SFB/TRR 21 - Seminar

10. März 2011, Stuttgart

Alexander Krupp
(Walther-Meißner-Institut, TU München)

Growth and Characterization of Ferromagnetic Heusler Compounds

After giving a short introduction into Heusler compounds my work focuses on the two ferromagnetic Heusler compounds Co2MnSi and Co2FeAl which have a large Curie temperature, saturation magnetization and hold great potential to realize the half-metallicity at room temperature. By PLD (pulsed laser deposition) thin Heusler films (10-30 nm) have been grown using self-fabricated targets of these two materials. The above-mentioned thin films have been structurally analyzed and compared with sputtered films from Bielefeld. One crucial point to understand the magnetic behavior of the Heusler compounds at low fields is the magnetic anisotropy which was investigated by ADMR (angle dependent magnetoresistance) measurements. Here the phenomenological model of Birss and Limmer et al. was used to fit the acquired data and gain the resistivity and anisotropy parameters. With this simulation the ADMR data of the Heusler thin films can be described very well. All this knowledge will help to systematically fabricate Heusler films of self-tailored anisotropy and control their switching behavior.

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Universität Stuttgart, NWZII, Raum 6.331
Pfaffenwaldring 57, 70569 Stuttgart

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