

Abstract Submitted  
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**Ferromagnetism of CoAl(100) induced by oxidation at 300 K**  
VOLKER ROSE, Center for Nanoscale Materials (CNM), Argonne National Laboratory, KLAUS BRUEGGEMANN, RUDOLF DAVID, HARALD IBACH, Institute for Surfaces and Interfaces (ISG 3), Research Center Juelich, Germany — In situ magneto-optical Kerr effect measurements were performed to investigate the magnetic behavior of CoAl(100) upon oxidation at room temperature. As an ideal Co<sub>50</sub>Al<sub>50</sub> crystal is known to be paramagnetic at room temperature, our studies show a transformation into a ferromagnetic phase during increasing exposure to O<sub>2</sub>. Oxidation of CoAl(100) at 300 K leads to the growth of an amorphous Al<sub>2</sub>O<sub>3</sub> film [1], causing a Co excess at the metal/oxide interface that is sufficient to provide ferromagnetism. Annealing of the oxidized sample brings about a drastic increase of the coercive field, generated by diffusion of Al into the Co film. But, after annealing at 550 K, the ferromagnetism vanishes completely. [1] V. Rose, V. Podgurski, I. Costina, R. Franchy, Surf. Sci 541 (2003) 128.

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