



	Experiment title: Structural properties of a heavy-metal/ferromagnet interface: Bi/Ni(111)	Experiment number: 25-02-878
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Report:

We report an investigation on the structural properties of Bi/Ni(111) using surface x-ray diffraction. We aimed at understanding the growth mode of Bi on Ni(111) and the influence of parameters like the evaporation flux and deposition temperature. The experiments ran well and we obtained satisfactory results that will allow us to draw a complete picture of the interface structural properties. We prepared successfully a Ni(111) surface. The pristine Ni(111) surface was characterized using SXRD (bulk CTR's and reflectivity). Next, we deposited Bi at RT and at low temperature (approx. 100 K). In agreement with previous work, the growth at RT is of the Volmer-Weber type, and after a first epitaxial Bi layer, Bi crystallites appear. The density and number of layers exposed depend on the Bi flux, but the crystallites have a (111) orientation with good epitaxial orientation. In turn, when the growth takes place at low temperature a continuous films of Bi(111) can be prepared. The quality of the epitaxial film was probed by measuring equivalent reflections in the (111) orientation and by checking the absence of diffraction rigs and/or additional reflections. Although the quality of the film is not perfect, we could determine growth conditions (temperature, flux) suitable to produce epitaxial Bi films in registry with the substrate. Work is in progress to conclude the analysis of the data obtained.