HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

DEPARTMENT OF CHEMISTRY

MATERIALS CHARACTERIZATION SERVICES AT THE DEPARTMENT OF CHEMISTRY

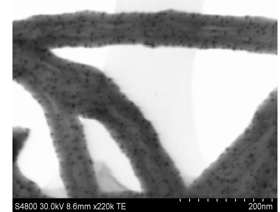
Hitachi S-4800 Field emission scanning electron microscope with Oxford INCA 350 Energy dispersive X-ray microanalysis system

High resolution SE and BSE imaging also at low acceleration voltages

Bright field STEM imaging

Qualitative and quantitative EDS analysis including linescans and elemental mapping

Cross-section sample preparation with Allied MultiPrep precision polishing machine



FEI Quanta 3D 200i DualBeam focused ion beam/scanning electron microscope with Omniprobe nanomanipulator and EDS

3D structural investigation with FIB milling

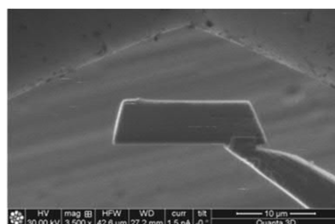
TEM sample preparation with liftoff techniques

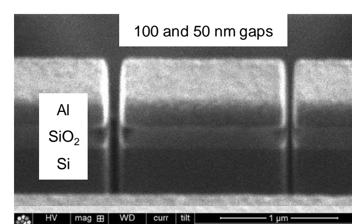
STEM imaging and STEM-EDS mapping

ESEM mode for imaging wet samples

High-temperature stage for imaging at up to 1000 °C

Fast EDS mapping with Inca 350 and a 50 mm^2 x-ray detector





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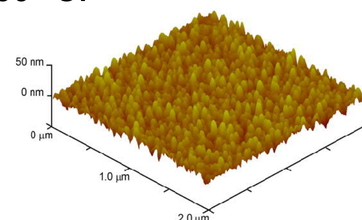
Veeco Instrument NanoScope V – MultiMode V scanning probe microscope

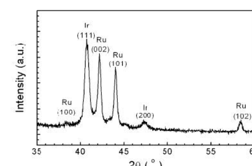
A full range of SPM techniques for surface characterization of properties like 3D-topography, elasticity, friction, adhesion, and magnetic fields.

Analysis can be made both in air and in fluid with in-situ heating and temperature control from ambient to 60 °C.

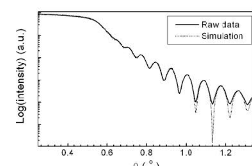


Modes included: Contact Mode AFM, TappingMode AFM, STM, Lateral, Magnetic, and Electric Force Microscopies, PhaseImaging, Conductive AFM, Electrochemical SPM, Nanolithography, Nanoindentation, Force measurements.

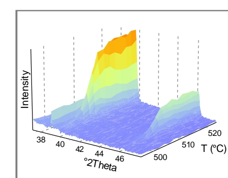
PANalytical X'Pert PRO MPD, Bruker D8 Advance and Rigaku Smartlab diffractometers



X-ray diffraction
- phase and crystallite size from crystalline materials
- in-plane diffraction and pole figures

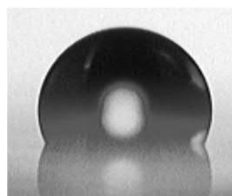


X-ray reflection
- film thickness (1 – 100 nm)
- film and substrate density and roughness



Non-ambient measurements
- *in situ* XRD in different atmospheres up to 1200 °C

Single crystal x-ray structure determination
Electrical materials characterization
Contact angle measurements
Light microscopy (up to 1000x)



Photocatalyst testing
IR spectroscopy
UV-VIS spectroscopy
Thermogravimetry

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