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Extreme Ultraviolet (EUV) Lithography II

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Patrick P. Naulleau
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Introduction

It is with pleasure that I write the introduction for the Proceedings of the second SPIE conference on Extreme Ultraviolet (EUV) Lithography.

This year, the conference continued to have a vibrant participation from various segments of our industry and academia, with strong representation from Europe, Asia, and America. The level of participation in terms of number of papers presented was very similar to last year's while the attendance to the meeting was up significantly, showing the growing interest and even eagerness for this technology.

The papers in these Proceedings address areas that are known critical issues for the technology, such as sources, masks, resist performance, and components lifetime. They also provide updates on the status of tools and process development for the technology nodes of interest.

The introduction of EUV Lithography in industrial pilot lines is in full swing and EUV scanners have been installed at chip manufacturers for early process development. Although the throughput of these scanners and source power is not at the expected levels yet, many wafers have been printed with these beta tools with excellent results down to approximately 20 nm half-pitch resolution and with good overlay. Source manufacturers report progress in the stability, lifetime, and average usable power for the scanner. The progress made in the quality of EUV optics is particularly noteworthy: flare levels below 5%, which are now achieved, were once thought to be practically impossible. The EUV mask infrastructure also continues to make progress and a lot of effort is devoted to put in place actinic inspection tools. Finally, the limits of resist resolution have been pushed beyond 20 nm, with some formulations approaching 15nm half-pitch. These are but a few examples of the progress made during the past year.

I would like to thank the authors and conference attendees for their active participation: you make this conference possible. I am also extending my wholehearted gratitude to my cochair, Patrick Naulleau from LBNL, who has expertly carried a large part of the workload this year. I am confident that this conference will grow and thrive under his leadership for the next two years. Our acknowledgments go to the conference program committee for all their help in putting the program together and chairing sessions. Finally, we are indebted to the SPIE staff, as their many contributions truly help make this conference a success.

Bruno M. La Fontaine