TEMwindows.com
a division of SiMPore Inc.

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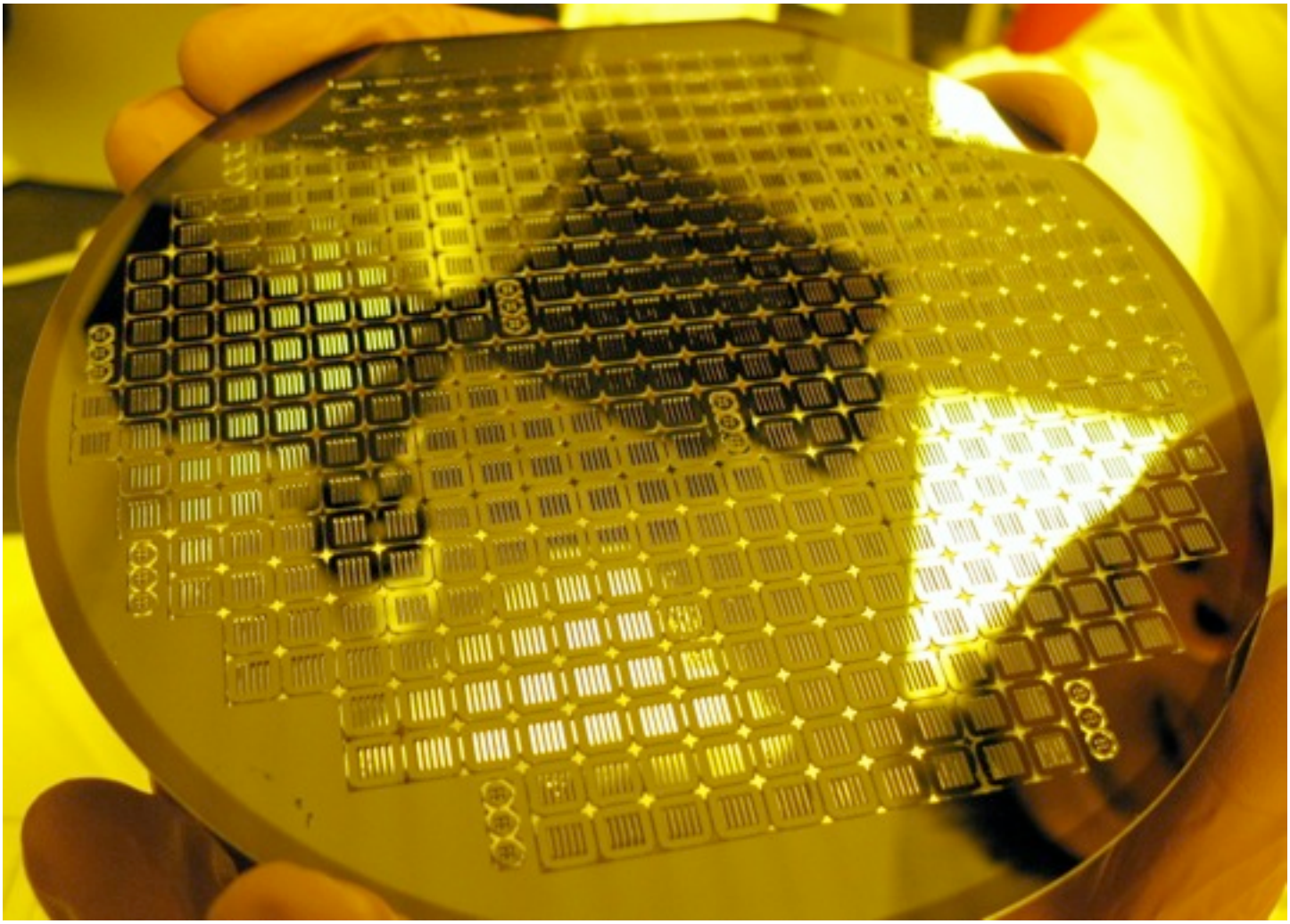
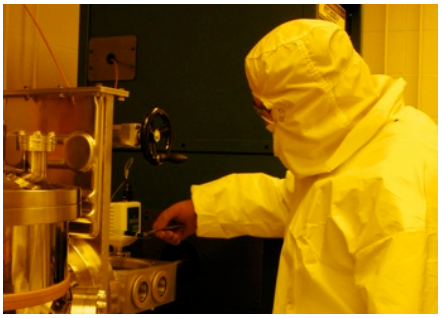
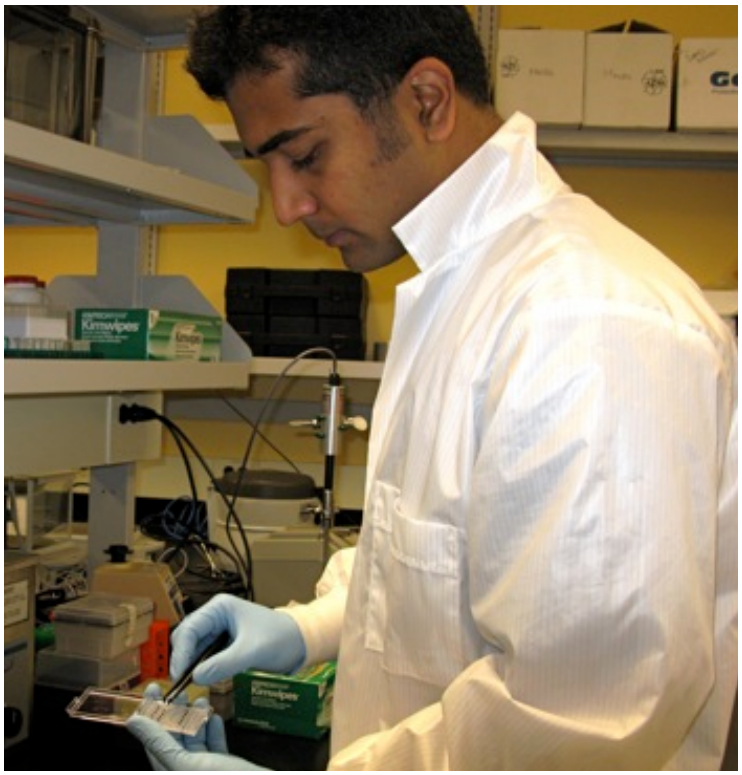
CUSTOM FABRICATION



CUSTOM FABRICATION TO MEET YOUR NEEDS



We are proud to meet the needs of researchers solving cutting edge problems around the world. Our customers have included scientists and engineers at prestigious universities and national labs in the North America, Europe and Asia. Our expertise in ultrathin supported films and MEMS processes allow us to undertake truly unique projects. Nearly all of the custom design, deposition, etching, inspection 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. In addition, we can maintain strict confidentiality when desired by our customers.



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.

FROM OUR CUSTOMERS

LAWRENCE BERKELEY NATIONAL LABORATORY, USA

The National Center for X-ray Tomography at Lawrence Berkeley National Laboratory requires custom membrane devices with rather precise specifications. In practice, these devices are demanding to fabricate. The engineers at TEMwindows.com were able to develop and implement a solution that meets our precise requirements. We received high-quality devices that accurately met our needs. These devices are performing well under the harsh conditions of our experimental procedures.

RIKEN INSTITUTE, JAPAN

TEMwindows.com has been very responsive to our specialized needs on several custom projects. Their engineers have demonstrated the experienced know-how to fabricate membrane devices meeting our specifications.

AVAILABLE FILMS

Si

PURE SILICON

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

SiO_2

SILICON DIOXIDE

- Amorphous silicon dioxide
- Thermal, Sputter or PECVD deposition
- Thicknesses from 20 to 2000 nm

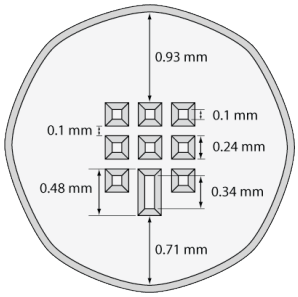
Si_XN_Y

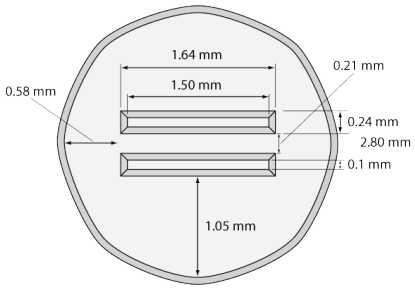
SILICON NITRIDE

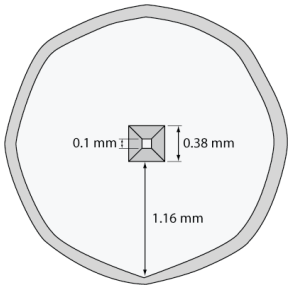
- Amorphous silicon nitride
- LPCVD Low stress
- Thicknesses from 5 to 2000 nm
- Ultra flat suspended membranes

DEVICES

We fabricate devices for a number of applications. The typical user is seeking a custom specimen holder for high-resolution TEM. However, we have also fabricated devices for x-ray diffraction, environmental TEM, protein and nanoparticle separations and even cell culture. In these different applications, we have varied membrane thickness, window geometry, film composition, and deposition and placement of electrodes. If you are not sure if your needs fit within our capabilities, give us a call or send an email. We would be happy to get into the details and provide you with a quote.







AN OVERVIEW OF CUSTOM CAPABILITIES

Silicon Wafer Specifications

- 100, 200, 300 and 400 micron thick
- 100 mm (4-inch) diameter

Custom mask design and chrome mask printing

- Feature size resolution to 2 microns (line/space resolution)
- Minimum membrane window size typically ~ 5 microns
- Maximum membrane window size typically 1 mm by >10 mm

Front-to-back alignment lithography

- Front-to-back tolerance +/- 5 microns or better
- Features as small as 2 micron 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 noble metals including 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

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