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 Pb(Mg$_{1/3}$Nb$_{2/3}$)$_{0.72}$Ti$_{0.28}$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