

SFB 608

Einladung zum Kolloquium

Ort: Universität zu Köln
II. Physikalisches Institut, Seminarraum 201

Zeit: 31.01.07, 14:30 Uhr

Sprecher: Dr. Kathrin Dörr
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Thema: Approaches towards ferroelectric control
of thin film magnetism

Ferroelectricity may offer access to low-power control of magnetism in thin film structures. Therefore, multiferroic (magnetic and ferroelectric) nanofabricated composites and single-phase compounds achieve increasing attention. Here, along with a brief review on current thin film work, three approaches towards ferroelectric control of thin film magnetism will be introduced. (i) Ferromagnetic doped LaMnO_3 films grown on piezoelectric, nearly cubic $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})_{0.72}\text{Ti}_{0.28}\text{O}_3(001)$ (PMN-PT) crystals have been reversibly strained, inducing large magnetization modulation at ambient temperature, strong resistance modulation and a shift of the Curie temperature. (ii) A multiferroic field effect transistor comprising of a magnetic channel and ferroelectric gate electrode is introduced, and the separation of the effects of polarization-controlled interface charge and piezoelectric gate strain is discussed. (iii) Results on preparation and multiferroic properties of epitaxial hexagonal HoMnO_3 films are presented. Thin films have been prepared by an off-axis pulsed laser deposition technique.

Gez. Prof. H. Tjeng