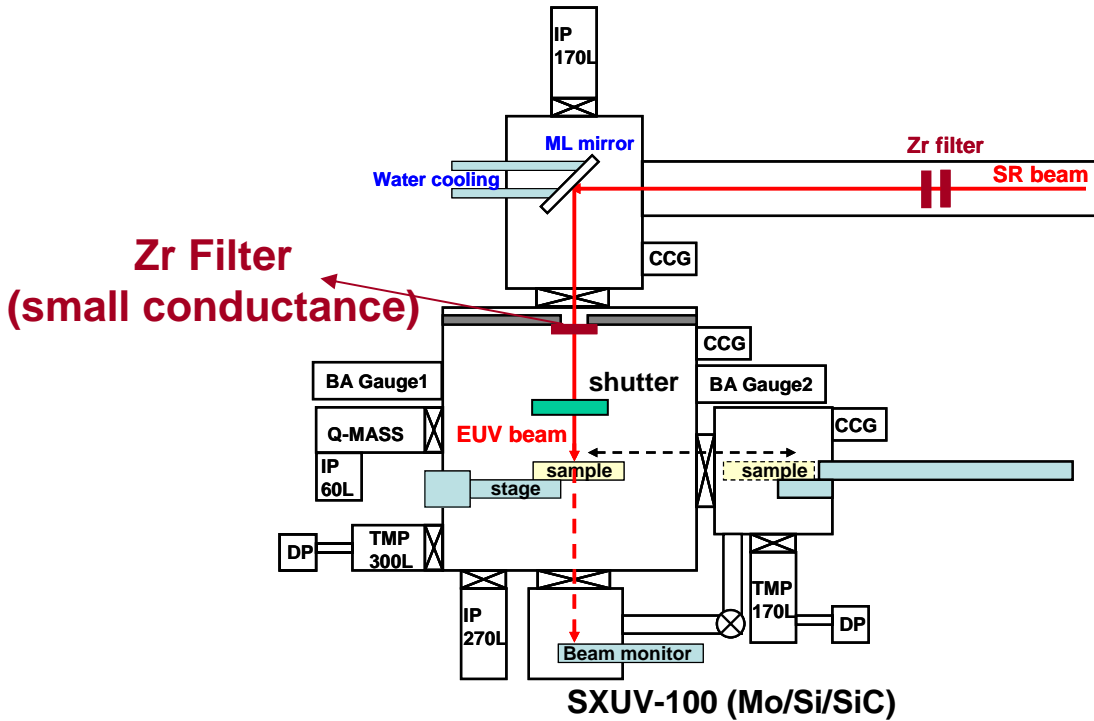

Status of ASET-Outgassing evaluation

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ASET EUV Lithography Laboratory

This work was supported by NEDO.

ASET-Outgassing evaluation apparatus



Back pressure: $<1 \times 10^{-7}$ Pa (just after baking)
Back pressure: $2-9 \times 10^{-7}$ Pa (in resist film)

EUV intensity: $0.1 \sim 1$ mW/cm²@250mA

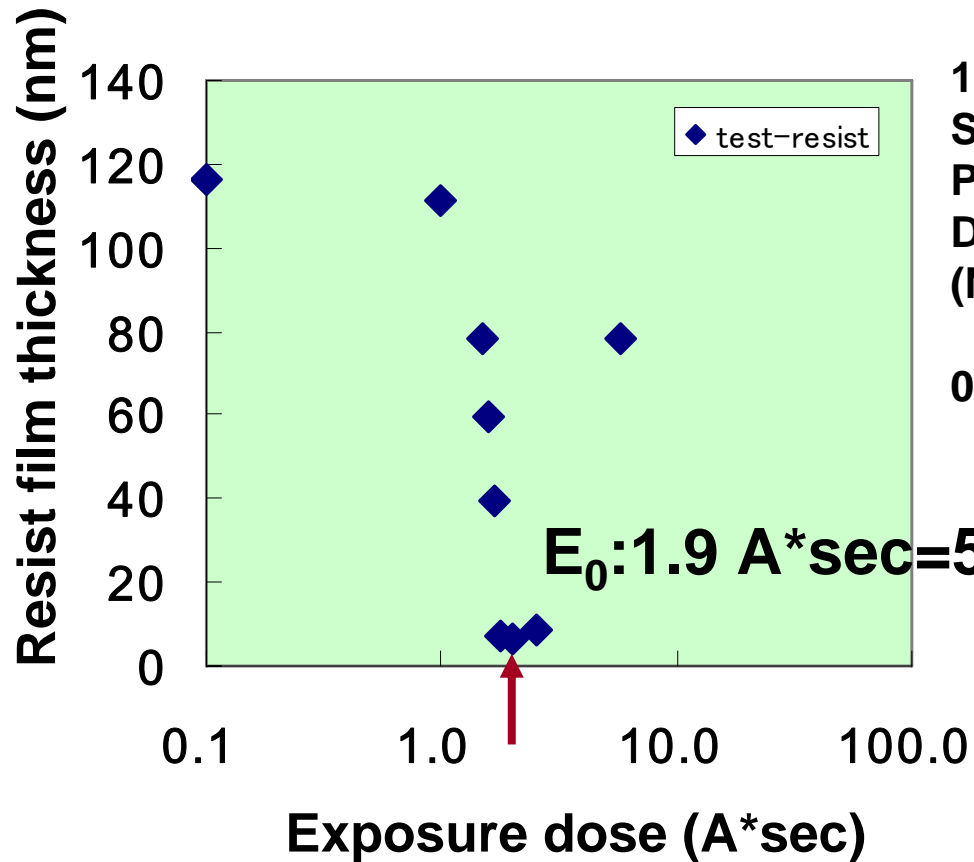
Exposed area: 1 cm x 2 cm

Q-MASS: M-QA200TS (ANELVA)
60sec@1-200 amu scan

Progress of ASET-Outgassing evaluation apparatus

- 2005/3** **Installed**
- 2005/4** **Adjustments**
- 2005/5-6** **Preliminary experiments**
- 2004/7** **Adaptation (Beam monitor, Filter, Orifice)**
- 2005/8-9** **Adjustments**
- 2005/10-** **Round robin outgassing**
Preliminary results

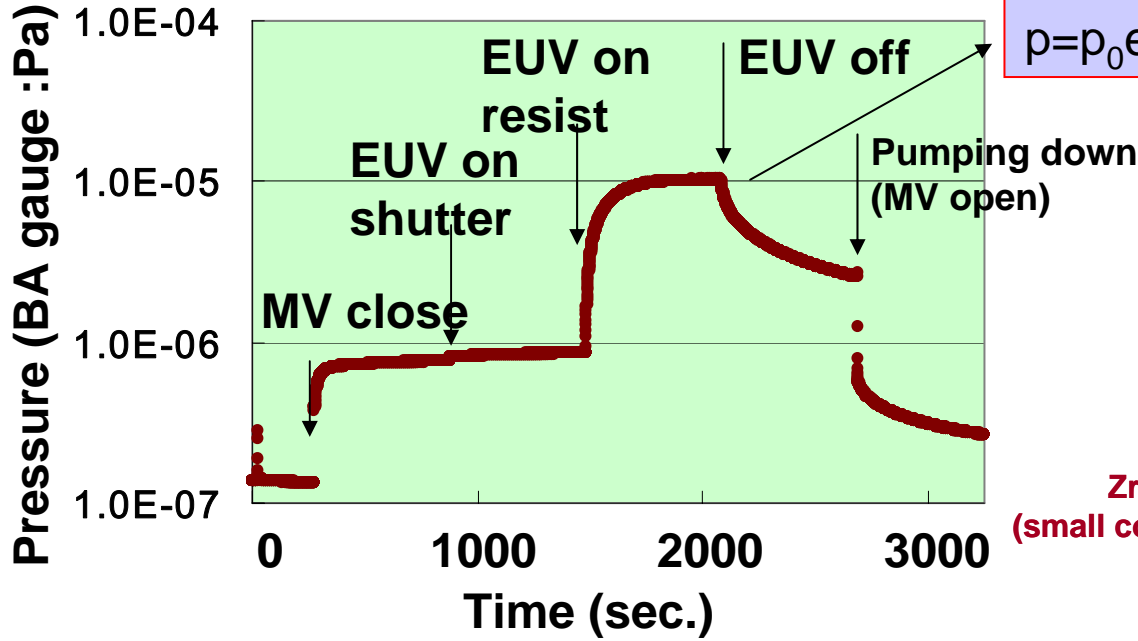
Ezero evaluation



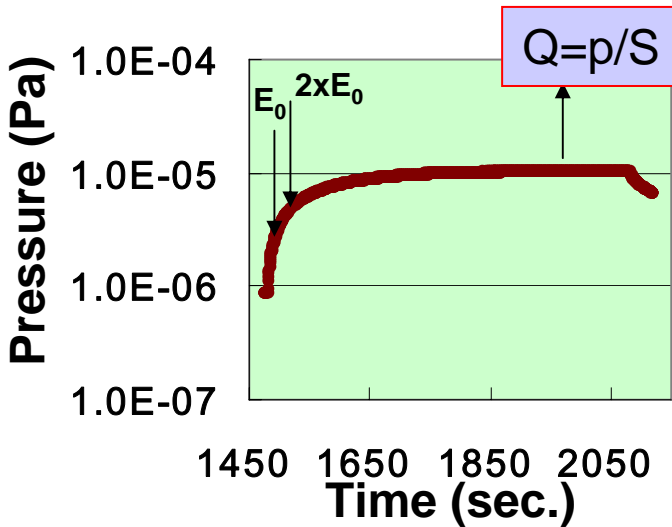
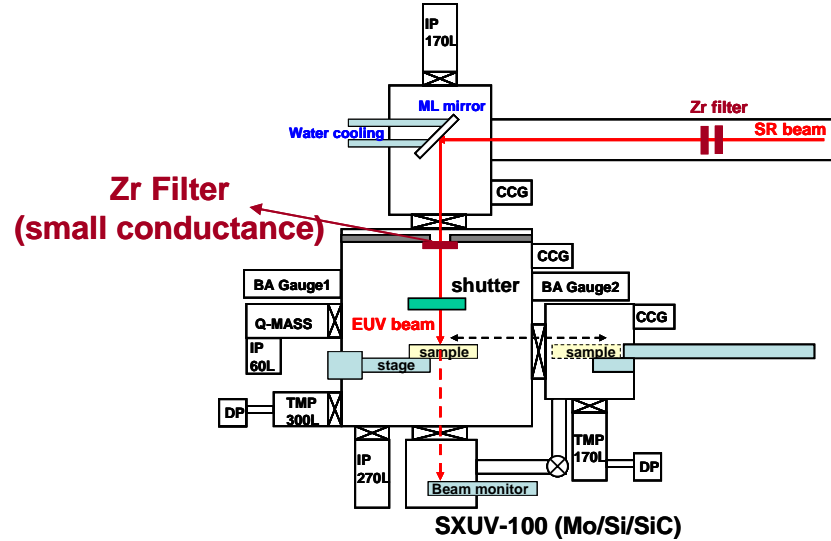
125 nm thickness
Softbake: 140° C for 60 seconds
Postbake: 130° C for 90 seconds
Development: use 0.26N TMAH
(NMD-3 2.38%) for 40 seconds

0.5 mW/cm²@250mA

Preliminary outgassing evaluation



0.21 mW/cm² @ 234mA
Exposed area: 2cm²

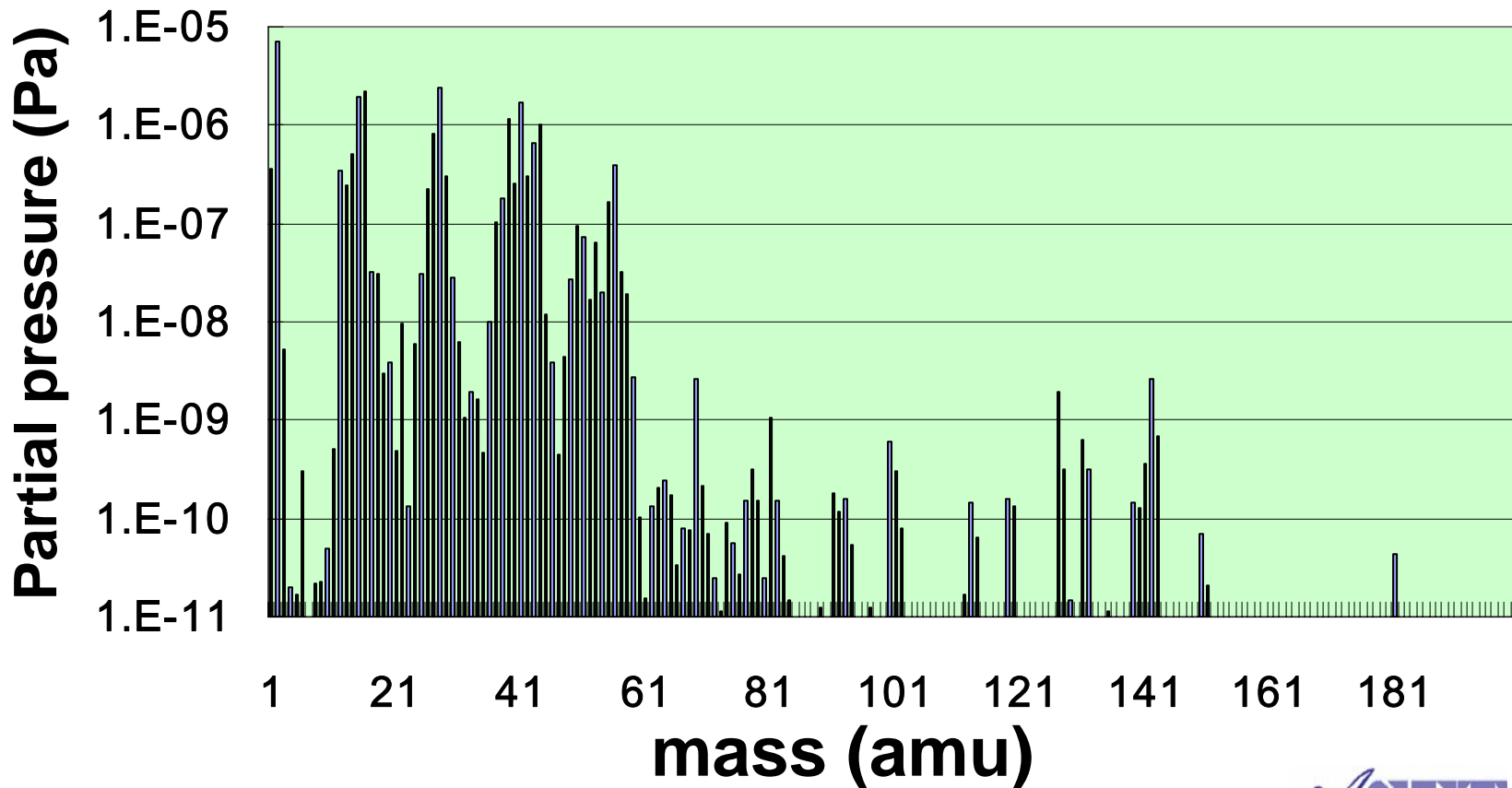


Q: 2.4x10¹¹ molecules/cm²/sec at 0.21mW/cm² in stationary state

Q: 2.2x10¹⁴ molecules/cm²/sec at 200mW/cm² in HVM (simply estimation)

Q-MASS analysis 1

Q-MASS: M-QA200TS (ANELVA)
60sec@1-200 amu scan
10 scans average
0.67mW/cm²@241mA
Exposed area:2cm²



Q-MASS analysis 2

	H,H ₂	H ₁₋₂ O	CO ₂	C ₄ H ₇₋₁₀	C ₆ H ₅₋₆	12-43amu	*>43amu	C _x F _y	SO _x	IH,I
Pa	7.4E-06	7.0E-08	1.0E-06	6.2E-07	4.7E-10	1.4E-05	2.3E-07	1.0E-07	1.3E-09	2.3E-09
ratio	3.2E-01	3.0E-03	4.4E-02	2.7E-02	2.0E-05	5.9E-01	1.0E-02	4.6E-03	5.7E-05	9.9E-05

*except C₄H₇₋₁₀, C₆H₅₋₆, C_xF_y, SO_x, IH,I