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Advanced Etch Technology for Nanopatterning VII

**Sebastian U. Engelmann
Richard S. Wise**
Editors

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Introduction

This proceedings volume contains accepted papers from the SPIE conference on Advanced Etch Technology for Nano-patterning VII (The SPIE Etch conference) held as part of the International Symposium on Advanced Lithography, 25 February – 1 March 2018, in San Jose, California, United States. These proceedings papers cover the latest advances in the wide field of etch and nano-patterning technology and offer a glimpse of the state-of-the-art of this important field of semiconductor technology.

This year's SPIE Etch conference continued the fine tradition of having a wide international representation and attracted many researchers from related fields. For this year, our conference spanned three days, with the papers divided into eight sessions (listed below) which continued to garner tremendous interest among conference attendees:

- Keynote Session
- Advanced Plasma Patterning Techniques
- Materials and Etch Integration: Joint Session with Conferences 10586 and 10589
- Innovations in Plasma and Patterning Materials
- Patterning Process Control
- Novel Plasma Patterning Techniques: Atomic Layer Etching
- Patterning and Etch for EUV: Joint Session with Conferences 10583 and 10589
- Patterning Solutions for Emerging Product Applications

The widely recognized challenges in extension of Moore's Law has driven the industry toward collaboration across process modules. This year, the Etch conference focused on strengthening this collaboration with two well-attended joint sessions, on Patterning Materials and Etch with the Advances in Patterning Materials and Processes (with conference 10586), and on EUV Etch interactions with the EUV Lithography (with conference 10583).

The keynote session of the Etch conference this year was focused on patterning challenges related to EUV patterning as well as new challenges that arise for plasma etch processes in memory and logic applications. A more and more interdisciplinary approach to the patterning challenges across etch, lithography, materials, integration, metrology, process simulation and many more has become very apparent. We hope that this proceedings volume proves valuable to the many patterning scientists and engineers working in the fast-moving semiconductor industry. We also hope that it serves as a useful reference for those who are interested in nanofabrication, micro- and nano-fluidics, micro- and nano-

photonics, Micro-Electro-Mechanical Systems (MEMS), BioMEMS, organic electronics, advanced packaging, and bio-chips.

We thank the authors, particularly the invited speakers, for their valuable contributions to the conference and proceedings volume. The SPIE Etch conference is highly regarded among the worldwide patterning community, which recognizes the high quality of our talks and proceedings papers. We also thank members of the organizing committee for their dedication and hard work to help maintain a high quality of this conference. We are also grateful to LAM Research Corporation (United States) for their generous financial support.

Finally, we extend our sincere thanks to the SPIE staff for their tireless efforts and their meticulous organizational skills in helping make this year's SPIE Etch conference a success and in assembling and publishing this proceedings volume.

Sebastian U. Engelmann
Richard S. Wise