



**ecoss 33**  
27 AUG - 1 SEP 2017  
SZEGED, HUNGARY



## **NANOSTRUCTURED METAL SURFACES – FROM SURFACE SCIENCE TO ELECTROCHEMISTRY /ELECTROCATALYSIS**

### **R.J. Behm**

*Institute of Surface Chemistry and Catalysis,  
Ulm University, D-89069 Ulm, Germany*

The Surface Science approach to Heterogeneous Catalysis, aiming at a fundamental understanding of catalytic surface reactions from studies of elementary reaction steps on structurally well defined model surfaces under idealized reaction conditions, has been extended significantly by modern developments. Nanostructuring and in situ spectroscopies allow the use of more complex, but nevertheless structurally well defined surfaces and more realistic reaction conditions. Likewise, progress in theory and computation allow the description of surface reactions in increasingly complex systems.

Similar strategies can be employed also for gaining insight into fundamental processes in electrochemical and electrocatalytic reactions on complex electrode surfaces. This will be illustrated for a number of electrochemical/-catalytic reactions. Furthermore, the role of surface restructuring under electrochemical reaction conditions will be elucidated. Finally, the potential of this approach, which aims at the description of the overall (electro-)catalytic behavior of the electrode on the basis of the reactivity of individual nanostructures, will be discussed.