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

October 28-29, 2021, Hilton Foshan, Foshan Guangdong, China

2021 年 10 月 28 日至 29 日，佛山希尔顿酒店，佛山，广东，中国

Agenda 会议日程

Program Chairs: Akiyoshi Suzuki, Yanqiu Li, Will Conley

Registration 注册		
27 Oct. 2021	12:00-22:00	@酒店大厅 The hotel lobby
28-29 Oct. 2021	08:00-17:00	@酒店大厅 The hotel lobby

DAY 1: 28 Oct. 2021 (Thursday) Grand Ballroom 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) （主/承办方、举办省市 相关领导） Will Conley (US, Online) Akiyoshi Suzuki (Japan, Online)
09:00-10:10	Plenary Session Chair: Yanqiu Li (李艳秋)
	5 minutes Q&A for each talk
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)**
	5 minutes Q&A for each talk
10:35-11:10	**John Sturtevant (Mentor, Siemens):** (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	
13:30-15:20	**Process Session** **Chair: Jianrui Cheng (程建瑞)**
	5 minutes Q&A for each talk
13:30-14:00	**Takashi Masuyuki (Nikon):** (INVITED, Online) Lithographic solutions for 3D structured devices
14:00-14:30	**Dean Wu (YMTC 长江存储):** (INVITED) In Device Metrology Recipe Setup with Self-Reference Target
14:30-15:00	**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 manufactruing environment
15:00-15:20	**Debao Ding** (CXMT **长鑫存储):** Reticle Haze Characterization and Management in a DRAM fab
15:20-15:40	**Coffee Break**

15:40-17:10	**Equipment and Process Session** **Chair: Weimin Gao (高伟民)**
	5 minutes Q&A for each talk
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	**Billy Tang (ASML- Cymer Light Sources):** Holistic imaging for yield improvements enabled by high-availability, and low-environmental impact Cymer ArFi lightsource
16:30-16:50	**Zhen Ma (Edwards):** EUV vacuum system safety while maximizing process productivity
16:50-17:10	**Yonggang Xie (KINGSEMI 沈阳芯源):** Native Front End Track Application
17:10-18:30	**Poster Session**
	Authors should be present at your poster.
18:40-20:30	**Banquet 晚宴 （Grand Ballroom 宴会厅）for all attendees**

Day 2: **29 Oct. 2021 (Friday)** —— **Parallel Session I，并行报告会场 I** **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)**
	5 minutes Q&A for each talk
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)**
	5 minutes Q&A for each talk
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	**Jianqiang Sun (YMTC 长江存储):** Innovative Solution for Scanner Chuck Contamination Early Detection
11:35-11:55	**Wei Zhang (CXMT 长鑫存储)：** Scribe Line Self Reference Targets to enable Accurate and Robust After-Etch Overlay Metrology of Active layer
11:55-13:30	**Lunch**
DAY 2-Afternoon	
13:30-15:00	**Material and Process Session** **Chair: Huayong Hu (胡华勇)**
	5 minutes Q&A for each talk
13:30-14:00	**Takanori Kawakami (JSR):** (INVITED, Online) Advanced Lithography Material Status beyond 5nm Node
14:00-14:20	**Toru Fujimori (FUJIFILM Corporation):** (Online) Negative tone imaging (NTI) process for ArF immersion and EUV lithography to improve 'Chemical Stochastic'.
14:20-14:40	**Qiang Wu (Fudan University, 复旦大学):** Process Model Guided Photoresist Formulation Optimization
14:40-15:00	**Jiantao Wang (Shanghai Huali Integrated Circuit Cooperation, 上**

	海华力): Photoresist Material Gaping Filling Loading Improvement from Pattern Density Perspective
15:00-15:20	**Coffee Break**
15:20-17:00	**Process Session** **Chair: Bob Dong (董昊)**
	5 minutes Q&A for each talk
15:20-15:40	**Michael Shifrin (Nova):** (Online) Implementation of Machine Learning in Advanced Pattern Process Control Metrology
15:40-16:00	**Dekun Yang (Wuhan University):** An angle-resolved scatterometry for critical dimension metrology in semiconductor industry
16:00-16:20	**Chen Cheng (Shanghai Huali Integrated Circuit Cooperation, 上海华力):** A Novel Research of ASML&Nikon lithography illumination matching
16:20-16:40	**Chin Kuei Chang (USC):** Integrated Automation Solution Driving Zero Yield Loss under Reticle Management
16:40-17:00	**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
17:00-17:10	**Closing Plenary Address** **闭幕致辞**

Day 2: **29 Oct. 2021 (Friday)** —— **Parallel Session II, 并行报告会场 II** **Grand Ballroom Part B, 宴会厅 B**	
DAY 2–Morning	
08:30-10:00	**Computational Lithography Session** **Chair: Xiaodong Meng (孟晓东)**
	5 minutes Q&A for each talk
08:30-09:00	**Germain Fenger (Mentor, Siemens):** (INVITED, Online) Predict the curve for the most advanced

	technology nodes
09:00-09:30	**Jianliang Li (AMEDAC 全芯智造):** (INVITED) An innovative method to retain optical kernels by keeping Bossung curves smoothness
09:30-10:00	**Zongqiang Yu (DJEL):** (INVITED) Yield driven chip manufacturability solutions
10:00-10:20	**Coffee Break**
10:20-12:10	**Equipment and Process Computational Session** **Chair: Zongqiang Yu (俞宗强)**
	5 minutes Q&A for each talk
10:20-10:50	**Toshihiro Oga (Gigaphoton):** (INVITED, Online) ArF lightsource "GT66A" for next-generation immersion lithography enhancing EPE and CD performance
10:50-11:20	**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
11:20-11:50	**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
11:50-12:10	**Li Chen (YMTC 长江存储):** An Effective Method of Etch Bias Compensation Using Neural Network Assisted Etch Model
12:10-13:30	**Lunch**
DAY 2-Afternoon	
13:30-15:10	**New Patterning Process Session** **Chair: Shisheng Xiong (熊诗圣)**
	5 minutes Q&A for each talk
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**
15:30-17:10	**Computational Lithography and DTCO Session** **Chair: Liguo Zhang (张立国), Feng Shao (邵峰)**
	5 minutes Q&A for each talk
15:30-15:50	**Jet Jiang (YMTC 长江存储):** Hotspot Prediction using Machine Learning Regression for Design Verification Sign-off
15:50-16:10	**Jiao Huang (ASML):** Genetic algorithm to speed up modeling turn-around-time
16:10-16:30	**Xiaona Zhu (Fudan University):** The new CFET Structure Design for the logic stand cell library Circuits
16:30-16:50	**Yanli Li (Fudan University):** A Study of the Advantages to the Photolithography Process brought by the HiNA EUV Exposure Tool
16:50-17:10	**Yingfang Wang (HFC):** Modeling Sampling Strategy Optimization by Machine Learning Based Analysis
17:10-17:20	**Closing Plenary Address** **闭幕致辞**

Agenda is subject to change

Poster Session **28 Oct., 2021 (Thursday) 17:10-18:30 Outdoor of Grand Ballroom 宴会厅走廊**	
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-	**Yongqiang Hou, Haihua Chen, and Qi Wang (Shanghai IC R&D**

P-02	**Center)** A Simulation Study on OMOG and 6% PSM Mask Photolithography Process Window with Minimum 80 nm pitch
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, Biqiu Liu, Xiaobo Guo, Cong Zhang, Wenzhan Zhou, Jun Huang, Yu Zhang, Jian Hao, Chengshuang Tang, Pin Li, Huiyan Zeng (Shanghai Huali, ASML)** Novel MWL µDBO 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-07	**Cong Lu, Shaoxiang Lu, Jing Yang, Monica Xie, Jesline Ang, Zihao Qu (YMTC, KLA)** Investigation on Wafer Edge Scanner Alignment Issue by PWG Metrology
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, Biqiu 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 metrospection 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-15	**HungWei Yeh, JianHua Liu (Mentor, SMIC)** Semi-supervised machine-learning significantly reduce photomask OPC turn-around time
IWAPS2021-P-16	**Wenwen Zhang, Ken Chen, Baron Chien, Xing Gao, Keeho Kim (Mentor Graphics, 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-34	**Pandeng Xuan, Pengzhen Zhang, Jinyu Qiu, Doudou Zhang, Kai You, Wenjie Tao, Kai Ding, Yuan Chen, Gang Xu, Jiahui He, Lingyi Guo, Jincheng Pei (YMTC, KLA)** A study of overlay metrology target size and performance optimization on 3 D NAND device
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-37	**Xiaosong Yang, Hai Zhang, Dekun Huang, Yimin Wu, Yifan Gu, Junyi Bao, Xue Gong, Aliasghar Keyvani Janbahan, Jun Li, Yiping Zhao and Hua Li (SMIC, 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
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 strucutre array based on self-aligned double patterning

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

Locations