

Overview - Resist Outgassing / Optics Contamination

Presentations and discussion to address questions and issues in the following areas:

- General optics contamination
- Resist outgassing physics/chemistry
- Witness plate testing

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General optics contamination

- Why have the results from different labs been inconsistent?
 - Can we understand the subtle vacuum differences that may have led to the variations?
 - Can we move to more consistent results between labs with some standardization of procedures or calibrations?

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Resist outgassing physics/chemistry

- How does outgassing change for different pulse structures, and pulsed vs. continuous wave (synchrotron) sources?
- How does outgassing vary with
 - total dose?
 - dose rate?
 - bandwidth of illumination?
 - exposed area of resist?
 - thickness of resist?
- Are there any clear observations about different formulations and their effect on outgassing?
- Are there molecules that are more likely to contaminate (that can be focused on)?

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Witness plate testing – based on ASML proposed test

- How does the capping layer choice effect the results?
 - Should the community settle on a standard choice, like Ru, TiO₂ or Si capped?
- Does the angle of illumination of the mirror matter?
- Does the distance from mirror to resist matter?
- Does the illumination bandwidth affect the results due to reflectivity changes?
 - If there is a change, is it well understood and can it be accounted for in the results?
- How do the results scale with the total dose on the mirror – which will be different if the illumination area changes?
- Does the pulse structure of the illumination affect the results?
- How does the background pressure affect the results?
 - Can this be accounted for by a control test without resist?
- Are reflectivity measurements capable of accurately detecting changes of a few % ?

