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Kurt G. Ronse
Eric Hendrickx
Patrick P. Naulleau
Paolo A. Gargini
Toshiro Itani
Editors

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Introduction

The following papers are the manuscripts of the International Symposium on EUV lithography (EUVLS), organized by imec, Eureka, SPIE, and Eidec in Monterey (CA) from 17 to 20 September 2018.

The EUVL Symposium was for the second year co-organized together with Photomask 2018 Conference (PM) and was well attended. Over 580 attendees followed the sessions which were divided into joint sessions and separate sessions for EUVLS and PM.

After all the EUVL sessions, the EUVL Symposium Steering Committee jointly discussed the progress on the focus points identified in 2017 and formulated focus points towards 2019.

The Committee expressed strong confidence in EUVL insertion in 2019 at the 7nm node. With EUVL source power increased to 250W and the large number of scanner shipments in 2018, it is believed to be unlikely that EUVL will not be taken into (pilot) production in the next 12 months. The Committee also expressed the opinion that the current status of photoresists and masks (including mask actinic infrastructure) is suitable to support 7-nm node insertion.

For the next technology nodes (5nm and beyond), attention in various areas is required. Focus item number one is still stochastics, leading to roughness and failures. Stochastics come partly from shot noise and partly from EUVL materials/processes and need to be co-optimized in order to guarantee the required yield. Focus item two is EUV mask defectivity, which commonly will be tackled by using EUV pellicles. The use of pellicles is still hard and troublesome and reduces the throughput. Focus item three is litho cluster reliability, which should exceed 90% (estimated nowadays to reach about 80%). Downtime should primarily consist of scheduled down, no surprises. Finally, focus item four calls for the development of actinic patterned mask inspection and alternative mask absorbers to increase the overlapping process windows of typical use cases.

With these conclusions, the community is informed where to concentrate research and development efforts. The next EUVL Symposium is again planned in September 2019 in Monterey, again co-organized with the PM2019 Conference.

Kurt G. Ronse
Eric Hendrickx
Patrick P. Naulleau
Paolo A. Gargini
Toshiro Itani