

Maskless Meeting Conclusions

Results of January 17-19, 2005 Meeting

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Accelerating the next technology revolution.

Meeting Highlights

- Meeting addressed both Charged Particle Maskless Lithography (CP-ML2) and Optical Maskless Lithography (O-ML2).
 - 109 experts in attendance
 - CP-ML2 & O-ML2 Technology presentations
 - Presentations on technology programs in Europe, Japan, and US
 - 5 breakout sessions
- Recommendations for issues from each breakout
- Assembly prioritized issues
- Steering Committee arranged prioritized issues into sub-categories

Output

- **Key observations:**
 - There is a large number of promising technologies for ML2
 - The immaturity of all programs indicates the need for further development requirements
 - Several potential markets were identified for ML2, but more work is required to identify the potential of each

Output

- **Business issues for both O-ML2 and CP-ML2**
 - Throughput
 - Timing for market
 - Development funding

Output

- **Technical issues for both O-ML2 and CP-ML2**
 - Beam calibration, verification and inspection of pixels on wafer
 - Compatibility with optical lithography process
 - Data storage, volume, and transmission
 - Data verification, redundancy, compression
 - Platform
 - Stitching errors affecting critical dimension (CD) and overlay

Output

- **Specific issues for Charged-Particle Maskless**
 - Beam current versus throughput tradeoff and extensibility
 - Beam stability/reliability
 - Blanker array
 - Contamination/charging of column
 - Corrections (proximity, heating, other)
 - Source stability/dose accuracy/shot noise

Output

- **Specific issues for Optical Maskless**
 - Laser requirements
 - Resolution extensibility
 - Modulator