

EUV Optics and Mask Contamination – Overview of Presentations

- Madey: Electron-induced carbon accumulation faster on TiO_2 than on Ru.
- Niibe-san: In-situ mirror surface analysis and elemental concentration mapping demonstrated. EtOH can enable conservation of mirror reflectivity (Ru-capped).
- Denbeaux: Radiation in the VUV wavelength range appears to cause optics contamination.
- Hill: There are risks associated with accelerated lifetime testing.
- Nishiyama-san: Status of optics contamination in SFET.
- Wüest: Main contaminant on SEMATECH MET mirrors (Albany) and mask (Berkeley) is carbon.

Discussion – Optics and Mask Contamination

- Which mirrors are more likely to be contaminated?
 - Illumination optics ↔ Projection optics
 - Outgassing: Vacuum components ↔ Resist
- Out-of-band radiation:
 - How important?
 - Are even lower hydrocarbon levels required?
 - Can filters – which are contamination-resistant – be devised?
- Mask contamination:
 - How does one determine when mask has to be cleaned?
 - How many times can a mask be used?
 - Will mitigation of mask contamination be required?
 - Is cleaning while preserving CD feasible?
- Mirror Cleaning techniques:
 - How effective? How often?
 - Effect on other components (not mirrors)?
- HVM conditions – will anything be significantly different?
 - Higher intensities, non-linear effects?