



PELLICLE TRANSMISSION MEASUREMENTS

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EUV Symposium – Mask/Pellicle TWG

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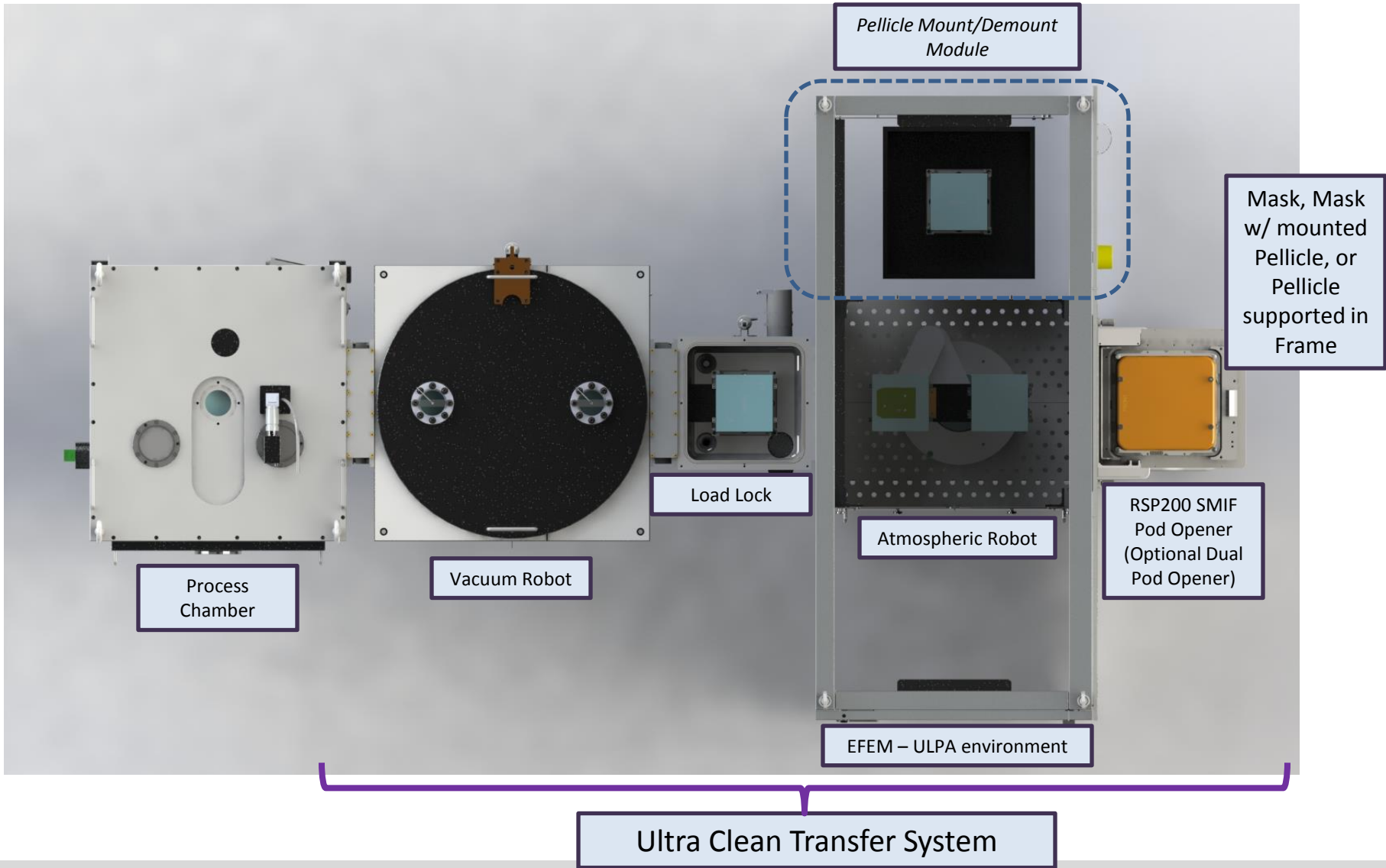
PELLICLE TRANSMISSION MEASUREMENTS

- EUV Pellicle Transmission Tool utilizes EUV Tech's Ultra Clean Transfer system with RSP-200 or optional Dual Pod opener
- Modes of operation:
 - Freestanding pellicle supported by a frame
 - Pellicle mounted on a mask
 - Selectable wavelength range for measurement
- Measured pellicles:
 - Mounted a 100 nm thick SiN pellicle on to a mask blank
 - Measured freestanding 100 nm SiN & 400 nm Si pellicles supported by a frame



EUV Pellicle Transmission Tool

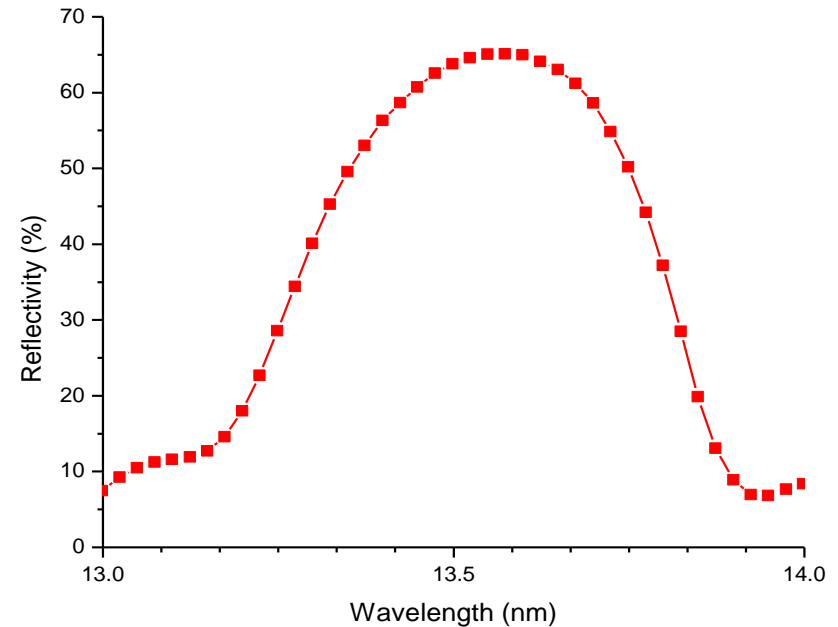
EUV PELLICLE TRANSMISSION TOOL



TOOL REPEATABILITY

- Measured the same location on the pellicle mounted on a mask blank 10 times to determine tool repeatability

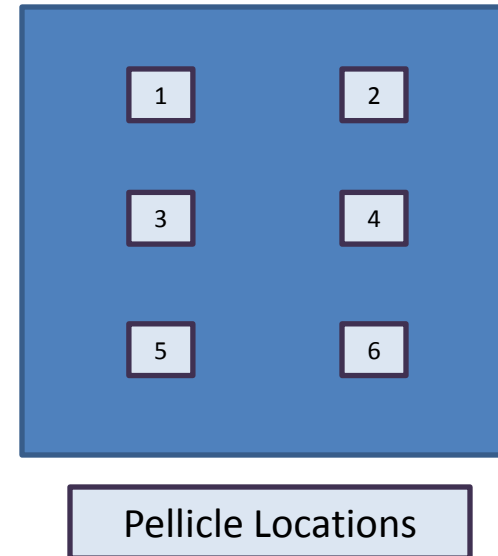
Pellicle Transmission @ 13.52nm (Single Pass)	Pellicle Transmission 13 - 14nm band-pass (Single Pass)
54.57%	40.69%
54.54%	40.69%
54.53%	40.69%
54.53%	40.66%
54.56%	40.67%
54.54%	40.66%
54.54%	40.68%
54.51%	40.68%
54.51%	40.68%
54.53%	40.67%
Avg	40.68%
3 Sigma	0.03%



PELLICLE TRANSMISSION MEASUREMENTS: MOUNTED ON A MASK BLANK

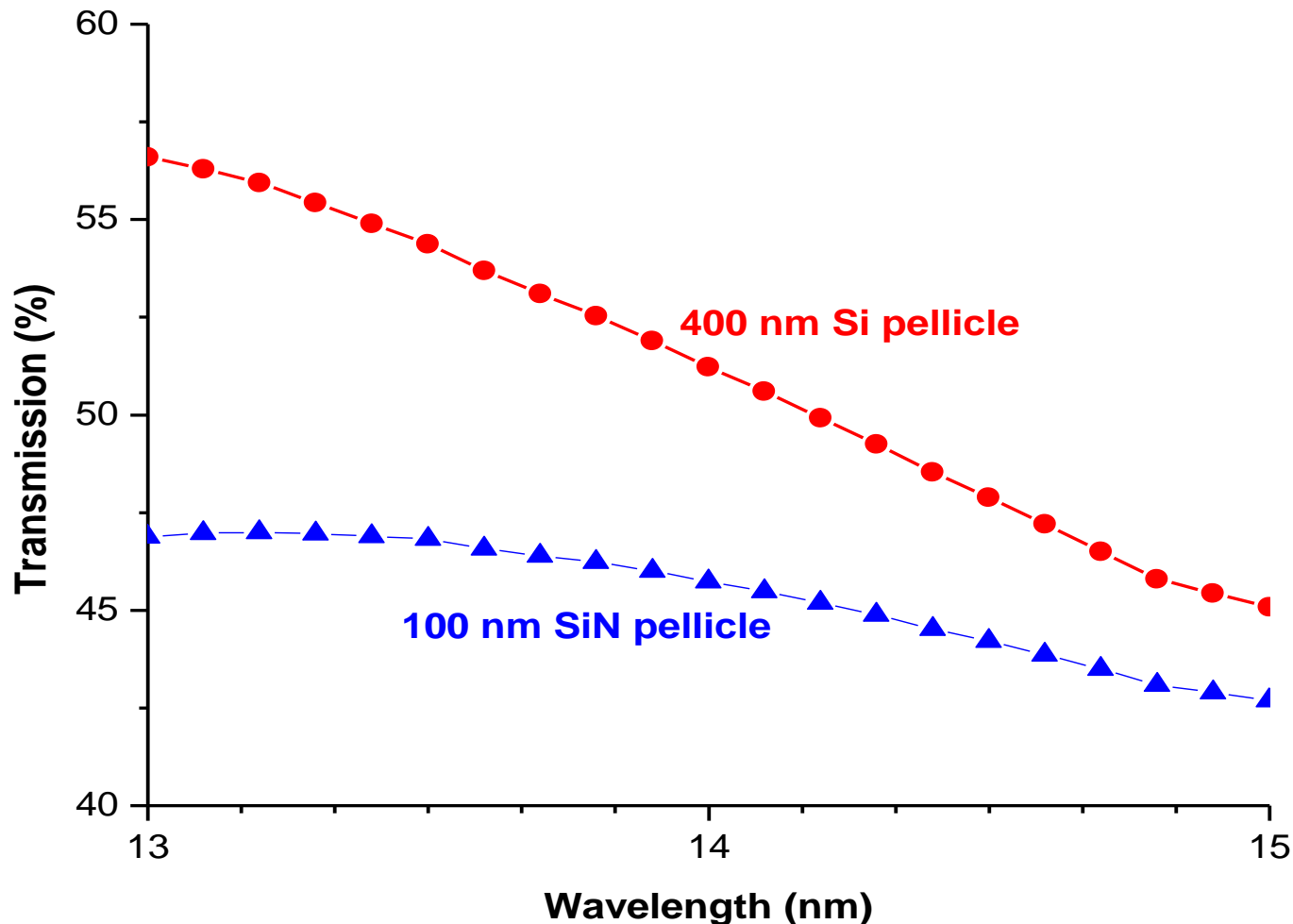
- Measured 6 locations on a 100nm SiN pellicle

Pellicle Location	Pellicle Transmission @ 13.52nm (Single Pass)	Pellicle Transmission in 13-14nm band-pass (Single Pass)
1	53.64%	40.04%
2	55.11%	41.20%
3	54.92%	41.03%
4	54.65%	40.87%
5	54.54%	40.68%
6	54.81%	40.98%

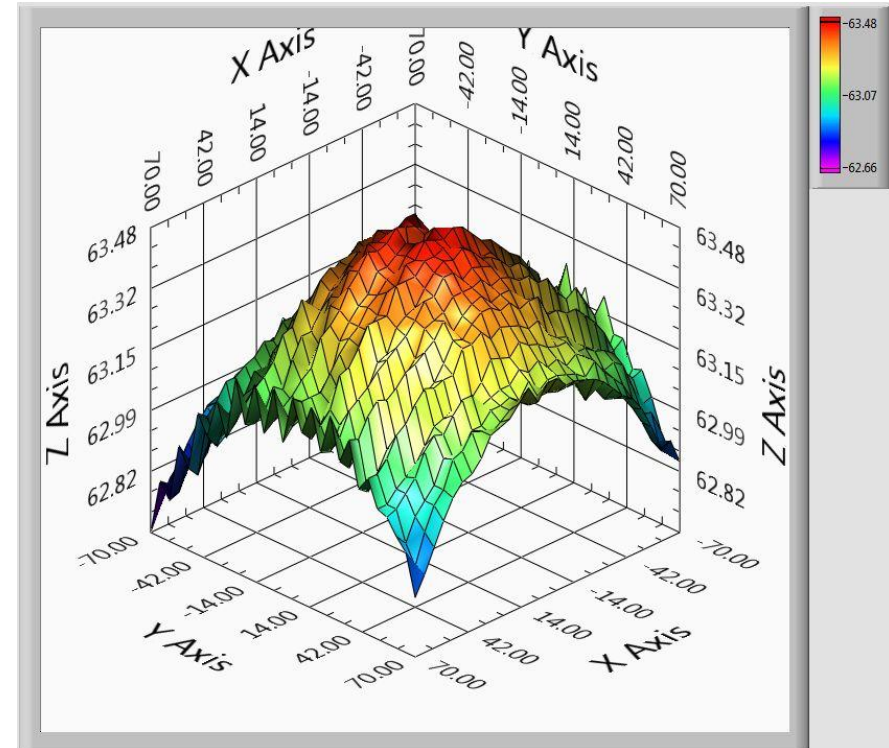
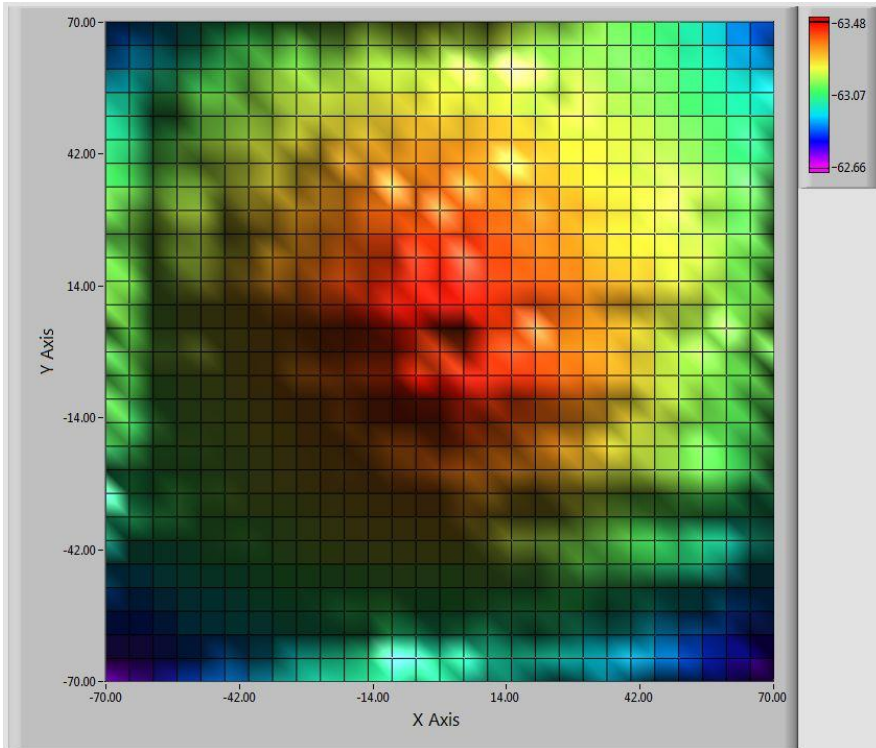


FREESTANDING PELLICLE TRANSMISSION MEASUREMENTS

- Measured a 100 nm SiN pellicle and a 400nm Si pellicle supported by a frame



MAPPING OF ENTIRE PELLICLE



- Example of a reflectivity measurements across a reticle
- This same measurement process can be utilized to map the transmission of a pellicle

EUV PELLICLE TEST SUITE

EUVT EUV
Pellicle Thermal
Stress Test
Fixture

EUVT EUV
Pellicle Pressure
Change Test
Fixture

EUVT EUV
Pellicle
Mechanical
Shock Test
Fixture

