List of Topics for 2017 EUVL Workshop

(June 12-15, 2017, CXRO, LBNL, Berkeley, CA)

The EUVL Workshop is generally focused on R&D topics related to the readiness of EUV Lithography for introduction into fabs. We are inviting papers that address such topics at 5 to 7 nm nodes and EUVL's extension for future manufacturing nodes at 3 nm and beyond. The detailed list of topics is given below:

(A) EUVL at 7 nm Node

- Meeting scanner power and uptime requirements
- Mask pellicle readiness to support high volume manufacturing (HVM)
- Topics related to meeting and improving productivity, and availability for 7 nm node

(B) EUVL at 5 nm Node

- Meeting 250 W power targets and >90% availability requirements
- Mask pellicle readiness to support HVM source power level
- Improving mask blank defectivity
- Actinic patterned mask defect Inspection (includes high-harmonic generation (HHG) source based system)
- EUV resists to meet resolution, LER and sensitivity targets. Includes new resist chemistries, resist fundamentals and new chemistries.

(C) EUVL at 3 nm Node and beyond (based on JM3 Call for papers for EUVL for 3 nm and beyond, put together by various guest editors. Details at link.)

High numerical aperture (NA) EUVL (>0.5 NA) scanner for 3 nm node and beyond

- High-NA microexposure tools
- Anamorphic NA >0.5 optics
- High-NA scanners
- High-NA computational lithography, including source-mask optimization and mask 3D effects

EUV Sources

- Extension of plasma-based sources to 500W+ levels
- Higher conversion efficiency (CE) operation opportunity of plasma-based sources
- Free electron laser (FEL) as next-generation EUVL sources - challenges and timelines for commercial viability
- Shorter EUV wavelength lithography and sources - potential and challenges

EUV Masks

- Mask materials: multilayer (ML) defect requirements; substrate and ML blank defect inspection and reduction; thermal effect under high power; absorber material to meet high NA-imaging requirements
- Mask modeling: fast and accurate modeling of 3D effects
- Pattern synthesis and optical proximity correction (OPC): OPC with anamorphic imaging, magnification, and mask error enhancement factor (MEEF) difference in two directions
- Pattern generation and transfer: resolution, pattern fidelity, critical dimension (CD) and registration control, phase control for phase shift masks (PSMs)

- Mask inspection and metrology: pattern defects, contamination, pattern metrology
- Mask defect disposition: defect printability based on aerial image and resist print, defect review, defect repair
- Pellicles: requirements, materials, mounting, lifetime under high-EUV power, recovery and reuse
- Mask handling and maintenance, such as lifetime in continuous exposure under high dose
- Material design to meet the 3-nm node resolution LER and sensitivity (RLS) requirements and imaging process window

EUV Resists

- Fundamental operating mechanisms of photoresist materials designed for the 3 nm node and beyond
- Patterning variability: line width roughness (LWR) or local critical dimension uniformity (LCDU) and its sources, including photon or material stochastic effects in the resist
- Impact of fundamental resist design strategy on OPC
- Pattern transfer into relevant underlayers and device structures, including novel etch processes
- Metrology related to resists designed for the 3 nm node, at relevant dimensions.