Conference 8323

Alternative Lithographic Technologies IV

Session 4: Maskless/Direct-Write Lithography I

Date: **Tuesday 14 February**
Time: **1:30 PM - 3:00 PM**

Sub-20nm hybrid lithography using optical and pitch-division, and e-beam *(Invited Paper)*
Paper 8323-14
Author(s): Jérôme Belledent, CEA-LETI (France); Michael C. Smayling, Tela Innovations, Inc. (United States); Sebastien Barnola, CEA-LETI (France); Lucile Mage, Commissariat à l'Énergie Atomique (France); Jonathan Pradelles, CEA-LETI-Minatec (France); Sébastien Soulan, Laurent Pain, CEA-LETI (France)

Session 9: Maskless/Direct-Write Lithography II

Date: **Wednesday 15 February**
Time: **3:40 PM - 5:30 PM**

Complementary patterning demonstration with e-beam direct writer and spacer DP process of 11nm node
Paper 8323-38
Author(s): Hideaki Komami, Masahiro Takizawa, Hideaki Isobe, Masaki Kurokawa, Akio Yamada, Advantest Corp. (Japan); Hidetami Yaegashi, Kenichi Oyama, Shohei Yamauchi, Tokyo Electron AT Ltd. (Japan)

CP element-based design for 14nm node EBDW high-volume manufacturing
Paper 8323-39
Author(s): Takashi Maruyama, Shinji Sugatani, Yasuhide Machida, e-Shuttle, Inc. (Japan); Hiroshi Takita, Hiromi Hoshino, Toshio Hino, Masaru Ito, Fujitsu Semiconductor Ltd. (Japan); Akio Yamada, Advantest Corp. (Japan); Tetsuya Iizuka, Satoshi Komatsu, Makoto Ikeda, Kunihiro Asada, The Univ. of Tokyo (Japan)

Posters-Wednesday

Date: **Wednesday 15 February**
Time: **6:00 PM - 8:00 PM**

Multiple columns for high-throughput complementary e-beam lithography (CEBL)
Paper 8323-69
Author(s): Enden D. Liu, Theodore A. Prescop, David K. Lam, Multibeam Corp. (United States)

Optimization of chemically amplified resist for high-volume manufacturing by electron-beam direct writing toward 14nm node and beyond
Paper 8323-75
Author(s): Jun-ichi Kon, Fujitsu Labs., Ltd. (Japan); Takashi Maruyama, Yoshinori Kojima, Yasushi Takahashi, Shinji Sugatani, e-Shuttle, Inc. (Japan); Kozo Ogino, Hiromi Hoshino, Fujitsu Semiconductor Ltd. (Japan); Hideaki Isobe, Masaki Kurokawa, Akio Yamada, Advantest Corp. (Japan)

Optimization of the MSB approach for future technology nodes
Paper 8323-85
Author(s): Ines A. Stolberg, Hans-Joachim Doering, Wolfgang H. Dorl, Thomas Elster, Joachim Heinitz, Matthias W. Klein, Marc Schneider, Matthias Slodowski, Ulf Weidenmüller, Vistec Electron Beam Lithography Group (Germany)

Feasibility study of optical/e-beam complementary lithography
Paper 8323-83
Author(s): Christoph K. Hohle, Kang-Hoon Choi, Martin Freitag, Manuela S. Gutsch, Jan Paul, Fraunhofer-Ctr. Nanoelektronische Technologien (Germany); Philipp Jaschinsky, Frank Kahlenberg, GLOBALFOUNDRIES Dresden Module One, GmbH & Co. KG (Germany)

Conference 8324
Metrology, Inspection, and Process Control for Microlithography XXVI

Session 4: Inspection
Date: **Tuesday 14 February**
Time: **8:00 AM - 10:00 AM**

Multiple column high-throughput e-beam inspection
Paper 8324-122
Author(s): Enden D. Liu, Cong Tran, Multibeam Corp. (United States); Kevin M. Monahan, Quantflow Strategies LLC (United States); Theodore A. Prescop, David K. Lam, Multibeam Corp. (United States)

Conference 8326
Optical Microlithography XXV

Session 5: Source and Mask Optimization
Date: **Tuesday 14 February**
Time: **3:50 PM - 5:30 PM**

Source-mask optimization incorporating manufacturability constraints
Paper 8326-16
Author(s): Thomas Mülders, Synopsys GmbH (Germany); Vitaliy Domnenko, Synopsys, Inc. (Russian Federation); Bernd Küchler, Hans-Jürgen Stock, Synopsys GmbH (Germany)

Achieving first-time-right mask layouts
Paper 8326-17
Author(s): Bernd Küchler, Synopsys GmbH (Germany); Artem Shamsuarov, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Thomas Mülders, Ulrich Klostermann, Synopsys GmbH (Germany); Seung-Hune Yang, Seongho Moon, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Vitaliy Domnenko, Synopsys, Inc. (Russian Federation); Sung-Woon Park, Synopsys Korea Inc. (Korea, Republic of)

Session 10: Optical/DFM: Joint Session with Conference 8327
Date: **Thursday 16 February**
Time: **8:00 AM - 10:00 AM**

Sub-20nm logic lithography optimization with simple OPC and multiple pitch division
Paper 8326-39
Author(s): Michael C. Smayling, Tela Innovations, Inc. (United States); Valery Axelrad, Sequoia Design Systems, Inc. (United States); Koichiro Tsujita, Canon Inc. (Japan); Hidetami Yaegashi, Tokyo Electron AT Ltd. (Japan); Ryo Nakayama, Canon Inc. (Japan); Kenichi Oyama, Tokyo Electron AT Ltd. (Japan); Yuichi Gyoda, Canon Inc. (Japan)

Session 12: OPC

Date: **Thursday 16 February**
Time: **1:20 PM - 3:00 PM**

Binary modeling method to check the sub-resolution assist features (SRAFs) printability
Paper 8326-49
Author(s): Jianliang Li, Synopsys, Inc. (United States); Weimin Gao, Synopsys GmbH (Belgium); Yongfa Fan, Jing Xue, Qiliang Yan, Kevin Lucas, Lawrence S. Melvin III, Synopsys, Inc. (United States)

Conference 8327

Design for Manufacturability through Design-Process Integration VI

Session 1: Keynote Session

Date: **Wednesday 15 February**
Time: **8:25 AM - 10:10 AM**

Implications of triple patterning for 14 nm node design and patterning *(Keynote Presentation)*
Paper 8327-2
Author(s): Kevin Lucas, Synopsys, Inc. (United States)