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## **Alternative Lithographic Technologies**

William M. Tong  
Douglas Resnick  
Ricardo Ruiz

## Alternative Lithographic Technologies

This year marks the second year of the Special Section on Alternative Lithographic Technologies. Our issue features papers on emerging lithographic technologies that are potentially both cost-effective and scalable to high-volume manufacturing (HVM).

The change in the lithographic landscape has been incremental in the past year: EUV lithography is still behind on source development, while multiple patterning is approaching diminishing returns. Thus, the urgency of finding a viable lithographic technique has become greater than ever. This is reflected in our special issue, as the number of papers has expanded from six to thirteen. This is a recognition of the growing importance of the emerging lithographic techniques. With the advancement of multibeam/multicolumn techniques, maskless/direct write (ML/DW) continues to make progress both on resolution and throughput. Nanoimprint has begun to gain acceptance in HVM and has made strong

advancements in both lower defect levels and better overlay. Directed self-assembly continues its explosive growth, with new emphases on metrology.

We hope you will be impressed by the creativity and progress demonstrated in these papers that may be key to lithography for HVM five to ten years down the road.

**William M. Tong**  
KLA-Tencor Corp.

**Douglas Resnick**  
Molecular Imprints, Inc.

**Ricardo Ruiz**  
HGST

**Guest Editors**