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**Tuesday, 22<sup>th</sup> March 2022, 16:00 s.t.**

TU Wien, Institut für Angewandte Physik, E134  
1040 Wien, Wiedner Hauptstraße 8-10  
Yellow Tower „B“, 5th floor, SEM.R. DB gelb 05 B

**The seminar will be also held as a Zoom Meeting**

<https://tuwien.zoom.us/j/95229010795?pwd=MThVQ0Y1NjN2bDFVdGxLZEhHR21rUT09>

Meeting ID: 952 2901 0795

Password: MtvBD2Y5



## Visualizing Nanoscale Surface Chemistry: From Ultra-High Vacuum to Electrochemical Environments

Often, pristine molecular resolution on metal surfaces necessitates the use of low temperature, ultra-high vacuum STM (LT-UHV STM). Importantly, it is also possible to study the assembly of molecules and atoms with liquid and electrochemical STM (EC-STM) to bridge the temperature and pressure gap of ultra-high vacuum studies and to take measurements under more realistic conditions. The first investigation focuses on the EC-STM study of five simple amino acids (AAs), and the means by which these molecules interact with a Au(111) surface. Using EC-STM under relevant biological conditions, the amino acids were shown to have a considerable interaction with the underlying surface. In some cases, the amino acids trapped diffusing adatoms to form Au islands and in other cases, they assisted in the formation of magic gold fingers. Importantly, these findings have also been observed under UHV conditions, but this is the first demonstration of the correlation *in situ* and was controlled via an external applied potential. By analyzing the results gathered via EC-STM at ambient conditions, fundamental insight can be gained into not only the behavior of these amino acids with varied side chains and the underlying surface, but also into the relevance of LT-UHV STM data as it compares to data taken in more realistic scenarios. In the second project, EC-STM was used to study the deposition of AAs on an atomically thin layer of Ag on Au(111), which demonstrated extreme surface roughing in stark contrast to the same deposition on bare Au. Despite the periodic familial similarities between Ag and Au, the monolayer of Ag drastically altered the molecule-surface interactions leading to another example of how thin films chemically modify bulk materials.

All interested colleagues are welcome to this seminar lecture  
(30 min. presentation followed by discussion).

Friedrich Aumayr  
(LVA-Leiter)

U. Diebold  
(Seminar Chair)