



# Characterisation



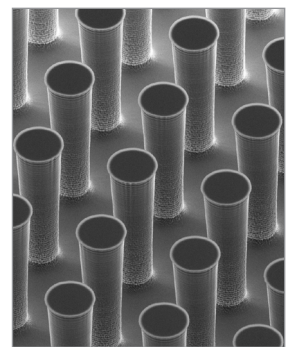
DTU Danchip monitors and assures the quality of the processes which are offered to users of the cleanroom. DTU Danchip has equipment within optical and topographic imaging, element analysis, film thickness and resistivity characterization, surface hydrophobicity and surface tension.

Using Scanning Electron Microscopy (SEM), we can resolve structures down to around 5-10 nanometers. We have four scanning electron microscopes allowing immediate characterization of processed wafers.

The Zeiss and FEI SEMs are the most advanced at DTU Danchip. They are state-of-the-art instruments with two vacuum modes to extend their imaging capability to non-conducting materials such as thick polymers or biological materials. The microscopes offer unsurpassed resolution, down to 1-2 nm is achievable depending on sample type. Equipped with Energy-Dispersive X-ray spectroscopy (EDX) systems some of our SEMs are capable of performing elemental analysis of very small volumes of the sample with micrometer precision.

A number of topographic characterization equipment are available at DTU Danchip, among these an Atomic Force Microscope (AFM) and a 3D optical profiler. In the AFM, a needle placed on a cantilever moves extremely accurately across the surface of the component, measuring the height difference down to 0.5 nanometer. The 3D optical profiler combines both confocal and interferometry techniques to measure surface topographies on a sub-nanometer scale with a spatial resolution down to 500 nm. The 3D profiler is also equipped with spectroscopic reflectometry to measure thicknesses of thin films up to 20  $\mu\text{m}$ .

After appropriate training, we allow cleanroom users to work alone and independently with our characterization equipment. For further information on our SEM or other characterization equipment contact us at [sales@danchip.dtu.dk](mailto:sales@danchip.dtu.dk).



## Characterisation Equipment

- Scanning Electron Microscopes
- Atomic Force Microscope
- 3D Optical Profilometer
- Dektak Stylus Profilometer
- Secondary Ion Mass Spectrometer
- Photoelectron Spectrometer
- Photoluminescence-mapper
- Ellipsometer
- Spectroscopic Reflectometer
- Thickness Measurers
- Drop Shape Analyzer
- Four Point Probe
- IR-Camera
- Optical Microscopes