

# Main Fabrication Facilities

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*Advanced and sophisticated equipment:*

- NIL (nano imprint lithography)
- FIB – highly advanced technology
- Laser micromachining
- Lithography mask design and fabrication
- Various thin film deposition methods, e-beam and optical lithography, wet and dry etching, backend processing; various characterization methods available

*List of Equipment:*

## **Electron Microscopes**

- Environmental Scanning Electron Microscope (ESEM – FEI Quanta 200 FEG)
- Field Emission High Resolution Scanning Electron Microscope (HRSEM - Jeol JSM-6700)
- Particle Beam Lithography E-beam lithography (Raith 150)
- SEM with e-beam writing attachment (Jeol 6400 + Elphy)
- Focused Ion Beam (Raith ionLine)

## **AFM/STM**

- AFM (Molecular Imaging PicoSPM II)
- Variable Temperature Ultra-High Vacuum STM/AFM System (Omicron)
- AFM in a glove box (NT-MDT SMENA-A)
- JPK Biological AFM coupled with Raman Spectroscopy

## **Optical Microscopy**

- Metallurgical confocal microscope (Olympus LEXT)
- Measurement microscope (Hisomet II)
- Inspection Microscopes (Olympus MX-40, MX-50)

## **Photolithography and nanoimprint lithography**

- Contact lithography (Suss MA6, MJB3)
- Direct laser writing & photomask preparation (Heidelberg Instruments Fast Scan DWL-66fs)
- Nanoimprint Lithography (S.E.T. FC-150)

### **Thin film deposition**

- E-beam deposition (VST, Edwards 306)
- Thermal evaporation (VST)
- RF sputtering (MRC)
- DC sputtering (Penta Vacuum)
- PECVD (Oerlikon)
- Ion Beam Sputtering

### **Dry/Wet etching**

- RIE etching (Nextral 860 HDP RIE)
- RIE etching (Oerlikon 790 RIE)
- DRIE etching (Plasma Therm 770 ICP DRIE)
- Wet and dry substrate cleaning

### **Measurements**

- Profile/Step height (Tencor, Veeco)
- Spectroscopic Ellipsometer (Woollam M2000DUV)
- Spectroscopic Reflectometer (Sentech FTP)
- Film Stress and 3D surface profiling (KLA P16+)

### **Thermal Treatment**

RTP (Jipelec Jetfirst 100)

### **Backend**

- Dicing (Disco DAD 3350)
- Wire Bonding (K&S)
- Precision Diamond Scriber (ATV)
- Tousimis Critical Point Dryer