

# Facility Considerations for SEMATECH's EUV Resist Test Center

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## Metrology

### Critical Dimension

### Film Thickness



Hitachi S9380



Thermawave Optiprobe

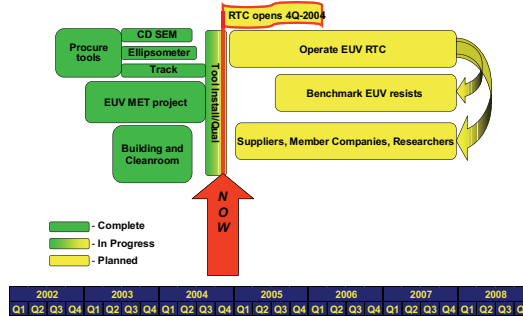


Previous SEMATECH Resist Test Centers: 193 nm, 157 nm

## EUV Resist Test Center (opens 4Q-2004)

Provides a neutral site facility that can be used by resist suppliers, SEMATECH members, and other interested parties to perform high resolution exposures to support the development of EUV technology

## Resist Test Center Schedule

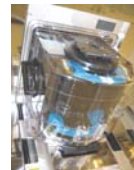


## Load/Lock for Vacuum Transfer



- Pumpdown load/lock to  $10^{-6}$  mbar
- Wafer transfer into stepper at  $10^{-7}$  mbar
- Exposure
- Return to load/lock
- Back to track for develop

## 200mm/300mm Bridge Tool Capability



Brooks Microtool insert for 200mm wafers in 300mm FOUP

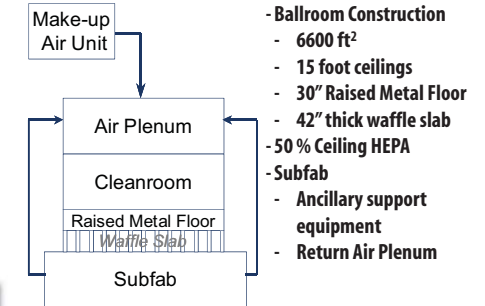
## EUV-Resist Test Center Contact

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## Cleanroom Environmental Control



- Ballroom Construction
- 6600 ft<sup>2</sup>
- 15 foot ceilings
- 30" Raised Metal Floor
- 42" thick waffle slab
- 50 % Ceiling HEPA
- Subfab
- Ancillary support equipment
- Return Air Plenum
- Particles
- Class 100 (spec)
- > Class 100 (actual)
- Tools - Class 1 (mini-environments)
- Wafers in FOUPs (Front Opening Universal Pod)
- Temperature
- 69 ± 3° F (spec)
- 69 ± 1° F (actual)
- Humidity
- 45 ± 5% RH (spec)
- 45 ± 2% RH (actual)

## EUV Micro Exposure Stepper



- Exitech MS-13
- 600x600 micron field
- $10^{-7}$  mbar vacuum in exposure chamber
- Open field exposure chamber available 2Q'05

## Stepper Lens Installation



## EUV Source Gas



- Located in Subfab
- Argon
- Helium
- Xenon
- Synthetic Air
- 21% O<sub>2</sub>/balance N<sub>2</sub>
- Venting back-fill

## Hoist/Trolley



## Coat/Develop Track



- 200mm/300mm bridge
- Adhesion module
- HMDS
- (8) photoresist nozzles
- Hand dispense photoresist supported
- Edge-bead/rinse solvent
- PGMEA
- (3) developer nozzles

## Coat/Develop Track Scrubber



- VOC abatement
- HMDS
- edge-bead/rinse solvent
- photoresist vehicle solvents
- Scrubber
- Recirculated water
- Packed tower
- Antifoam injection
- Necessary!