

Abstract Submitted
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Making Nonmagnetic Palladium Ferromagnetic by Antiferromagnetic CoO SRIJAN KUMAR SAHA, PIOTR KUŚWIK, Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, D-06120 Halle, Germany, PEDRO L. GASTELOIS, Servico de Nanotecnologia, Centro de Desenvolvimento da Tecnologia Nuclear, 31270-901 Belo Horizonte, MG, Brazil, MAREK PRZYBYLSKI, VALERI STEPANYUK, JÜRGEN KIRSCHNER, Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, D-06120 Halle, Germany — We present a novel finding of our combined experimental and theoretical studies which have revealed unexpected spin polarization of the Pd(001) substrate in contact with antiferromagnetic CoO overlayers. We give an evidence that the ferromagnetism of Pd is caused by the zigzag positions of Co atoms with respect to the Pd interface, resulted from the lattice-mismatch driven structural relaxation. Thanks to the itinerant nature of its 4d electrons, we see that the ferromagnetic properties of Pd are highly sensitive to the local environment and can be enhanced further by increasing the thickness of CoO overlayer film or/and by applying an additional uniaxial pressure along c-axis exerted externally on the bottom layers of the Pd substrate. Our finding provides new functionality for the interfacial moments of the CoO/Pd system, which can be accessed experimentally, e.g., by the magneto-optical Kerr effect as we demonstrate here.

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