PAUL SCHERRER INSTITUT

PSI facilities newsletter

full version available from:
http://www.psi.ch/info/facility-news

Announcement

2015 PSI Summer School on Condensed Matter Research

The PSI summer schools on condensed matter physics have a long standing tradition. Based on the previous schools on neutron scattering starting back in 1992 the PSI summer schools aim to train young researchers in the methods being used at large scale facilities such as neutron, muon and photon sources. International experts and PSI staff members will introduce and deepen the knowledge of the participants not only on methods but also on those phenomena, which are presently at the forefront of modern solid state physics and chemistry. Following the school a practical training is offered at PSI. It will allow a limited number of participants to get hands-on experience with state-of-the-art instrumentation using photons, neutrons, and muons. **More details**: www.psi.ch/summerschool

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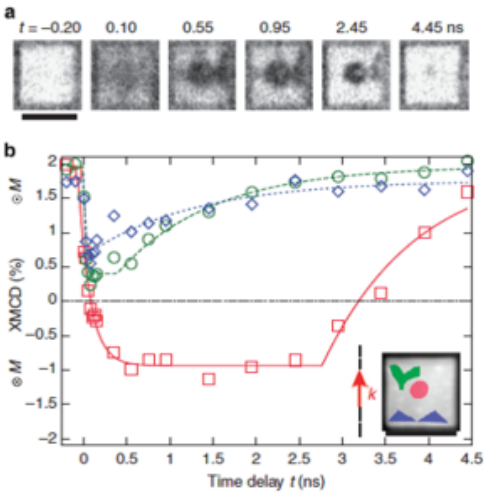
Research highlight

NANOSCALE SUB-100 PICOSECOND ALL-OPTICAL MAGNETIZATION SWITCHING IN GDFECO MICROSTRUCTURE



Magnetization dynamics inside a 5 µm x 5 µm structure.

L. Le Guyader et al, Nature Communications, Published 12 Jan 2015; DOI: 10.1038/ncomms6839

Ultrafast magnetization reversal driven by femtosecond laser pulses has been shown to be a promising way to write information. Seeking to improve the recording density has raised intriguing fundamental questions about the feasibility of combining ultrafast temporal resolution with sub-wavelength spatial resolution for magnetic recording. Here we report on the experimental demonstration of nanoscale sub-100 ps all-optical magnetization switching, providing a path to sub-wavelength magnetic recording. Using computational methods, we reveal the feasibility of nanoscale magnetic switching even for an unfocused laser pulse. This effect is achieved by structuring the sample such that the laser pulse, via both refraction and interference, focuses onto a localized region of the structure, the position of which can be controlled by the structural design. Time-resolved photo-emission electron microscopy studies reveal that nanoscale magnetic switching employing such focusing can be pushed to the sub-100 ps regime. http://www.psi.ch/sls/scientific-highlights