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Oxygen-induced nano-faceting of the Pd(112) surface ALINA VLAD, ANDREAS STIERLE, Max Planck Institute for Metals Research, 70569 Stuttgart, Germany, RASMUS WESTERSTROEM, EDVIN LUNDGREN, Department of Synchrotron Radiation Research, Institute of Physics, University of Lund, SE-221 00 Lund, Sweden, HELMUT DOSCH, Max Planck Institute for Metals Research — Extensive efforts are currently made to understand the elementary steps in heterogeneous catalytic reactions, with the ultimate goal of designing more efficient catalysts. The structure of the catalytically active particles, as well as the temperature and the gas phase pressure, play a decisive role in the behavior of these systems. We studied the interaction of oxygen with the Pd(112) surface from ultrahigh vacuum to atmospheric oxygen pressures by means of *in-situ* surface x-ray diffraction, high resolution core level spectroscopy and scanning tunneling microscopy. The rearrangement of the stepped (112) surface into different type of facets was observed and is strongly dependent on the oxygen pressure. The transition from different adsorbed-oxygen phases to the bulk oxide was also followed as a function of the oxygen pressure.

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