

Litho Panel Discussion Summary

1. Immersion will most likely carry litho to 45nm hp
2. EUV is most likely required for 32nm hp
3. First introduction of EUV into mfg: in 2009 (Van den hove, Abe, Arnold). Infrastructure is a challenge (Arnold)
 - NAND Flash has the most aggressive litho roadmap: 32nm hp in 2009 (Arnold)
4. Litho cost per bit continues to decrease → very good news (Lercel)
5. Optical mask becoming increasingly complex leading to high cost (Hayashi), prohibitive for low volume
6. **Litho Cost:** if target met, EUV offers best cost-per-bit solution for 45nm hp, 32nm hp node and beyond (Lercel, Abe, Hector)
7. **Litho Performance:** when available, EUV offers high k1 process (Abe, Hector, Lercel)
8. Collaboration to develop infrastructure needed

Key Challenges

- Hyper NA Immersion
 - Complex RET's, OPC's, data volume, low k1
 - Mask wrier, inspection and repair tools
 - Hyper NA requires high index fluid and resist and lens materials
- EUV
 - Mask blank defectivity
 - Reticle handling (no pellicle)
 - Development cost and readiness for 2009 introduction
- Mask:
 - Mask cost due to complexity (OPC, RET, Data volume, etc.)