

**INITIAL STAGE SOF THE GROWTH OF COBALT ON RU(0001) STUDIED BY LEEM**

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We study the clean Ru(0001) surface and the layer-by-layer growth of cobalt on ruthenium employing a low-energy electron microscope (LEEM). By means of selected-area diffraction measurements, we have performed IV analysis for data acquired on single terraces in order to determine the corresponding surface structures.

The clean surface presents a somewhat large first interlayer contraction which is at contrast with previous experimental studies but in close accordance with theoretical predictions for a hydrogen free ruthenium surface. The first Co monolayer grows pseudomorphically following the hcp stacking sequence. The vertical lattice spacing is contracted by 4% relative to the bulk ruthenium value. Films thicker than a monolayer present a relaxed in-plane lattice spacing, as detected by the presence of satellite spots in the diffraction pattern. We identify the stacking sequence of the different films. Films thinner than three monolayers are hcp without any stacking faults. Three monolayer thick islands nucleate in two different stacking sequences, starting the evolution of the film towards an fcc structure. The different stacking sequences of the islands are reflected in their shape, as proven by comparison with selected-area diffraction data.

Keywords: