

Critical Issues on Contamination and Lifetime

(the issues of importance in the area of EUV optics/mask contamination right now)

Contamination related systems of exposure tools:

Optics

- Illumination Optics

 - Oxidation

 - Carbon deposition and cleaning

- Projection Optics

 - Oxidation

 - Carbon deposition and cleaning

Mask

 - Carbon deposition and cleaning

 - Particles(Not dealt here)

Ranking of issues

Asked to several people which is the most important.

		Tool supplier	User
Carbon source			
Residual hydrocarbons	Optics, Mask	A	
Outgases from resists	Optics, Mask	B	
Wires, PCBs and other materials	Optics, Mask	A	
Oxidation source			
Residual water	Optics, Mask	B	
Capping layer	Optics	C	
Out of band radiation	Optics, Mask	B	
Cleaning technologies	Optics, Mask	B	

"A" should be cared most now, but "C" does not mean unimportant.

Results as Tool suppliers' opinion

- A The chamber should be cleaned as much as possible.
(Remove residual hydrocarbon and water)
Define the additional material that may possibly be sources.
(Depends on tool design)
- B Collect the infos of Resist outgases, being not known yet.
What is the typical substance? Collaboration needed.
(Unsaturated aromatic compound etc.)
Cleaning and OoB light should be studied.
(Cleaning: Application to tools needs some ideas.)
- C Capping layer seems to be of different importance by company. Basic strategy is to prevent oxidization firstly.