



**2<sup>nd</sup> April 2014 – 14:00**

**CFEL, Building 99 – Seminar Room IV**

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## **Parallel deposition of size-selected clusters: a novel technique for studying size-selectivity on the atomic scale**

**A new size-selective cluster deposition technique referred to as “parallel-deposition” is presented in this study. An ion beam of multi-sized clusters was spatially separated into individual cluster sizes by utilizing a Wien filter and the clusters spatially separated based on their atomic sizes were simultaneously deposited on a SiO<sub>2</sub>/Si(100) substrate. Three differently sized Au<sub>n</sub> clusters (n = 6, 7, and 8) were parallel-deposited on the SiO<sub>2</sub>/Si(100) surface and their spatial separation was confirmed before and after deposition by channeltron scanning and X-ray photoelectron spectroscopy (XPS), respectively. Most importantly, from an *in situ* XPS analysis, even-odd behavior was observed in the oxidation of the Au<sub>n</sub> clusters (n=6, 7, and 8) by exposing the parallel-deposited clusters to an atomic oxygen atmosphere, demonstrating the potential of this new technique to study the size-dependent properties of deposited clusters in various research fields.**

Host: Wolfgang Eberhardt, UHH-ASG