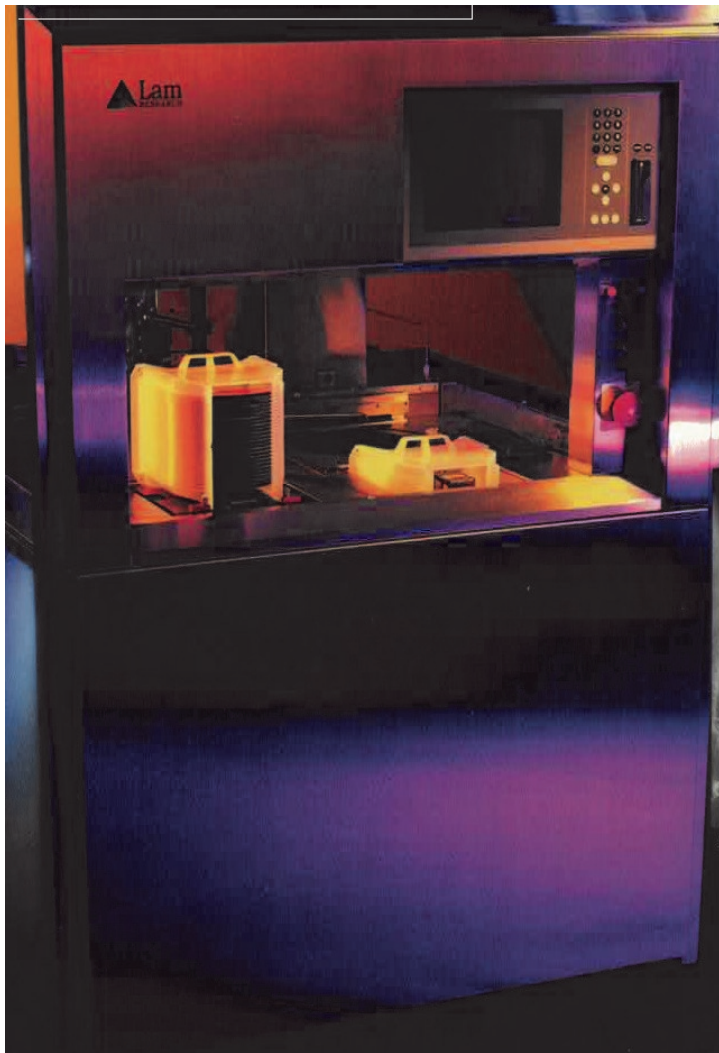


# Rainbow® 4520i



The Rainbow® 4520i system is a single wafer, two active processing chambers, vacuum load-locked low pressure oxide system for integrated isotropic/anisotropic (“wineglass”) profile on high aspect ratio contact and via structures. The Isotropic Module adds isotropic oxide etching capabilities to the existing anisotropic capabilities of the Rainbow 4520. The combination of isotropic and anisotropic etching provides excellent aluminum step coverage. The Isotropic Module is incorporated onto the entrance load-lock on the Rainbow 4520, therefore requiring only one additional wafer handling step. Having two chambers on a single machine greatly reduces the possibility of cross contamination between processes, which minimizes wafer breakage and defect densities.

## Applications

- ◆ Contact etch
- ◆ Planarization
- ◆ Via etch
- ◆ Trench mask etch
- ◆ Pad etch

## Typical Results

### Iso-chamber ( NF3/He)

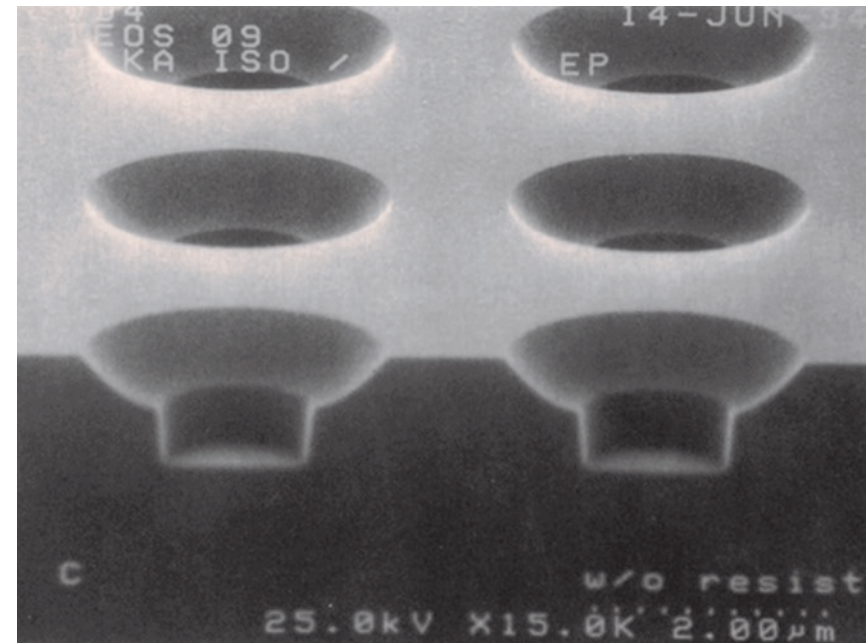
- ◆ BPSG etch rate >5000 A/min
- ◆ TEOS etch rate >2500 A/min
- ◆ Uniformity +/- 15% 3 $\sigma$

### Main chamber

- ◆ Thermal Oxide Etch rate  $\geq$  4500A/min
- ◆ BPSG etch rate >7500 A/min
- ◆ TEOS etch rate >5000 A/min
- ◆ Uniformity +/- 10% 3 $\sigma$

## System Reliability

- ◆ Uptime  $\geq$  85%
- ◆ MTTC < 6 hours
- ◆ MTBF  $\geq$  125 hours
- ◆ MTTR  $\leq$  4 hours



## Rainbow 4520 Isotropic Specific Items

- ◆ Integrated Isotropic Etch Chamber capable of isotropic etching for dielectric (oxide) films
- ◆ 1250 watt solid state, water cooled remote, isotropic chamber, RF generator
- ◆ RF match housing resides at the left side of the isotropic module
- ◆ 3 MFCs for isotropic chamber and 1 pressure controller for helium backside wafer cooling
- ◆ Isotropic Chamber Wafer Sizing Kit (125 mm, 150 mm, 200 mm)
- ◆ Hinged upper housing of isotropic chamber for ease of maintenance
- ◆ Air blower assembly is mounted on top of the bell jar cover, housing an impeller that directs air flow through the electrodes