materize

Prototyping Facility in Cleanrooms

Cleanroom based platform for development and testing of new ideas in micro and nano technologies

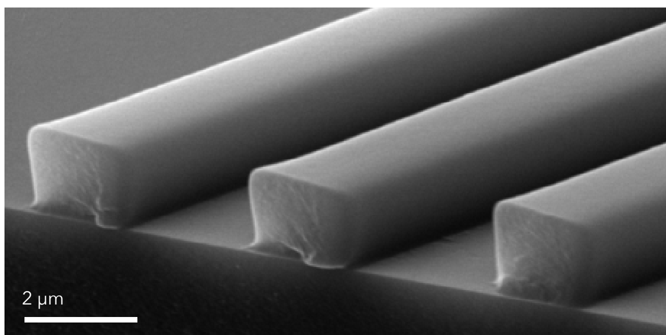
The Prototyping Laboratory is a facility in the cleanroom area of 680 m². With process and measurement tools providing a broad platform for the development and testing of new ideas in micro and nano technologies, based on CMOS line technologies. ISO class 7-8.

Cleaning and surface preparation

- Plasma cleaner. Surface treatment with low-pressure plasma – surface activation, surface cleaning, resist strip
- HMDS prime oven. Hexamethyldisilazane deposition for adhesion improvement
- UV/ozone cleaner. Surface cleaning and activation
- Ultrasound bath. Substrate cleaning

Lithography

- Direct laser writer
- Micro pattern generator for direct writing applications and low volume mask making
- Electron beam lithography
- Mask aligner

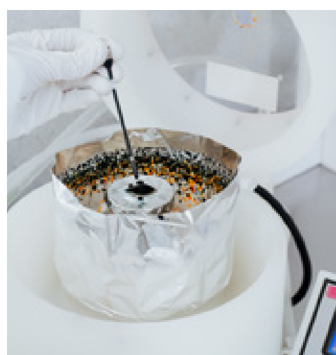


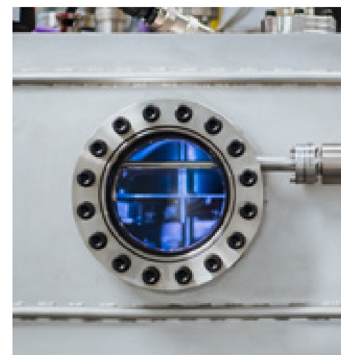
Thin film deposition

SPIN-COATER LAURELL (2 installed)

THERMAL EVAPORATION EDWARDS AUTO 306

- Two sources for metal
- Two sources for organic materials
- Substrate size up to 150 mm





SPUTTER CLUSTER SAF25/50

Magnetron sputtering cluster tool for process research and thin film deposition

- Five chambers
- Low temperature resistive thermal evaporation
- High temp. resistive thermal evaporation
- Two Magnetron sputtering - DC, RF
- Glow box loading/unloading (Ar)

ATOMIC LAYER DEPOSITION (available in 2018 Q4)

- Deposition of ZnO, HfO2, Al2O3

PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION

- Deposition of Si_3N_4, SiO_X, PBSG (doped silica used as sacrificial layer), a-Si (p-type, n-type)

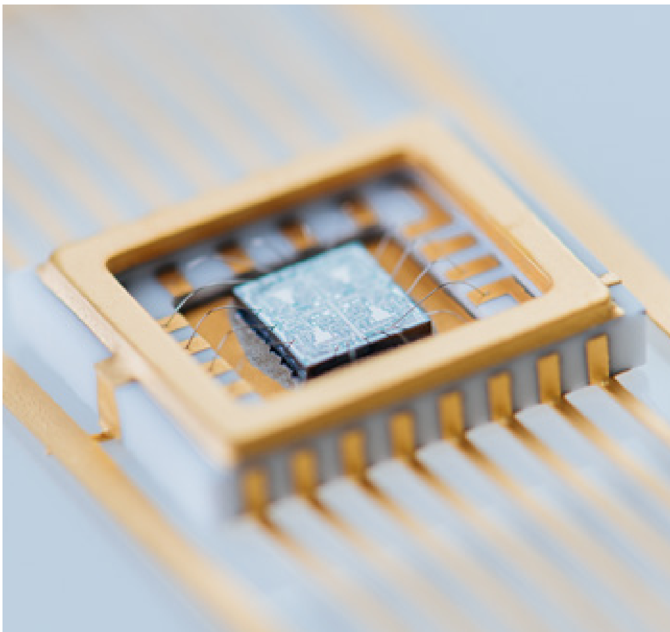
info@materize.com +371-6633-4488 8 Kengaraga street, Riga, Latvia materize.com

materize

Dry etching

- Reactive ion etching (Etching technology used in micro and nano fabrciation): Uses chemically reactive plasma to remove material deposited on substrates (available in 2019 Q1).
- Deep reactive ion etching (Bosch process): Highly anisotropic etch process used to create deep penetration, steep-sided holes, and trenches in wafers/substrates, typically with high aspect ratios. (available in 2019 Q1).

Bonding and packaging



WIRE BONDER (available in 2018 Q3)
Making interconnections (ATJ) between an integrated circuit (IC) or another semiconductor device and its packaging during its semiconductor device fabrication.

PROBE STATION (available in 2018 Q3)
Physically acquires signals from the internal nodes of a semiconductor device.

DICING SAW (available in 2019 Q1)
High-speed spindle fitted with an extremely thin diamond blade to dice, cut, or groove semiconductor wafers, silicon, glass, ceramic, crystal, and many other types of material.

Thermal processes

OXIDATION FURNACE. Oxidation of Si substrates to produce silicon oxide (available in 2019 Q1)

DOPING FURNACE. Solid source doping of Si (available in 2019 Q1)

Wet chemistry

WET BENCHES (available in 2018 Q4)

- Acid bench
- Solvent bench
- Lift-off bench

SPINE RINSE DRYER. Cleaning substrates with DIW and drying with N2 (available in 2018 Q4)

Characterization

THICKNESS MEASUREMENTS

- Dektak 150 profilometer
- Zygo NewView 7100 on-contact 3D Optical profiler
- Ellipsometer (available in 2018 Q2)

Determines thin film thickness and optical constants. Also composition, crystallinity, roughness, doping concentration, and other material properties associated with a change in optical response can be detected.

ELECTRON MICROSCOPY

- Scanning electron microscope Tescan Lyra
- Transmission electron microscope Tecnai GF20