

CUSTOM FABRICATION

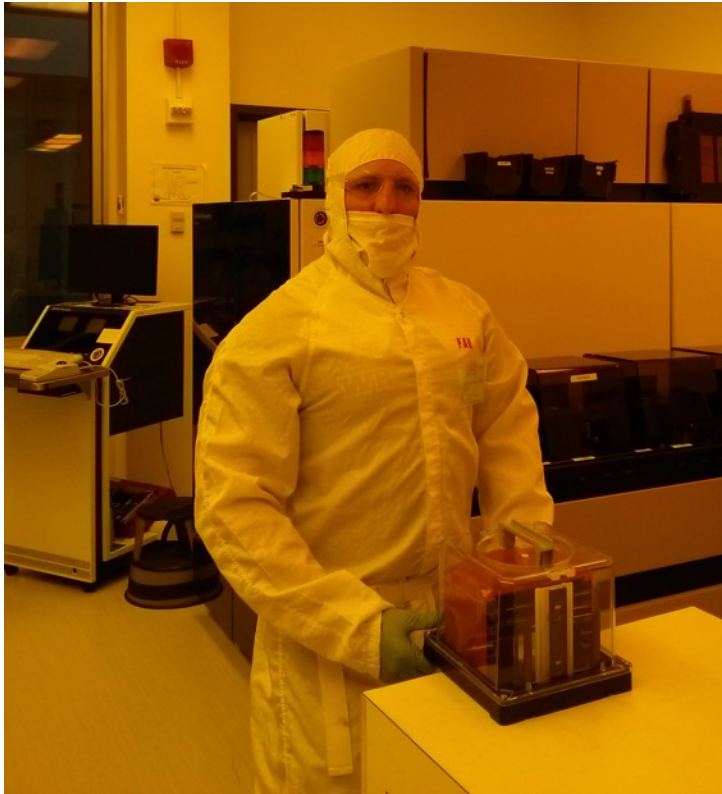


CUSTOM FABRICATION TO MEET YOUR NEEDS



We're proud to meet the needs of researchers solving cutting-edge problems and have worked with scientists and engineers at universities and national labs around the world. Our expertise in ultrathin-films and MEMS processes allow us to undertake truly unique projects. Nearly all of the custom design, deposition, etching, metrology and packaging is

performed directly by our team members. This allows us to quote quick turn-around times and maintain high-quality at all levels of the fabrication process.



BY SCIENTISTS AND ENGINEERS

FOR SCIENTISTS AND ENGINEERS

Because we are scientists and engineers first, we understand your needs better. We will give you the detail to understand how we price a project from mask design through process development, wafer deposition, etching, inspection and packaging. In many cases, we will setup a conference call with you and our fabrication engineers prior to generating a quote. For large projects, we are happy to provide weekly or biweekly updates and involve you in the decision making. We have a tremendous amount of experience in supported thin films and that dramatically reduces the amount of process development time. For custom projects that involve routine films and patterns, we do not charge for process development. Most custom products are shipped to the customer within 8 weeks of placing an order and providing a deposit.

MOST POPULAR FILMS



PURE SILICON

- Amorphous, Single Crystal or nanocrystalline
- Sputter deposited 5 to 50 nm thick
- Nanocrystalline films are nanoporous with tunable pore sizes from 5 to 75 nm



SILICON DIOXIDE

- Amorphous silicon dioxide
- GFLAT exclusive ultra flat oxide
- Thermal, Sputter or PECVD deposition
- Thicknesses from 20 to 4000 nm



SILICON NITRIDE

- Amorphous silicon nitride
- LPCVD Low stress - tunable
- Thicknesses from 5 to 2000 nm
- Ultra flat suspended membranes



DEVICES

We fabricate devices for a number of applications, including high-resolution and environmental TEM, x-ray diffraction, and even nanoparticle separation and cell culture. These various applications have required a wide range of membrane thickness/type, window geometry and patterned metals. Give us a call or send an email and we'll gladly discuss details. provide you with a quote.

AN OVERVIEW OF CUSTOM CAPABILITIES

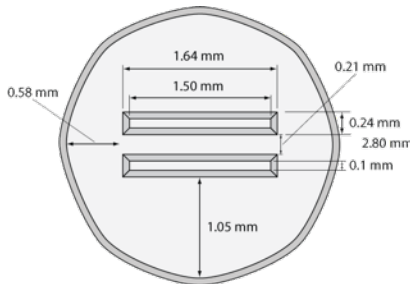


Silicon Wafer Specifications

- 100, 200, 300 micron thick and standard thicknesses
- 100 mm (4-inch) diameter
- 150 mm (6-inch) diameter

Custom mask design and chrome mask printing

- Feature size resolution to 350 nanometers (line/space resolution)
- Minimum membrane window size typically ~ 5 microns
- Maximum membrane window size (based on film) up to 25 mm x 25 mm

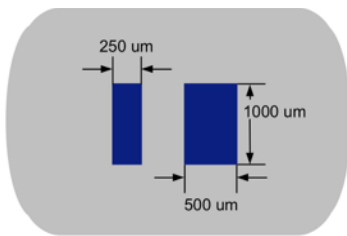


Front-to-back alignment lithography

- Front-to-back tolerance +/- 5 microns or better (+/- 20 microns for 150mm)
- Features as small as 500 nanometer circles can be etched in suspended membranes
- Orientation or identification marks can be etched into suspended membrane or over support silicon to reduce interference with imaging

Metal Deposition

- Deposition of aluminum, palladium, gold, 50 to 200 nm thicknesses
- Deposition of adhesive layer of titanium, chrome, etc.
- Features to less than 10 microns with alignment to membrane windows within +/- 5 microns



Device Packaging

- Devices are typically separated from the supporting wafer and packaged in transparent gel-boxes for ease of handling and viewing
- All devices are individually inspected under light microscopy
- Devices can also be designed with continuous films for spin coating that can be later dissected along scribe lines by the customer