



International Workshop on

Advanced Patterning Solutions

The 5th International Workshop on Advanced Patterning Solutions

第五届国际先进光刻技术研讨会

December 12-13, 2021, Hilton Foshan, Foshan Guangdong, China

2021年12月12日至13日, 佛山希尔顿酒店, 佛山, 广东, 中国

Agenda

Program Chairs: Akiyoshi Suzuki, Yanqiu Li, Will Conley

Registration 注册	
11 Dec. 2021	12:00-22:00 @酒店大厅 The hotel lobby
12-13 Dec. 2021	08:00-17:00 @酒店大厅 The hotel lobby
DAY 1:	
12 Dec. 2021 (Sunday)	
Grand Ballroom 三层宴会厅	
DAY 1-Morning	
08:30-09:00	Opening Ceremony & Welcome Address Chair: Yayi Wei
Welcome Address	Jianlin Cao (曹健林) Tianchun Ye (叶甜春) Yemin Dong (董业民, 广东省工信厅) Danping Yun (云丹平, 广东省科技厅) Xu Liu (刘旭, 光学学会) Will Conley (US, Online) Akiyoshi Suzuki (Japan, Online)
09:00-10:10	Plenary Session Chair: Yanqiu Li (李艳秋), Yayi Wei (韦亚一)
	<i>5 minutes Q&A for each talk</i>
09:00-09:35	Vivek Singh (Nvidia): (KEYNOTE, Online) Computational Lithography for the Next Decade

09:35-10:10	Anthony Yen (ASML): (KEYNOTE, Online) Extending the limits of semiconductor lithography
10:10-10:35	Group Photo & Coffee Break
10:35-12:10	Advanced Technologies Session Chair: Xiangzhao Wang (王向朝), Yaobin Feng (冯耀斌)
	<i>5 minutes Q&A for each talk</i>
10:35-11:10	John Sturtevant (Siemens EDA): (KEYNOTE, Online) Curvy Masks Ahead
11:10-11:40	Keita Sakai (Canon): (INVITED, Online) Addressing NIL Integration for Semiconductor Device Manufacturing
11:40-12:10	Xuemei Chen (KLA): (INVITED, Online) EPE challenges, analytics, and predictive control for advanced patterning
12:10-13:30	Lunch
DAY 1-Afternoon	
13:30-14:50	Process Session Chair: Jianrui Cheng (程建瑞), Yaobin Feng (冯耀斌)
	<i>5 minutes Q&A for each talk</i>
13:30-14:00	Takashi Masuyuki (Nikon): (INVITED, Online) Lithographic solutions for 3D structured devices
14:00-14:30	Kan Zhou (Huali integrated circuit corporation 上海华力): (INVITED) Dose control strategy using random logic device patterns and massive metrology in a foundry high volume manufacturing environment
14:30-14:50	Debao Ding (CXMT 长鑫存储): Reticle Haze Characterization and Management in a DRAM fab
14:50-15:10	Coffee Break
15:10-16:50	Equipment and Process Session

	Chair: Weimin Gao (高伟民)
	<i>5 minutes Q&A for each talk</i>
15:10-15:40	Billy Tang (ASML- Cymer Light Sources): (INVITED) Holistic imaging for yield improvements enabled by high-availability, and low-environmental impact Cymer ArFi lightsource
15:40-16:10	Tilmann Heil (Carl Zeiss): (INVITED, Online) Current and Future Mask Making Challenges from an equipment manufacturer's point of view
16:10-16:30	Zhen Ma (Edwards): EUV vacuum system safety while maximizing process productivity
16:30-16:50	Yonggang Xie (KINGSEMI 沈阳芯源): Native Front End Track Application
16:50-18:30	Poster Session
	Authors should be present at your poster.
18:40-20:30	Banquet 晚宴 (Grand Ballroom 宴会厅) for all attendees

<u>Day 2:</u>	
<u>13 Dec. 2021 (Monday)</u> — <u>Parallel Session I, 并行报告会场 I</u>	
Grand Ballroom Part A, 宴会厅 A	
DAY 2-Morning	
08:30-10:05	Mask, Metrology and Inspection Session Chair: Yaobin Feng (冯耀斌), Weimin Gao (高伟民)
	<i>5 minutes Q&A for each talk</i>
08:30-09:05	Naoya Hayashi (DNP): (KEYNOTE, Online) Sustainable and "Green" Lithography using Advanced Mask Technologies
09:05-09:35	Fei Wang (ASML HMI): (INVITED, Online) Maximizing patterning performance and yield with high speed e-beam metrology and inspection
09:35-10:05	Masami Ikota (Hitachi High-Tech): (INVITED, Online) Electron Beam Metrology Challenges to the Next Process Node

10:05-10:25	Coffee Break
10:25-11:55	Process Inspection and Control Session Chair: Vincent Chen (陈枫)
	<i>5 minutes Q&A for each talk</i>
10:25-10:55	Ying Guangchi (Shanghai Huali Integrated Circuit Cooperation, 上海华力): (INVITED) Study on Lithography Defect Reduction for 19nm NAND SADP Process
10:55-11:15	Liang Wu (ASML): A Novel Control Strategy to Improve On-Product Overlay with Context-Based Wafer Grouping for an Advanced Node Logic Layer in High-Volume Manufacturing Environment
11:15-11:35	Wei Zhang (CXMT 长鑫存储): Scribe Line Self Reference Targets to enable Accurate and Robust After-Etch Overlay Metrology of Active layer
11:35-11:55	Junyi Bao (ASML) Using Feedforward in On-Product Overlay Run-to-Run Control Loop for Reducing Lot-to-Lot Variation for a MEOL Layer of an Advanced Logic Node
11:55-13:30	Lunch
DAY 2-Afternoon	
13:30-15:10	Material and Process Session Chair: Huayong Hu (胡华勇), Yousong Sun (孙友松)
	<i>5 minutes Q&A for each talk</i>
13:30-14:00	Takanori Kawakami (JSR): (INVITED, Online) Advanced Lithography Material Status beyond 5nm Node
14:00-14:30	Toru Fujimori (FUJIFILM Corporation): (INVITED, Online) Negative tone imaging (NTI) process for ArF immersion and EUV lithography to improve 'Chemical Stochastic'.
14:30-14:50	Qiang Wu (Fudan University, 复旦大学): Process Model Guided Photoresist Formulation Optimization

14:50-15:10	Jiantao Wang (Shanghai Huali Integrated Circuit Cooperation, 上海华力): Photoresist Material Gaping Filling Loading Improvement from Pattern Density Perspective
15:10-15:30	Coffee Break
15:30-16:50	Process Session Chair: Bob Dong (董昊), Sicong Wang (王思聪)
	<i>5 minutes Q&A for each talk</i>
15:30-15:50	Michael Shifrin (Nova): (Online) Implementation of Machine Learning in Advanced Pattern Process Control Metrology
15:50-16:10	Chen Cheng (Shanghai Huali Integrated Circuit Cooperation, 上海华力): A Novel Research of ASML&Nikon lithography illumination matching
16:10-16:30	Le Wang (KLA): Integrated Automation Solution Driving Zero Yield Loss under Reticle Management
16:30-16:50	Jie Du (CXMT 长鑫存储): Computational ASCAL verification with inline ASCAL in high volume manufacturing fab for ArF XT:1460K with LOCO-B
16:50-17:00	Closing Plenary Address 闭幕致辞

<u>Day 2:</u>	
<u>13 Dec. 2021 (Monday)</u> — <u>Parallel Session II, 并行报告会场 II</u>	
Grand Ballroom Part B, 宴会厅 B	
DAY 2–Morning	
08:30-10:00	Computational Lithography Session Chair: Xiaodong Meng (孟晓东), Yijiang Shen (沈逸江)
	<i>5 minutes Q&A for each talk</i>
08:30-09:00	Qiang Wu (Fudan University): (INVITED) The Discussion of the Typical BEOL Design Rules from 3 nm to 2 nm Logic Process with EUV and High NA EUV Lithography

09:00-09:30	Germain Fenger (Siemens EDA): (INVITED, Online) Predict the curve for the most advanced technology nodes
09:30-10:00	Jianliang Li (AMEDAC 全芯智造): (INVITED) An innovative method to retain optical kernels by keeping Bossung curves smoothness
10:00-10:25	Coffee Break
10:25-11:55	Process Computational and Equipment Session Chair: Liguozhang (张立国), Feng Shao (邵峰), Yongming Wen (温永明)
	<i>5 minutes Q&A for each talk</i>
10:25-10:55	Zongchang Yu (DJEL): (INVITED) A novel approach makes yield more predictable
10:55-11:25	Toshihiro Oga (Gigaphoton): (INVITED, Online) ArF lightsource "GT66A" for next-generation immersion lithography enhancing EPE and CD performance
11:25-11:55	Jiajie Liu, Yu Zhang (Shanghai Huali Integrated Circuit Cooperation, 上海华力) & Abhishek Vikram (Anchor Semi.): (INVITED) Pattern Centric Machine Learning Approach to Uncover Process Defects During Wafer Inspection and Review
11:55-13:30	Lunch
DAY 2-Afternoon	
13:30-15:10	New Patterning Process Session Chair: Shisheng Xiong (熊诗圣)
	<i>5 minutes Q&A for each talk</i>
13:30-14:00	XuanMing Duan (Jinan University 暨南大学): (INVITED) Sub-Diffraction Lithography with Ultrafast Laser
14:00-14:30	Xiaobin Xu (Tongji University 同济大学): (INVITED) Exploitation of large-area nanoscale-patterning approaches and their applications in nanodevices
14:30-14:50	Jie Liu (Hunan University 湖南大学): HNU-EBL: A Software Toolkits for Electron Beam Lithography Simulation

	and Optimization
14:50-15:10	RAN JI (Qingdao Germanlitho Co.,Ltd 青岛天仁微纳公司): Industrial application of nano-imprint in the production of micro - nano optical devices
15:10-15:30	Coffee Break
15:30-16:50	Computational Lithography and DTCO Session Chair: Zongchang Yu (俞宗强)
	<i>5 minutes Q&A for each talk</i>
15:30-15:50	Jiao Huang (ASML): Genetic algorithm to speed up modeling turn-around-time
15:50-16:10	Rongzheng Ding (Fudan University): HD SRAM size shrink beyond 7nm by CFET without EUV
16:10-16:30	Yanli Li (Fudan University): A Study of the Advantages to the Photolithography Process brought by the HiNA EUV Exposure Tool
16:30-16:50	Yingfang Wang (HFC): Modeling Sampling Strategy Optimization by Machine Learning Based Analysis
16:50-17:00	Closing Plenary Address 闭幕致辞

Agenda is subject to change

<u>Poster Session</u>	
<u>12 Dec., 2021 (Sunday) 16:50-18:30 Outdoor of Grand Ballroom 宴会厅前廊</u>	
IWAPS2021-P-01	Hang Fan, Fusheng Zhu, Yachao Wang, Pinggui Li (CSMC) Challenges in BCD process with thicker EPI layer as well as ways to address them
IWAPS2021-P-03	Rui Qin, Shaowen Qiu, Yunsheng Xia, Silva Hu, Jimmy Chang, Junjun Zhang, Wei Zhang, PanpanWang, Xiaofang Zhou, Elton Bitincka, Giacomo Miceli, Sylvia Yuan, Natalia Drabik, Pavel Izikson, Giulia Argento, Yvon Chai, Yu Liu, Justin Jiang, Hao Jing, Shaun Dai (CXMT, ASML) Fast In-Device Overlay Metrology on DRAM Storage Node Contact

	and It's Applications in Process Control
IWAPS2021-P-04	Yifei Zhu, Rui Qian, Biqu Liu, Xiaobo Guo, Cong Zhang, Wenzhan Zhou, Jun Huang, Yu Zhang, Jian Hao, Chengshuang Tang, Pin Li, Huiyan Zeng (Shanghai Huali, ASML) Novel MWL μ DBO pi-run flow at Day 1 of R&D phase
IWAPS2021-P-05	Jie Luo, Jingheng Meng, Baodong Han, Hongbo Sun, Deyuan Xiao, Chao Zhao (Beijing Superstring Academy of Memory Technology) High Aspect Ratio Contact Profile Control and Cryogenic Etch Process
IWAPS2021-P-06	Xiaofei Qian, Xiaohu Liu, Wenliang Li, Yiming Zhu, Peng Wu, Degui Yuan (Shanghai Huali) Co-development and improvement of Auto ADI for advance node production
IWAPS2021-P-08	Qi Wang, Haihua Chen, Shaojian Hu (Shanghai ICRD) Verified Optical Scatterometry Model for Line-Space and Metal-Gate Structures
IWAPS2021-P-09	Haihua Chen, Qi Wang, Manhua Shen (Shanghai ICRD) Spin-on-carbon Material Buried Voids Defect Analysis And Improvement In Via Patterning Process With Double Exposure Lithography
IWAPS2021-P-10	Yuyang Bian, XiJun Guan, Biqu Liu, Xiaobo Guo, Cong Zhang, Wenzhan Zhou, Jun Huang, Yu Zhang, Lingyi Guo, Faquan Liu, Jinyan Song, Chunfei Sui (Shanghai Huali, KLA) A Study of Overlay Accuracy Improvement on Process Induced Asymmetry Effect
IWAPS2021-P-11	Chi Zhang, Hongwen Zhao, Chunjie Zheng (Shanghai Huali) A Hybrid In-die Metrology Solution for High-order Overlay Control and CD Uniformity Improvement
IWAPS2021-P-12	Fang Wei, Chenming Zhang, Honglin Meng, Zhihao Chu, Chao Huang, Lin Wu, Han Chen, Daquan He, Lulu Chen, Donghan Jin Robbin Zhu, Pei Wang, Hong Wei Zhang, Xuechen Zhu, Shane Su, Andy Zhang, Elly Shi, Selena Chen, Leon Liang (Shanghai Huali, ASML) Patterning hot spot verification using high speed e-beam metrosppection with D2DB at foundry high volume manufacturing environment
IWAPS2021-P-13	Yiwen Ji, Xiaobin Wu, Xiaoquan Han, Wanlu Xie, Xiangyu Ma (IMECAS, UCAS)

	Phase defect detection algorithm for extreme ultraviolet mask blank based on watershed edge detection
IWAPS2021-P-14	Weifeng Li (Shanghai Huahong Grace Semiconductor Manufacturing Corporation) Application of Sub-resolution Assist Features in Photo Process
IWAPS2021-P-16	Wenwen Zhang, Ken Chen, Baron Chien, Xing Gao, Keeho Kim (Siemens EDA, HFC) A workflow of hotspot prediction based on fully/semi-supervised machine-learning method
IWAPS2021-P-17	Yuguang Chen, Sikun Li, Jianfang He, Libin Zhang, Weijie Shi, Ming Tang, Yayi Wei, Xiangzhao Wang (SIOM, HUST, IMECAS, UCAS, DJEL) A Scanner Matching Method based on Interior-point BFGS Algorithm
IWAPS2021-P-18	Shaobo Hu, Sikun Li, Zinan Zhang, Ming Tang, Yuejing Qi, Xiangzhao Wang (SIOM, UCAS, HUST, IMECAS) A fast mask diffraction model towards rigorous simulation in terms of accuracy
IWAPS2021-P-19	Yin Sheng Yu, Kan Zhou, Guo Ping Liu, Dongyu Xu, Yu Hui Li, Xin Guo, Cheng Zhang Wu, Hong Wen Zhao, Wen Zhan Zhou (Shanghai Huali) Contour Based Solution For Identifying Mask Induced Error
IWAPS2021-P-20	Ge Tongguang, Qiu zhengxiu, Zou Jian, Liao Xianhuang (Shanghai Huali) OPC accuracy improvement through rectangle pattern split into square pairs on 22nm via layer
IWAPS2021-P-21	Zhang Renli, Jiang Mingzhu, Chen Xianhong, Liao Xianhuang (Shanghai Huali) Optical Proximity Correction Using Intensity as Auxiliary Criterion
IWAPS2021-P-22	Zengzhi Huang, Weiran Huang, Jiguang Zhu, Guowei Cao, Junbo Feng, Zhenguo Zheng, Yadong Jin (Chongqing United Microelectronics Center, Siemens Digital Industries Software) A Design-Oriented Approach to Implement Inverse Lithography Technology OPC in Silicon Photonics MPW Platform
IWAPS2021-P-23	Jialu Huang, Ying Huang, Yang Lin, Zi-yang Liu, Yang Lin, Wenhui Wu (ASML) Does Generative Adversarial Network (GAN) help in SRAF image generation?

IWAPS2021-P-25	Zhishu Chen, Lisong Dong, Yayi Wei (IMECAS) Optimizing the aberration distribution to improve the lithography performance of Contact layer in 5nm node
IWAPS2021-P-26	Jiashuo Wang, Lisong Dong, Pengjie Kong, Yayi Wei (IMECAS) Analysis on the influence of several parameters in physical resist models
IWAPS2021-P-27	Fei Peng, Yi Song (Wuhan University) 3D grayscale lithography based on exposure optimization
IWAPS2021-P-28	Biqiu Liu, Cong Zhang, Xiaohang Su, Yifei Zhu, Xiaobo Guo, Wenzhan Zhou (Shanghai Huali) The application of DTCO and Hotspot Reduction Technology on Achieving Fast Silicon Success
IWAPS2021-P-29	Mingfei Wang, Peng Zhang, Junwen Chen, Kai Wang (Xidian University) Linearity Enhancement for Double-Heterojunction InAlN/GaN/InAlN/GaN HEMT Using Multi-channel Lateral Gate
IWAPS2021-P-30	Ziming Wang, Li Liu (Xidian University) Simulation Research of 4H-SiC Double-Trench MOSFET with High-k Gate Dielectric Materials
IWAPS2021-P-31	Lipeng Qin, Shijun Zhou, Xianrui Lou, Pengteng Yin, Haichang Zheng, Yanchao Liu (HLMC) Development of the first low activation energy KrF photoresist (acetal) in China
IWAPS2021-P-32	Markus Laukkanen, Kimmo Karaste, Luong Nguyen Dang, Ray Hsu, Vincent Chen, Thomas Gädda, Juha Rantala (Pibond) Silicon photoresists for patterning processes
IWAPS2021-P-33	Kimmo Karaste, Hanna Luusua, Markus Laukkanen, Ray Hsu, Vincent Chen, Thomas Gädda, Juha Rantala (Pibond) Semiconductor back-end manufacturing process utilizing a silicon-based resist and non-patternable polyimides
IWAPS2021-P-35	Xin Zhou, Jing Li, Minxia Ding, Zhipeng Wu (IMECAS, UCAS) A New Multi-axis Synchronous Control Model based on Machine Learning
IWAPS2021-P-36	Jing Li, Qingyang Zhang, Minxia Ding, Guanghua Yang (IMECAS) EGD: A software for designing enhanced phase grating
IWAPS2021-P-38	Xingsong Su, Yunsong Qiu, Mengkang Yu, GuangSu Shao, Hongbo Sun, Weiping Bai, Deyuan Xiao, Ted Park, Kanyu Cao (CXMT)

	High density V-GAA transistor structure array based on self-aligned double patterning
IWAPS2021-P-39	Xianguo Dong, Kan Zhou, Chengzhang Wu, Hongwen Zhao, Wenzhan Zhou, Chunfei Sui, Faquan Liu, Jinyan Song, Linyi Guo (HLIC, KLA) Improve overlay performance against process variation impact by using overlay metrology recipe optimization

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For update agenda and further information, please visit the website: www.iwaps.org

Locations

