19th Fraunhofer IISB Lithography Simulation Workshop

June 6 – 8, 2024, Behringersmühle, Germany

Program
(status as of May 16, 2024)

Thursday, June 6

6:00 pm: Welcome reception

- 8:00 – 8:15 pm: **Welcome and introduction**, Andreas Erdmann (Fraunhofer IISB)
- 8:15 – 9:00 pm: **How computing, GPU, and deep Learning are reshaping lithography,** Leo Pang (D2S)

Friday, June 7

- 9:00 – 9:25 am: **EUV lithography: past, present and future**, Mark van de Kerkhoff (ASML, Univ. of Eindhoven)
- 9:25 – 9:50 am: **Tip-to-tip printability at High NA EUVL: rigorous simulations and AIMS results,** Guillaume Libeert, Rik Jonckheere, Joern-Holger Franke, Nick Pellens, Peter De Bisschop, Vicky Philipsen (imec)
- 9:50 – 10:15 am: **Modeling of multi-trigger resists**, Thiago Jose dos Santos[1], Zelalem Belete[1], Andreas Erdmann[1], Alex P.G. Robinson[2], Carmen Popescu[2], A. McClelland[2] ([1]Fraunhofer IISB, [2]Irresistible Materials Ltd.)

10:15 – 10:45 am: Coffee break

- 10:45 – 11:10 am: **Fast EUV lithography simulation by CNN including M3D effects**, Hiroyoshi Tanabe (Tokyo Institute of Technology)
- 11:10 – 11:35 am: **PINN-based EMF solver for modeling of light diffraction from EUV masks and optical metasurfaces**, Vlad Medvedev, Andreas Erdmann, Andreas Rosskopf, Philipp Brendel (Fraunhofer IISB)
- 11:35 am– 12:00 pm: **Metalens design: from single component to optical system**, Sébastien Héron, Enzo Isnard, Laure Lee, Brigitte Loiseaux (THALES Research & Technology)

12:00 – 1:30 pm: Lunch

- 1:30 – 1:55 pm: **Manufacturing of microlens by grayscale lithography for CMOS image sensors**, Marie-Line Pourteau, Aurélien Fay, Sébastien Bérard-Bergery, Florian Tomaso, Elénore Letty, Rémi Coquand, Ujwol Palanchoke, Charlotte Beylier, Guillaume Claveau, Samir Guerroudj (Leti)
- 1:55 – 2:20 pm: **Neural lithography: real2Sim redefines the pipeline of computational lithography**, Cheng Zheng[1], Guangyuan Zhao[2], Peter T.C. So[1] ([1]MIT, [2]The Chinese University of Hong Kong)
- 2:20 – 2:45 pm: **Training and application of physics-inspired neural networks for two-photon lithography**, Valeriia Sedova[1], Andreas Erdmann[1], Joël Rovera[2], Florie Ogor[2], Kevin Heggarty[2] ([1]Fraunhofer IISB, [2]IMTA)
- 2:45 – 3:10 pm: **Modeling a massively parallelized TPP process for 3D micro/nanostructures fabrication**, Joël Rovera[1], Kevin Heggarty[1], Valeriia Sedova[2], Andreas Erdmann[2], Thomas Le Deun[1] ([1]IMTA, [2]Fraunhofer IISB)

3:30 pm: Special event and dinner

Saturday, June 8

- 9:00 – 9:25 am: **A fast method for predicting resist top loss from aerial image, with a reconstructed 3D resist profile using deep neural network**, Dereje S. Woldeamanual, Joe Tang, Wolfgang Hoppe, Hans-Juergen Stock, Mariya Braylovska (Synopsys)
- 9:25 – 9:50 am: **A generative approach for SEM images towards advanced node defect inspection in semiconductor manufacturing**, Bappaditya Dey, Vic De Ridder, Victor Blanco, Bartel Vanwaeyenberge, Philippe Leray (imec)
- 9:50 – 10:15 am: **EUV imaging enhancement via phase injection: from theory to application**, Hidde Keizers, Eelco van Setten, Steven Beekmans, Jungtae Lee (ASML)

10:15 – 10:45 am: Coffee break

- 10:45 – 11:10 am: **Extending EUV beyond 8 nm half-pitch: imaging aspects of increasing NA**, Gerardo Bottiglieri, John Mcnamara, Reinier van der Meer, S. Blok, Jim Overkamp (ASML)
- 11:10 – 11:35 am: **Mask repair optimization by aerial image simulation**, Fan Tu, Christian Felix Hermanns, Micheal Budach, Hubertus Marbach (Zeiss SMT)
- 11:35 am – 12:00 pm: **OPC and modeling solution to support High-NA EUV stitching**, Dongbo Xu[1], Qinglin Zeng[1], Werner Gillijns[2], Xuefeng Zeng[1], Vincent Wiaux[2], Vicky Philipsen[2], Edita Tejnil[1], Yuyang Sun[1], Germain Fenger[1] ([1]Siemens EDA, [2]imec)
- 12:00 – 12:10 pm: **Final discussion and concluding remarks**

12:30 pm: Lunch