International Conference on EUVL 2025

CONFERENCE REPORT

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SPIE. PHOTOMASK TECHNOLOGY+ EUV LITHOGRAPHY

2025 Conference Chairs

Symposium Chair:

Toshiro Itani (AIST)

Symposium Co-Chairs:

Patrick Naulleau (EUV Tech)
Paolo Gargini (Stanford Univ.)
Kurt Ronse (imec)

Program Chair:

Takahiro Kozawa (Osaka Univ.)

Program Co-chairs:

Joern-Holger Franke (imec)
Eric Hendrickx (imec)
Winfried Kaiser (Zeiss)
Eric Panning (SiClarity)

2025 Focus Area Update

Development concerns	Average	3-sigma
1. Resist resolution, sensitivity & stochastics met simultaneously	1.2	2.0
2. Extension of EUV mask infrastructure and technology: Absorber, ML, Stitching vs 6x12 inch mask for high NA EUV	2.1	1.8
3. High NA Patterning performance: Limited DOF, Polarization issues, etc.	3.5	2.4
4. Keeping mask defect free: Pellicle, or other...	3.8	2.5

Ranking done based on the votes of the steering committee members.

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2025 Focus Areas

2021	2022	2023	2024	2025
1. Resist resolution, sensitivity & stochastics met simultaneously	1. Resist resolution, sensitivity & stochastics met simultaneously	1. Resist resolution, sensitivity & stochastics met simultaneously	1. Resist resolution, sensitivity & stochastics met simultaneously	1. Resist resolution, sensitivity & stochastics met simultaneously
2. Keeping mask defect free (pellicle, or others)	2. Keeping mask defect free (pellicle, or others)	2. Extension of EUV mask infrastructure / technology (absorber, ML, half-field, PSM) for high NA EUV	2. Extension of EUV mask infrastructure / technology: Absorber, ML, Stitching vs 6x12" mask for high NA EUV	2. Extension of EUV mask infrastructure / technology: Absorber, ML, Stitching vs 6x12" mask for high NA EUV
3. Extension of EUV mask infrastructure / technology (absorber, ML) for high NA EUV	3. Extension of EUV mask infrastructure / technology (absorber, ML, half-field, PSM) for high NA EUV	3. Keeping mask defect free (pellicle, or others)	3. Keeping mask defect free (pellicle, or others)	3. High NA Patterning performance: Limited DOF, Polarization issues, etc.
4. Power efficiency and stability improvements	4. Power efficiency and stability improvements	4. Power efficiency and stability improvements	4. Power efficiency (sustainability)	4. Keeping mask defect free: Pellicle, or others

2025 Ranking Comments / Notable Outcomes

Resist materials

- Remains the highest concern by unanimous vote.
- Control of 3D profile of resist patterns is a concern.
- More work needed on development of novel platforms.

EUV extension

- Despite obvious imaging and energy efficiency benefits; surprising lack of discussion on 6”x12” masks (compared to ALP in February). Reports focus more on progress in high NA HVM productivity with present mask format.
- Stitching multiple die more efficient than cutting from the wafer and reassembling, thus stitching at high NA has the advantage over packaging.

2025 Ranking Comments / Notable Outcomes

High and Hyper NA Patterning performance/stability

- Limited DOF is an obvious concern.
- Community finally effectively recognizes that polarization control will be needed and solutions on sector-based polarization control proposed.
- Increased interest on hyper NA EUV.

Keeping mask defect free

- Good progress on pellicles, especially on CNT-based technologies.
- Pellicle adoption for High NA at high power applications ongoing.

2025 General Comments from Steering Committee

- **Excellent attendance record: over 900 attendees registered!**
- **Fresh interest from companies seeing business opportunity in EUV.**
- **Overall impression of the meeting was good: Presentations and time for networking during lunch, afternoon and banquet!**

See you next year on Sept. 8-11, 2026 at Monterey!

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