

Probing magnetism at the nanoscale with XPEEM: from nanoparticles to multiferroic heterostructures

Carlos A. F. Vaz

Swiss Light Source, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland

In this talk I will overview some of the research activities at the SIM beamline, with emphasis on studies of magnetism in individual magnetic nanoparticles [1] and in so-called *artificial multiferroic heterostructures* [2,3]. The ability to apply external stimuli in XPEEM will be exemplified for LSMO structures fabricated on PMN-PT, where electric fields applied to the sample result in modifications in the magnetic domain structure of LSMO induced by piezo-strain [4]. Another development is the ability to carry out surface science at the nanoscale, which will be illustrated by the capability of XPEEM to enable the study of the evolution of the magnetic and electronic properties of individual Fe nanoparticles upon oxygen exposure [5]. The high sensitivity, high spatial and time resolution, the large flexibility for sample excitations, and the high throughput, which are a result of combining synchrotron x-rays with PEEM, augur well for the future of XPEEM as a standard technique in microspectroscopy.

References

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Email corresponding author: carlos.vaz@psi.ch