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**Tuning magnetic anisotropy in Fe/Pt multilayers on Pt(001) by surface charging** PEDRO RUIZ-DIAZ, VALERI STEPANYUK, Max Planck Institute of Microstructure Physics, Weinberg 2, 06120 Halle (Saale), Germany — Magnetic anisotropy of nanoscale systems has recently received considerable attention from both experimentally and theoretically perspectives. Diverse ways of manipulating the anisotropy have been sought and found. Those include alloying, external electric field exposure and electrolyte charging. However, the hunt for a system that would exhibit a large anisotropy and be easy to manipulate at the same time is still on. By using density functional theory tools, we study the magnetic anisotropy of Fe/Pt multilayers on Pt(001). Our fully relativistic *ab initio* calculations demostrate that the value of magnetic anisotropy energy (MAE) strongly depends on the composition of Fe/Pt multilayers, achieving remarkable large values for systems featuring Fe layers capped with Pt. For instance, positive charging of a Fe slab capped with Pt enhances significantly the MAE. More intriguing is the behavior of Fe bilayers, for which surface charging does not only change the value of the anisotropy but can also lead in the switching of the easy axis. To understand the physics underlying this behavior of MAE, we analyze the electronic structure of the system by means of the second-order perturbation theory linking MAE to the local density of electronic states near the Fermi level.

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