



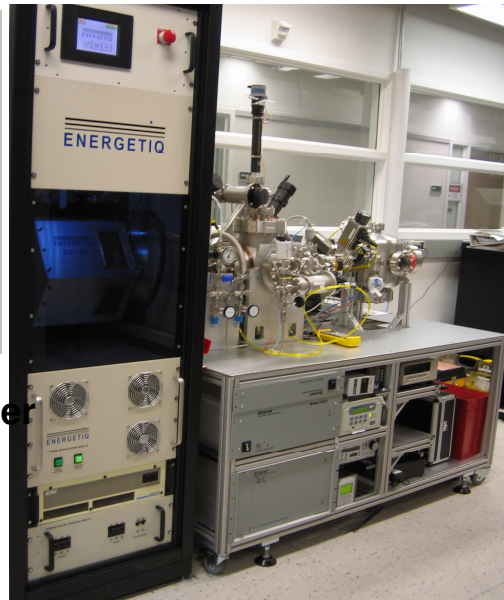
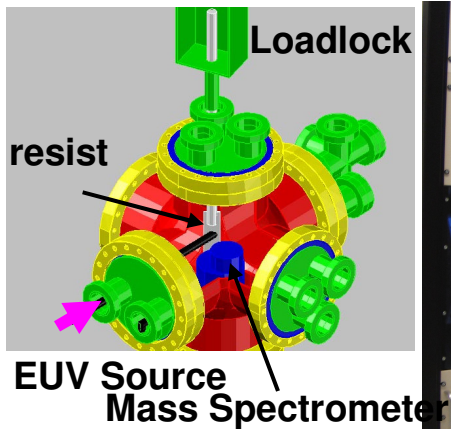
Collector upgrades for higher power optics contamination testing

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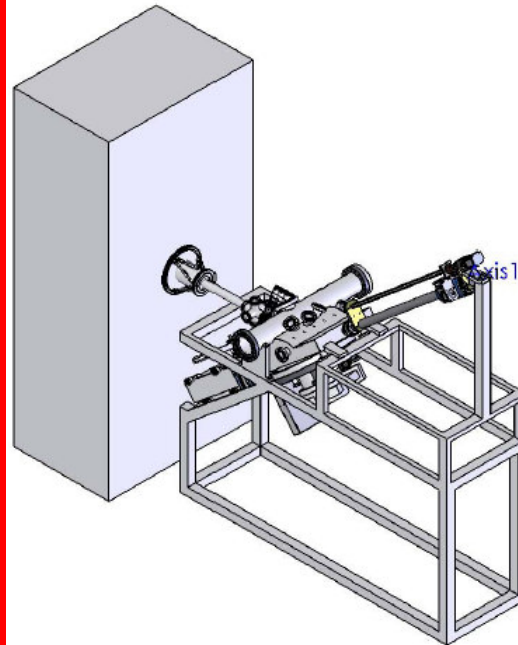


Diagrams of old and new vacuum chambers



New Chamber

- 300 mm wafer loading
- Collector for higher power
- Spinning rotor gauge and capacitance manometer for accurate pressure calibrations



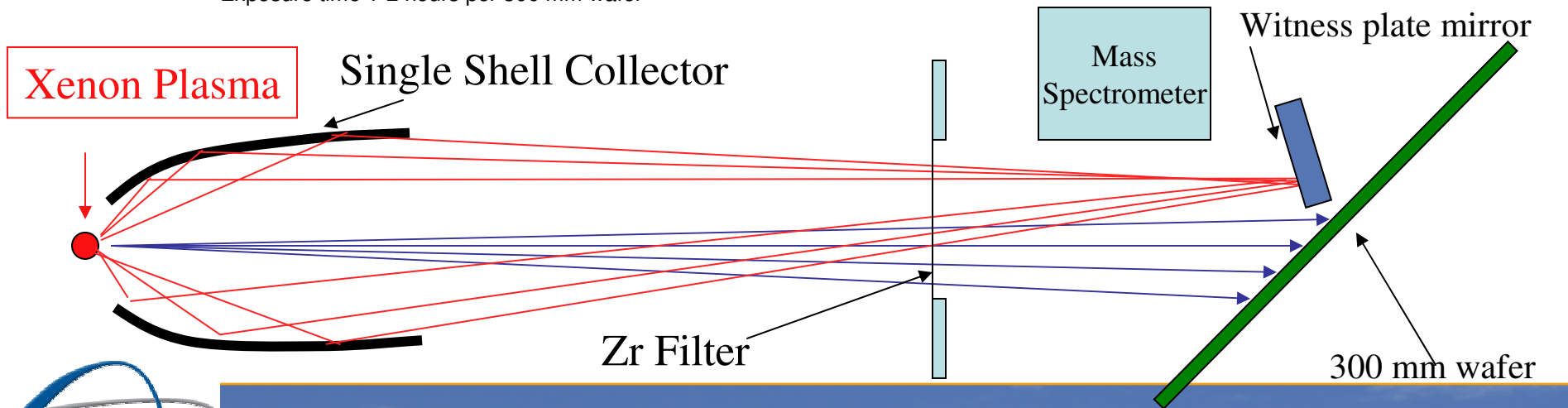
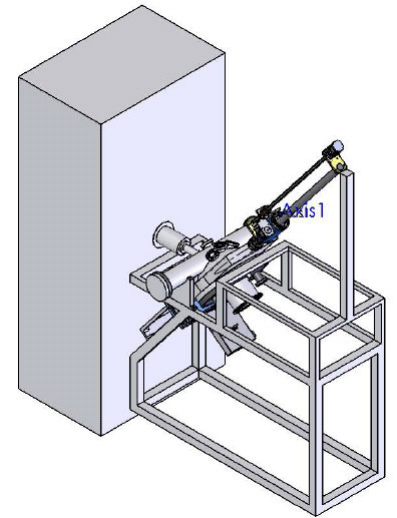
Old Chamber

- Only an ion gauge for pressure measurements and mass spectrometer calibrations
- Limited to 1" wide pieces of wafers for outgassing



Exposure conditions for Upcoming Witness Plate Testing

- Energetiq EUV source
 - ~10 W into 2π in 2% BW
 - ~50 W into 2π within 11-15 nm
 - Typically 1250 Hz
- Exposed through filter for spectral purity and vacuum separation
 - Zr filters ~11-17 nm bandwidth
 - Zr/Si filters ~ 11-15 nm bandwidth
- Direct beam
 - Few mW/cm² within a few cm² area (limited by filter size)
- Focused from collector
 - Few hundred mW/cm² within a few mm² area
- For outgassing tests, misalign collector so only use direct beam (few mW/cm²)
- For witness plate tests
 - Focused from collector onto mirror (few hundred mW/cm²)
 - Direct beam onto 300 mm wafer (few mW/cm²)
 - Exposure time 1-2 hours per 300 mm wafer



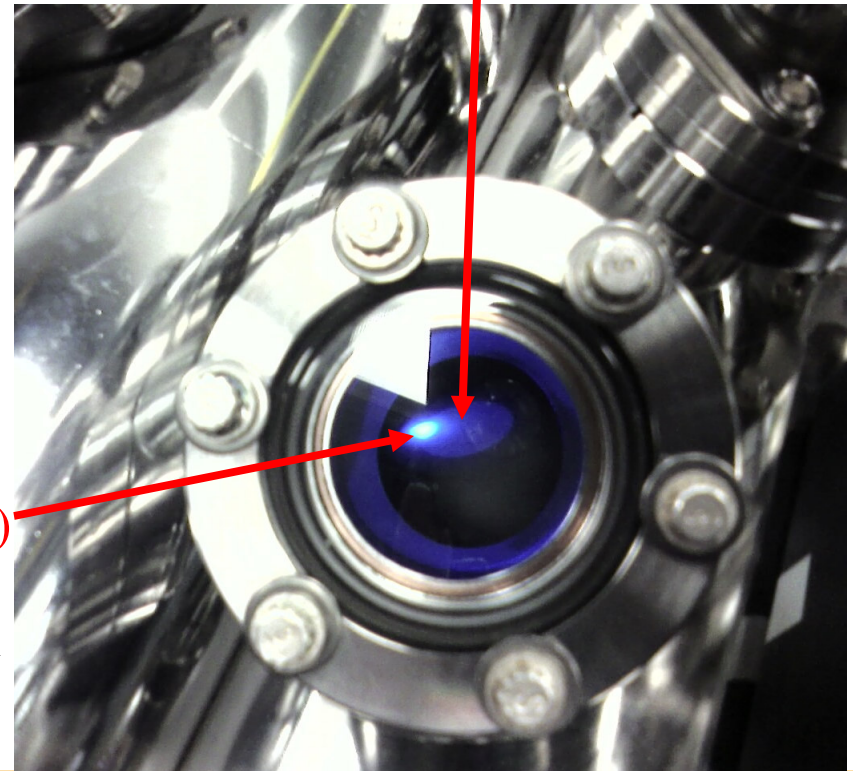
Collector alignment and power measurements



Focused EUV Beam (high intensity)

Preliminary measurements based on photoresist exposures show 100-200 mW/cm² intensity in focus

Direct EUV Beam (low intensity)



Visible light from EUV radiation on a phosphor screen