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Element-selective investigation of domain structure in CoPd and FePd alloys using small-angle soft X-ray scattering C. WEIER, R. ADAM, Peter Grünberg Institut, PGI-6 & JARA-FIT, Forschungszentrum Jülich, 52425, Jülich, Germany, R. FRÖMTER, J. BACH, G. WINKLER, A. KOBS, H.P. OEPEN, Institut für Angewandte Physik, Universität Hamburg, Jungiusstraße 11, 20355, Hamburg, Germany, P. GRYCHTOL, H.C. KAPTEYN, M.M. MURNANE, Department of Physics and JILA, University of Colorado, Boulder, Colorado 80309, USA, C.M. SCHNEIDER, Peter Grünberg Institut, PGI-6 & JARA-FIT, Forschungszentrum Jülich, 52425, Jülich, Germany — Recent optical pump-probe experiments on magnetic multilayers and alloys identified *perpendicular* spin superdiffusion as one of possible mechanisms responsible for femtosecond magnetization dynamics. On the other hand, no strong evidence for the ultrafast *lateral* spin transport has been reported, so far. To address this question, we studied magnetic domain structure of CoPd and FePd thin films using small-angle scattering of soft X-rays. By tuning the synchrotron-generated X-rays to the absorption edges of Fe or Co we recorded Fourier images of the magnetic domain structure corresponding to a chosen element. Applying $in-situ$ magnetic fields resulted in pronounced rearrangement of domain structure that was clearly observed in scattering images. Our analysis of both the stand-alone, as well as magnetically coupled CoPd/FePd layers provides insight into the formation of domains under small magnetic field perturbations and pave the way to better understanding of transient changes expected in magneto-dynamic measurements.

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