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### Focus section on Nanofabrication Technologies, Devices and Applications

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## GUEST EDITORIAL

### Focus section on Nanofabrication Technologies, Devices and Applications

Warren Y-C. Lai, Leonidas E. Ocola and Stanley Pau

Nanotechnology promises an unprecedented era of innovation across multiple disciplines and diverse applications. Its pursuits and activities are proliferating with different approaches, from top-down to bottom-up to converging techniques, and with varying degree of maturity from concept to commercialization. The key to realise nanotechnology's potential is still the ability to assemble and manufacture nano-scale devices, structures with dimensions smaller than 100nm, in a controlled manner over macroscopic distances.

This focus section of the *Journal of Experimental Nanoscience* contains a collection of papers on nanofabrication that were presented at the 2007 NSTI International Conference on Nanofabrication Technologies, Devices and Applications at Santa Clara, May 20–24. The conference focused on all areas of nanofabrication that will accelerate nanotechnology's progress: from innovative research to state-of-the-art development to cost-effective manufacturability in nanofabrication processes and technologies for current and novel devices and applications, including enabling and differentiating aspects in materials, metrology, characterisation, and reliability.

The conference can be roughly divided into two parts: Technologies sessions and Devices and Applications sessions. The sessions were coordinated as much as possible with the other nano- and opto-conferences at NSTI. The technologies sessions examined the two complementary approaches to nanofabrication: top-down and bottom-up, and the convergence of these approaches. The top-down approach utilises nanolithographic and etching techniques to pattern nanodevices, while the bottom-up approach utilises molecular and self-assembly techniques to create nano-materials and nano-structures. Both approaches, the combination of them and nano-metrology enable powerful nanofabrication technologies. The devices and applications sessions surveyed the wide range of usage in nanotechnology, including all areas in nano-sensors, nano-photonics, nano-electronics, and nano-bio applications. While many papers were equally at home in the parallel nano-devices and nano-applications conferences, the primary focus was on innovative nanofabrication that significantly advances the devices and enables the applications.

First we want to extend our gratitude to Dr Nick Quirke who has arranged to make this special section possible. We also want to thank the invited speakers who set the excellent standards for the quality of the conference papers. Our keynote speakers included Dr Darlene Solomon from Agilent Technologies, Dr Kurt Petersen from SiTime

Corporation, Dr Ilesanmi Adesida from University of Illinois at Urbana-Champaign and Dr Andreas Wild from Freescale Semiconductors Crolles Research Center.

No meeting can be successful without the tremendous amount of careful and diligent work in preparation, coordination, scheduling, notification, and many other conference logistics. We want to acknowledge the terrific staffs at NSTI, particularly Dr Matthew Laudon and Sarah Wenning for their tireless effort and expert guidance. We also want to thank our programme committee for their hard work: Dr Adekunle Adeyeye, Dr Robert Austin, Dr Ronald Besser, Dr Gregory Bogart, Dr Dustin Carr, Dr Chorng-Ping Chang, Dr Charles Kin P. Cheung, Dr Guy A. DeRose, Dr Zhixiong Guo, Dr Takamaro Kikkawa, Dr Jungsang Kim, Dr Uma Krishnamoorthy, Dr Andres H. La Rosa, Dr Sergey D. Lopatin, Dr Pawitter Mangat, Dr Omkaram Nalamasu, Dr Vivian Ng, Dr Sang Hyun Oh, Dr John A. Rogers, Dr Nicolaas F. de Rooij and Dr Gary Wiederrecht. Finally, we thank our conference sponsor, ASML, for their financial support that enabled us to invite the keynote and invited speakers.

We look forward to your contributions and participation in our fifth conference, Nanofabrication: Technologies, Devices, and Applications, part of NSTI Nanotech 2008 to take place 1–5 June 2008 in Boston.

**Warren Y-C. Lai**  
**Leonidas E. Ocola**  
**Stanley Pau**