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Electric field-induced modification of magnetism in thin CoPd films.[1] MIKHAIL ZHERNENKOV, MICHAEL FITZSIMMONS, JERZY CHLISTUNOFF, JAREK MAJEWSKI, LANL, IOAN TUDOSA, ERIC FULLERTON, UCSD — Recently, M. Weisheit et al., [Science **315**, 349 (2007)] reported modification of magnetic properties of thin-film ferromagnets by applying a large electric field at the surface of a ferromagnet. For an applied voltage of -0.6 V, the coercivities of 20 Å thick FePt and FePd films were changed by -4.5 and +1%, respectively. Here, we report polarized neutron reflectometry measurements of the magnetization depth profile of a 180 Å thick $Co_{50}Pd_{50}$ film immersed in an electrolyte as a function of applied electric field in an external magnetic field. The measurements were done at two values of applied electric potential of -0.6 volts and -1.2 volts and at zero volts (open-circuit potential). The applied magnetic field was 3 kG. We found a linear increase of the film magnetization with electric field. The change of magnetization occurred in the region of the film within 72 Å of the electrolyte/$Co_{50}Pd_{50}$ interface. The magnetization of the top part of the layer is increased by 2% (-0.6 V) and 3.6% (-1.2 V) compared to the open circuit potential result.

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