

CCMX Advanced Course
**“Combining Structural & Analytical Investigations of Matter at the Micro-, Nano
and Atomic Scale”**

5.-8. 11. 2018 ETH Zürich

Station 6

Hitachi HD2700CS

(Location: HPM A73)

HRSTEM demo (60 minutes)

Topics:

Probe-corrected STEM

STEM-detectors: HAADF, BF, SE

Analytical methods: EDXS, EELS

Dr. Frank Krumeich

- Description of the instrument and its main characteristics.
- Optimization of imaging performance using the Ronchigram (correction of astigmatism and coma).
- **STEM** investigation of Au-nanoparticles supported on TiO₂:
 - Bright field and (ABF/DF) imaging: Mass-thickness and diffraction contrast.
 - High-angle annular dark field (HAADF) imaging: Z contrast
 - Phase contrast.
 - Quality control by Fourier transformation.
 - Elemental analysis (EDXS: spot analyses vs. mappings)

Further information:

[1] Characterization of Catalysts in an Aberration-Corrected Scanning Transmission Electron Microscope.

F. Krumeich, E. Müller, R. A. Wepf, R. Nesper, *J. Phys. Chem C* **115** (2011) 1080–1083.

<http://dx.doi.org/10.1021/jp105997h>

[2] <http://www.microscopy.ethz.ch/HD-1.htm>