

Preparation and Characterisation of Fe/Ce Multilayer

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Ce/Fe multilayer (ML) with constant Fe (2 nm) and Ce (4.5 nm) sublayer thicknesses was prepared onto naturally oxidised Si(100) substrate using magnetron sputtering. Chemical purity of the sublayers was revealed *in-situ* by X-ray photoelectron spectroscopy (XPS) measurements. The structure of the sample was studied by standard low- and high-angle X-ray diffraction (XRD). Surface morphology of the ML was examined by atomic force microscopy. Magnetic properties of the sample was studied in the temperature range between 5 and 350 K using a vibrating sample magnetometer in a magnetic field up to 9 T. The hysteresis loops were measured in field perpendicular and parallel to the substrate. Furthermore, hydrogen absorption at a pressure of about 1000 mbar was studied at room temperature (RT) in Pd covered ML using four-point resistivity measurements. The solid state amorphisation reaction have been confirmed by XRD and magnetic measurements of the Ce/Fe ML. The absence of satellite peaks in the low - angle XRD pattern revealed no artificial layered structure. The above results show that interdiffusion of cerium and iron atoms is extremely fast at RT.

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This article was originally published on March 2018 with incorrect Ref. [6]. The correct reference is listed below:

[6] N. Jaouen, J.M. Tonnerre, D. Raoux, E. Bontempi, L. Ortega, M. Müenzenberg, W. Felsch, A. Rogalev, H.A. Dürr, E. Dudzik, G. van der Laan, H. Maruyama, M. Suzuki, *Phys. Rev. B* **66**, 134420 (2002)

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