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【816】Electric field control of magnetism through field effects in perpendicularly magnetized multilayers

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Charge-mediated control of magnetism has been found in many systems. Here we present an approach to controlling magnetism through field effects using a silicon nitride membrane as gate dielectric. A Pt/Co/Pt tri-layer structure is grown on a high resistance silicon nitride membrane and an electric field is applied out-of-plane. Magnetic characterization is performed with Magneto-optic Kerr effect (MOKE) and Photoemission electron microscopy (PEEM). We find that the electric field modifies the magnetic anisotropy and induces nucleation of new magnetic domains. We find that the charge modulation at the interface reduces the energy barrier for domain wall nucleation by 10%, explaining such an effect.

Author: Mr VIJAYAKUMAR, Jaianth (Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.)

Co-authors: Mrs SAVCHENKO, Tatiana M. (Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.); Mr HORISBERGER, Micheal (Neutron Optics and Scientific Computing Group , Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.); Prof. NOLTING, Frithjof (Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.); Dr VAZ, Carlos A. F (Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.)

Presenter: Mr VIJAYAKUMAR, Jaianth (Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.)

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