# Catalysis and surface reactivity at the atomic scale studied by high resolution STM

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For decades single-crystal surfaces have been studied under ultra-high vacuum (UHV) conditions as model systems for elementary surface processes underlying phenomena such as heterogeneous catalysis, epitaxial growth, corrosion etc. This "surface science approach" has contributed substantially to our understanding of the processes involved in especially catalysis, and has in some cases even led to the design of improved catalysts [1]. In recent years much attention has, however, been paid to the so-called gaps between surface science and industrial catalysis. One of these gaps is the pressure gap which arises because of the 13 orders of magnitude pressure difference between typical UHV base pressures and atmospheric pressure. The other gap is the structural gap relating to the difference in reactivity on single-crystal surfaces as opposed to small nanoclusters. In this talk I will review recent results from my own research group where we have used the unique capabilities of our high-resolution, fast-scanning STM to reveal fundamental processes in relation to catalysis [2-10].

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