



Contribution ID: 45

Type: **Poster**

Investigating the magnetization curves of individual nanoparticles at finite temperatures

Friday, 16 September 2011 13:35 (2 minutes)

Increasing the storage density in future magnetic memory devices to the ultimate limit will require to address information at the level of individual nanoparticles. However, at small sizes thermal excitations can lead to undesired fluctuations of the magnetization and will affect their response to magnetic fields. In this contribution we use photoemission electron microscopy (PEEM) together with x-ray magnetic circular dichroism (XMCD) to detect the magnetization of individual Fe nanoparticles at room temperature. By varying the particle size we observe the transition from the superparamagnetic state to stable ferromagnetism at a particle size of about 12 nm. Applying a magnetic field allows us to record magnetization curves of the particles in both states and in the transition regime. The data are compared to the predictions of simple macro spin models. The role of non-collinear spin structures on the mechanism of the thermally induced magnetization reversal is also discussed.

Please specify poster or talk

poster

Please specify the session

Imaging

Primary author: Ms BALAN, Ana Maria (Swiss Light Source, Paul Scherrer Institut)

Co-authors: Dr FRAILE RODRÍGUEZ, Arantxa (Institut de Nanociència i Nanotecnologia (IN2UB), Universitat de Barcelona); Dr KLEIBERT, Armin (Swiss Light Source, Paul Scherrer Institut); Prof. NOLTING, Frithjof (Swiss Light Source, Paul Scherrer Institut); Dr BANSMANN, Joachim (Institute of Surface Chemistry and Catalysis, University of Ulm)

Presenter: Ms BALAN, Ana Maria (Swiss Light Source, Paul Scherrer Institut)

Session Classification: Poster session II and lunch

Track Classification: Poster Session II (Friday)