The influence of epitaxial strain on the structure of iron oxide thin films on Pt(111) and Ru(0001)

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FeO(111) grows epitaxially on Pt(111), forming a Moiré superstructure [1]. In case of FeO(111) on Ru(0001), due to significant lattice mismatch and the corresponding epitaxial strain, not only a Moiré superstructure is formed, but also dislocations/domain boundaries appear [2]. FeO(111) is an interface layer used for the growth of thicker iron oxide films, such as Fe_3O_4(111) or α-Fe_2O_3(0001). For Pt(111), the Moiré superstructure does not significantly influence the morphology of Fe_3O_4(111) [1]. In case of Ru(0001), the morphology of Fe_3O_4(111) is complex which is believed to be driven by strain-induced defects in the FeO(111) film.

This work was financially supported by the Polish Ministry of Science and Higher Education (grant No. IP2011 030071 – Ru(0001) part) and the National Science Centre of Poland (grant No. 2012/05/D/ST3/02855 – Pt(111) part).

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