

In this work ways of preparation of thin epitaxial cerium oxide film on Cu(110) surface were studied. X-ray photoelectron spectroscopy (XPS), X-ray photoelectron diffraction (XPD), low energy electron diffraction (LEED), ion scattering spectroscopy (ISS) and scanning tunneling microscopy (STM) were used for the characterization of prepared systems.

The island structure of CeO<sub>2</sub> was prepared by the method of reactive evaporation in oxygen atmosphere. The influence of temperature on the electronic structure and morphology was studied. At the temperature above 550 °C partial reduction to Ce<sub>2</sub>O<sub>3</sub> and reordering of the islands to the CeO<sub>2</sub>(331) structure was observed. The ceria promoted oxidation of copper surface was approved, since the clean c(6x2) reconstruction of the surface was observed at the oxygen exposure 1,5 order of magnitude lower than on Cu(110) alone.

The other model system was prepared by cerium evaporation to the oxygen precovered Cu(110) surface. The mix of (2x1) and c(6x2) surface reconstruction was formed by oxygen exposition at 300 °C. Cerium was deposited on this surface, also at 300 °C. During the following heating to 500 °C the formation of epitaxial film Ce<sub>2</sub>O<sub>3</sub>(0001) was observed, accompanied by the formation of large hundreds nm long smooth band structures in the [110] direction.