orbit coupling between Au and NiFe. The influence upon damping is also presented.
