o.m8.o1 **Current Trends in Surface Crystallography.**
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Keywords: surface crystallography, X-ray diffraction.

Over the last decade there has been a dramatic evolution in the understanding and description of surface structures. Today, the structure of most the simple reconstructions on the low index surfaces of metals and semiconductors are known. Much more complex surfaces, like surface of oxides, liquid-solid interfaces, organic layers and solid/solid interfaces are now being studied. One of the key techniques in this evolution has been surface x-ray diffraction, which is an tool important for detailing the atomic structure. In the talk I will give an overview over recent advances in surface x-ray scattering and crystallography illustrating the complexity of systems that now can be tackled.

o.m8.o2 **The transition from a metal to an oxide surface on atomic scale.**
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Keywords: surface crystallography.

In this contribution we will discuss the transition from the Ru(0001) to the RuO2 surface. Depending on the preparation RuO2 exposes either the (110) surface (by O2 exposure under UHV conditions) or the (100) face (by electrochemical oxidation). Both oxide films are incommensurate to the underlying substrate surface. While the UHV prepared RuO2(110) surface is quite smooth with an averaged thickness of 2nm, the electro-oxidized Ru(0001) surface is rough, forming RuO2 cluster of 2nm in size. The primary reason to study RuO2 is related to its unique catalytic properties in the oxidation of CO and hydrocarbons, which were studied recently on atomic scale [1].

The oxidation of Ru(10-10) results in the growth of RuO2(100), which is unidirectionally strained. The experimental results obtained by low energy electron diffraction (LEED), scanning tunneling microscopy (STM), and high resolution surface core level shifts will be compared with DFT calculations.

[1] H. Over, Y.D. Kim, A.P. Seitsonen, S. Wendt, E. Lundgren, M. Schmid, P. Varga, A. Morgante, and G. Ertl, Science 287 (2000) 1474.