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# *Alternative Lithographic Technologies*

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**Bruno M. La Fontaine**
*Editors*

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# Introduction

Welcome to the 2009 conference on Alternative Lithographic Technologies. I am very pleased to have been chair of this conference, and in this volume you will find papers describing some very exciting developments in several fields.

In previous years, this conference has gone by the name of "Emerging Lithographic Technologies." However, that is something of a misnomer; rarely has a technology "emerged" from this conference into mainstream CMOS patterning. This year, we have changed the name to better reflect the true nature of the conference, that of Alternative Lithography methods such as nanoimprint and EUV, as well as patterning for Alternative Technologies such as disk drives and photonics. We hope to provide a forum for both of these technology areas as the conference grows and evolves.

2009 was not the best year for the economy. With great uncertainty in world markets, and fabs running at half capacity, there is no doubt that times are troubled. In spite of that, I was very pleased to see that most of the conference sessions had their usual attendance, and some even increased over previous years. This shows a willingness to still pursue research, creativity, and innovation to address manufacturing problems, and gives great hope for the future of these promising technologies.

The most promising developments seen here were in the EUV Lithography community. Nearly 100 papers on EUV were presented, and tremendous progress has been made in all mission-critical areas (source power, optics contamination, resist efficacy). It remains to be seen, however, whether all aspects of the technology will come together to be reliable enough to provide a cost-effective solution for future technology nodes.

Outstanding work was also presented in nanoimprint and parallel e-beam technology. Nanoimprint has proven to be viable for creating patterned media for disk drives, and is on its way to production. And initial demonstrations for CMOS manufacturing have been explored both in the US and in Japan. In the meantime, recent progress from several suppliers of multiple-e-beam tools in the US, Europe and Japan show that this technology is taking the steps needed to demonstrate the capabilities needed for printing large areas.

And finally, we also have a set of papers on self-assembly materials, which spontaneously form patterns on the nano-scale, requiring patterning only on a larger, micro-scale to "direct" the formation of these smaller features.

I am very impressed by the strength and diversity of the work presented here; I hope you are as well. Of course, this would not be possible without the help of my

Cochair, Bruno La Fontaine of AMD, the conference Program Committee, and of course, the SPIE staff. I thank them especially for their contributions in making this conference a success.

**Frank M. Schellenberg**