

This work deals with the preparation of thin cerium oxide films on the Cu(110) single crystal. Physico-chemical properties of this system were studied by surface science techniques (XPS, UPS, ARUPS, LEED, LEEM and STM). The first part of the work concerns interaction of Cu(110) single crystal with oxygen. Conditions for formation of O(2x1) and Oc(6x2) oxygen reconstructions were found. Various methods of preparation of CeO_x films were discussed. A novel method for continuous control of ceria stoichiometry from CeO₂ to Ce₂O₃ through variation of oxygen vacancy concentration has been developed. Ceria facilitated oxygen spill-over was observed on copper substrate. It was found that a restructuring of copper substrate occurs at the copper-ceria interface with subsequent formation of Cu(13 13 1) facets, which support a Carpet-like ceria overlayer. Interaction of this system with platinum was studied. Finally, high temperature growth of CeO_x films was studied and creation of ceria islands exposing the (110) plane was observed.