The 8th International Workshop on Advanced Patterning Solutions

第八届国际先进光刻技术研讨会

October 15-16, 2024, Nanhu Hotel, Jiaxing, Zhejiang Province, China

2024 年 10 月 15 日至 16 日，南湖宾馆嘉禾厅，浙江嘉兴，中国

(October 14 for registration, 10 月 14 日注册)

Agenda 会议日程

Program Chairs: Danping Peng, Toru Fujimori, Wenzhan Zhou

Registration 注册		
14 Oct. 2024	**10:30-20:00**	**@酒店大厅&嘉禾厅**
15-16 Oct. 2024	**08:00-17:00**	**@嘉禾厅 JIAHE Grand Ballroom**
DAY 1: **15 Oct. 2024 (Tuesday)** **JIAHE Grand Ballroom 嘉禾厅**		
DAY 1–Morning		
08:30-09:00	**Opening Ceremony & Welcome Address** **Chair: Yayi Wei(韦亚一)**	
Welcome Address	**Jianlin Cao (曹健林)** **Tianchun Ye (叶甜春)** **Xu Liu (刘旭)** **Toru Fujimori** **Wenzhan Zhou (周文湛)**	
09:00-10:10	**Plenary Session I** **Chair: Wenzhan Zhou**	
	5 minutes Q&A for each talk	
09:00-09:35	**Junjiang Lei (Seimens):** (KEYNOTE) TBD	
09:35-10:10	**Toru Fujimori (Fujifilm):** (KEYNOTE) Advanced photoresist development for stochastic reduction	
10:10-10:40	**Group Photo & Coffee Break**	
10:40-12:10	**Advanced Photoresist Session**	

	Chair: Toru Fujimori & Bing Li 李冰
	5 minutes Q&A for each talk
10:40-11:05	**Guoqiang Yang (ICCAS):** (INVITED) The Research and Development of Ultra-High-Resolution Resists
11:05-11:30	**Feng Luo (Nankai University):** (INVITED) EUV Photoresist for Advanced 0.55NA Lithography
11:30-11:50	**Feng Xu (Pibond):** Resist and underlayers – recent developments in material, patterning and pattern transfer processes
11:50-12:10	**Chunxiao Mu (HUST):** Wiener-Padé Model for Lithographic Resist Modeling
12:10-13:40	**Lunch**
DAY 1-Afternoon	
13:40-15:30	**Plenary Session II** **Chair: Guoqiang Yang 杨国强 & Shiyuan Liu 刘世元**
	5 minutes Q&A for each talk
13:40-14:15	**Hong Xiao (ASML):** (KEYNOTE) SEM signal enhancement of buried patterns and buried defects
14:15-14:40	**Yong Wang (Shanghai Advanced Research Institute):** (INVITED) EUV actinic reticle inspection beamline at Shanghai Synchrotron Radiation Facility
14:40-15:05	**Xiaosong Liu (USTC):** (INVITED) Hefei Light Source – the Low Energy Synchrotron Facility for EUV-Lithography Research
15:05-15:30	**Byoungho Lee (Hitachi High-tech):** (INVITED) MI's new challenges and approaches
15:30-15:50	**Coffee Break**
15:50-17:30	**Advanced Computational Lithography Session** **Chair: Yaobin Feng 冯耀斌 & Weimin Gao 高伟民**
	5 minutes Q&A for each talk
15:50-16:15	**Qiang Wu (Fudan University):** (INVITED) A SMO Software Designed for Today and Tomorrow's High-end Integrated Circuit Manufacturing Processes
16:15-16:40	**Jiang Yan (NICIC):** (INVITED) Thoughts Given to Optical Proximity Correction (OPC)
16:40-17:05	**Xu Ma (BIT):** (INVITED) Advanced Computational Lithography based on

	Information Theory
17:05-17:30	**Kan Zhou (Shanghai Huali):** (INVITED) Silicon Process Characterization Based on Massive SEM Contour Extraction and Hotspot Pattern Decomposition
17:30-18:30	**Poster Session** **Authors should be present at your poster.**
18:30-20:30	**Welcome Banquet for all attendees** **晚宴 (JIAHE Grand Ballroom 嘉禾厅)**

Day 2: **16 Oct. 2024 (Wednesday) —— Parallel Session I, 并行报告会场 I** **JIAHE Grand Ballroom Part A, 嘉禾厅 A**	
DAY 2–Morning	
08:30-10:20	**Equipment Session** **Chair: Jing Li 李璟 & Yun Zhan 詹云**
	5 minutes Q&A for each talk
08:30-08:55	**Billy Tang (ASML-Cymer):** (INVITED) Sustainability & Availability Improvements from Light Source Technology Enhancements
08:55-09:20	**Yang Liu (Harbin Institute of Technology):** (INVITED) Motion control methods in high-end measuring equipment
09:20-09:40	**Zhen MA (EDWARDS):** Lithography Vacuum and exhaust gas management for EUV high NA
09:40-10:00	**Jibin Leng (Hangzhou Cobetter Filtration Equipment Co., Ltd.):** New Polyethylene Filter Development for Next Generation Lithography
10:00-10:20	**Sebastian Vollmar (Carl Zeiss SMT GmbH):** MeRiT® MG neo – a new Photomask repair solution for the mature market
10:20-10:40	**Coffee Break**
10:40-12:10	**Mask Session** **Chair: Lifeng Duan 段立峰**
	5 minutes Q&A for each talk
10:40-11:10	**Hong Chen (Shenzhen GWX Technology Co.):** (INVITED) Significance Investigation on Thickness Effects of Mask on 28nm Node and Below
11:10-11:30	**Dejian Li (Uni Semiconductor Corp):** (INVITED) Evaluation of Lithography Printability Review in Mature Node Photomask Manufacturing

11:30-11:50	**Shuying Deng (Sun Yat-sen University):** Development of a synchrotron-based EUV microscope for actinic mask inspection
11:50-12:10	**Fu Li (Beijing Superstring Academy of Memory Technology):** Optimizing Mask Manufacturability and Image Quality: Exploring Variable Fracture Sizes in Inverse Lithography
12:10-14:00	**Lunch**
DAY 2-Afternoon	
14:00-15:30	**Metrology and Inspection Session** **Chair: Jiangliu Shi 师江柳**
	5 minutes Q&A for each talk
14:00-14:25	**Youngsu Kim (KLA):** (INVITED) Broadband Optical Wafer Inspection for Process Control: Industry challenges and Technology inflections
14:25-14:50	**Yuanliu Chen (Zhejiang Univ.):** (INVITED) In-process measurement and control for ultraprecision cutting
14:50-15:10	**Qiuping Nie (Yuwei Semi. Tech.):** Method for Improving Overlay Accuracy
15:10-15:30	**Qimeng Sun (the Fifth Electronic Research Institute of MIIT):** Non-destructive measurement of temperature in the micro-area wafer using Mueller matrix spectroscopic ellipsometry
15:30-15:50	**Coffee Break**
15:50-16:55	**Other Lithography and Process Session** **Chair: Shisheng Xiong 熊诗圣**
	5 minutes Q&A for each talk
15:50-16:15	**Jie Liu (Hunan Univ.):** (INVITED) A Hybrid Proximity Effect Correction Method based on Separation of Forward-/Back-Scattering and Cumulative Distribution Function
16:15-16:35	**Jianguang Xian (JiTong Technology Guang Zhou Co,):** Extended Theoretical Review of a new approach of Lithography at nm Resolution
16:35-16:55	**Bo Feng (Hunan University):** All-dry wafer thinning and Ru-filled nanoTSV-Middle processing for Backside Power Distribution
16:55-17:00	**Closing Plenary Address 闭幕致辞** **Chair: Wenzhan Zhou, Yayi Wei**

Day 2: **16 Oct. 2024 (Wednesday) —— Parallel Session II, 并行报告会场 II** **JIAHE Grand Ballroom Part B, 嘉禾厅 B**	
DAY 2–Morning	
08:30-10:20	**Computational Lithography Session** **Chair: Qiang Wu 伍强 & Sikun Li 李思坤**
	5 minutes Q&A for each talk
08:30-08:55	**Yijiang Shen (GUST):** (INVITED) Inverse lithography with adaptive threshold regularization
08:55-09:20	**Qi Wang (Fudan Univ.):** (INVITED) Source-Mask Co-Optimization Study for Typical EUV Design Rule Patterns with 40 nm Minimum Pitch
09:20-09:40	**Miao Yuan (BIT):** Zernike polynomial based pupil wavefront optimization technology for extreme ultraviolet lithography
09:40-10:00	**Pinxuan He (HUST):** Linearized EUV mask optimization based on the adjoint method
10:00-10:20	**Ying Li (Fudan Univ.):** Source-Mask Co-Optimization Study for 7 nm Metal Layer Patterns with 80 nm Minimum Pitch
10:20-10:40	**Coffee Break**
10:40-12:10	**AI Driven Lithography Session** **Chair: Xu Ma 马旭 & Yijiang Shen 沈逸江**
	5 minutes Q&A for each talk
10:40-11:05	**Shengrui Zhang (DJEL):** (INVITED) PanGen DMC: AI powered solution for fast design manufacturability check
11:05-11:30	**Haizhou Yin (Siemens EDA):** (INVITED) Monotonic Machine Learning for Retargeting Layer Generation by Leveraging Contour-Based Metrology
11:30-11:50	**Ying-chen Wu (ASML Brion):** GAOPC Improves OPC Parameter Search Efficiency and Convergence Speed
11:50-12:10	**Haibin Yu (Huali):** SONR based gauge down sampling for OPC model calibration
12:10-14:00	**Lunch**
DAY 2-Afternoon	
14:00-15:25	**Design and Process Session** **Chair: Xiaodong Meng 孟晓东 & Jacky Cheng**

	5 minutes Q&A for each talk
14:00-14:25	**Cai Chen (AMEDAC):** (INVITED) The Application of Multiple Patterning Solutions Based on Process Window Analysis in Lithography
14:25-14:45	**Chang XU (JHICC):** From 1D-Spot to 2D-Plain: A Computer Vision Based Comprehensive Approach for Process Window Qualification
14:45-15:05	**NanNan Zhang (GalaxyCore Semiconductor Limited):** A method of Combing Optical Proximity Correction and Design Layout Optimization to Improve Process Window
15:05-15:25	**Jiwei Shen (East China Normal University):** Large-scale chip layout pattern clustering method based on graph matching
15:25-15:45	**Coffee Break**
15:45-17:05	**Process and Simulation Session** **Chair: Feng Shao 邵峰**
	5 minutes Q&A for each talk
15:45-16:05	**Yuyang Bian (Huali):** Edge Placement Error Analysis Through Backscattered Electron Imaging
16:05-16:25	**Fuxun Chen (Zhejiang Univ):** Achieving High-Accuracy and Noise-Robust Process Window Analysis through Stepwise Regression
16:25-16:45	**Kan ZHOU (Huali):** Evaluation of Hotspots EPE Propagation Through Step-by-Step SEM Contour Analysis
16:45-17:05	**Yuxing Zhou (Beijing Superstring Academy of Memory Technology):** Spider mask reticle heating impact to on product overlay
17:05-17:10	**Closing Plenary Address 闭幕致辞** **Chair: Wenzhan Zhou, Yayi Wei**

Agenda is subject to change

Poster Session **15 Oct. 2024** **17:30-18:30 Outdoor of JIAHE Grand Ballroom 宴会厅前廊**	
IWAPS2024-P-01	**CHIH-LI(Julius) Chen, Ting Wang, Jifeng Miao, He Li, Changqi Sun, Dawen Yang, Pinhong Lin, Xiaodong Meng (Rong Semiconductor Co.，Tsinghua Univ., AMEDAC)** An effective Methodology of filter, measure and align SEM image in model calibration
IWAPS2024-P-02	**Xinyuan Zhang, Miaohong Yao, Shibin Xu , Kun Ren, Yongyu Wu (Zhejiang ICsprout Semiconductor， Zhejiang Univ. Siemens EDA)** SEM contour extraction application on opc model of CT layer
IWAPS2024-P-03	**Ruixiang Chen, Yang Zhao, Rui Chen (Sun Yat-sen University)** Inverse lithography based on a physics-driven deep learning approach
IWAPS2024-P-04	**Yongkang Liu, Wei Zhao, Ruixiang Yan, Kai Ni, Yuandong Gu, Jianlin Li (Shanghai University, Shanghai Melon Technology Co., Shanghai Industrial μTechnology Research Institute)** Research on Optical Proximity Correction with Embedded Coordinate Convolution Module
IWAPS2024-P-05	**Dion King, Ying Zhang, Qijian Wan, Ruizuo Hou, Shiwei Zhang, Chunshan Du (Huahong Grace Semiconductor Manufacturing Corporation，Siemens EDA)** A Fully Automatic and Generic Method for Classifying Repeating Array Designs
IWAPS2024-P-06	**Liuye Meng,Kun Ren, Yongyu Wu, Dawei Gao, Zheju Yan (Zhejiang University，Zhejiang ICsprout Semiconductor Co.)** Fast Layout Pattern Matching Using Spatial Indexing
IWAPS2024-P-07	**He Yang, Miao Yuan, Zhaoxuan Li, Zhen Li, Yanqiu Li (Beijing Institute of Technology)** Fast curvilinear optical proximity correction adopting quasi-uniform B-spline curves
IWAPS2024-P-08	**Zhen Li, He Yang, Miao Yuan, Zhaoxuan Li, Yuqing Chen, Yanqiu Li (Beijing Institute of Technology)** Fast lithographic source optimization adopting RMSProp with iterative shrinkage-thresholding algorithm compressive sensing for high fidelity patterning
IWAPS2024-P-09	**Zhilong Zhong, Jiamin Liu , Hao Jiang, Honggang Gu, Shiyuan Liu (Huazhong University of Science and Technology)** EUV Lithography imaging modeling and calculation based on full-vector beam propagation method
IWAPS2024-P-10	**Zhaoxuan Li, Miao Yuan, He Yang, Zhen Li, Yuqing Chen, Yanqiu Li (Beijing Institute of Technology)** Enabling Source and mask optimization by creating a dynamic aberration model

IWAPS2024-P-11	**Hongye Gao, Linqiang Ye, Jingfeng Kang, Wei Li, Aijiao Zhu, Xuanyu Ta, Jincheng Pei, Kevin Huang (Peking Univ., Semiconductor Manufacturing Beijing Corporation, KLA)** Implementation of a Versatile and Efficient Monitoring System in Semiconductor High-Volume Manufacturing
IWAPS2024-P-12	**Di Liang, Hao Yang, Yufei Sha, Yuxing Zhou, Jiahao Xi, Enqiang Tian, Mingyi Yao, Ganlin Song, Jiangliu Shi, Miao Jiang (Beijing Superstring Academy of Memory Technology)** A study of aerial image NILS and exposure energy as improvement factors for LER
IWAPS2024-P-13	**Yogev Baruch, Shuo Liu, Shu Lu, Shalev Dror, Zhenyu Wu (Zeiss)** ZEISS ForTune provides Intra-Field solutions at High Lateral Resolution for CDU and Overlay to increase IC manufacturing performance
IWAPS2024-P-14	**Jiwei Shen (East China Normal University, Huali)** Photolithographic Image Prediction Using Weak Supervision and Feature Encoding
IWAPS2024-P-15	**Yongyu Wu, Miaohong Yao, Shibin Xu, Kun Ren, Dawei Gao, Xiaoci Li, Qijian Wan, Chunshan Du (Zhejiang University, Zhejiang ICsprout Semiconductor Co., Siemens EDA)** Accurate SEM Contour-Based Measurement and Analysis of SRAM Patterns for Enhanced Design Optimization
IWAPS2024-P-16	**Kunyang Li, Jinjiang Fu, Shuying Deng, Zhou Zhou (Institute of Advanced Science Facilities, Sun Yat-sen University)** Application of Wiener Filter in Mask Detection
IWAPS2024-P-17	**Shengru Niu, Yiming Xu,Jing Zhou,Yichen Zhang, Weixuan Zeng,Shisheng Xiong (Fudan University， Zhangjiang laboratory)** Measurement and Analysis Algorithm for Sub-30 nm Patterns of Hexagonal Arrays in Microphotography
IWAPS2024-P-18	**Zheng Lan, Wei Zhao, Xiupeng Shi (Shanghai University)** Advancing Semiconductor Defect Detection with Integrated Deep Learning and Color Scale Preprocessing
IWAPS2024-P-19	**Hao Yang, Di Liang, Yuxing Zhou, Jiahao Xi, Enqiang Tian, Mingyi Yao, Ganlin Song, Jiangliu Shi, Miao Jiang (Beijing Superstring Academy of Memory Technology)** The implementation of overlay compensation between multiple photo layers generated by a single mask
IWAPS2024-P-20	**Hongye Gao, Linqiang Ye, Jingfeng Kang Lingyi Guo, Gaolin Mu, Jincheng Pei (Peking University, Semiconductor Manufacturing Beijing Corporation, KLA)** Customized Metrology Target Design Against OPO Challenges
IWAPS2024-P-21	**Botong Zhao, Yue Lu, Kan Zhou, Wenzhan Zhou (East China Normal University，Shanghai Huali Microelectronics Corporation)**

	Integrated Circuit Defect Classification Based on Multi-layer Attention Mechanisms
IWAPS2024-P-22	**Xintong Zhao, Botong Zhao, Jiwei Shen, Hu Lu, Pengjie Lou, Kan Zhou, Wenzhan Zhou (Shanghai Huali, East China Normal University)** Machine Learning Based Using Layout to Generate Reference SEM Images for Defect Inspection
IWAPS2024-P-23	**Lin Du (Shanghai Huali)** OCD Accuracy Improvement through Auto-TEM measurement
IWAPS2024-P-24	**Zhiping Mou, Kun Ren, Dawei Gao, Shibin Xu, Yanjiang Li, Chenwei Sun, Bo Pang (Zhejiang University，Zhejiang ICsprout Semiconductor Co.Ltd, Siemens EDA)** An efficient way towards massive CD-SEM metrology recipes based on Line Scan analysis--release your hands
IWAPS2024-P-25	**Tao Wang, Changchang Zhuang, Guo Yang, Hanshen Xin, Lin Jiang, Jianhua Zhang (Shanghai University)** Interface engineering of underlayer of chemically-amplified EUV photoresists to enhance the photolithographic performance
IWAPS2024-P-26	**Xianguo Dong (Shanghai Huali)** Study on Interaction Between Bottom SIARC and Photoresisit
IWAPS2024-P-27	**Jinyuan Song, Jing Li, Qingchen Wang, Qingyang Zhang, Wenhe Yang (Zhejiang University, Northeastern University)** Data-Driven Prediction and Interpretation of Defect States in II-oxides wide-bandgap semiconductors
IWAPS2024-P-28	**Qingchen Wang, Jing Li, Qingyang Zhang, Jinyuan Song, Dazhong Ma (Zhejiang University， Northeastern University)** Prediction and Design of Sapphire Materials Using Deep Transfer Learning and Materials Informatics
IWAPS2024-P-29	**Pengyu Sun, Fazhi Song , Yang Liu, Jiubin Tan (Harbin Institute of Technology)** Frequency-domain Modeling-free Learning Control for Wafer Stages with Transient Improvement by Adaption
IWAPS2024-P-30	**Guo Yang, Lifang Wu, Tao Wang, Xingyang Wu, Shenghao Wang, Luqiao Yin, Zihan Wang, Lin Jiang, Jianhua Zhang (Shanghai University)** Vacuum cleaning of amorphous carbon using hydrogen plasma for EUV lithography
IWAPS2024-P-31	**Yuqing Chen, Yanbei Nan , Tong Li, Zhenkun Zhang , Yanqiu Li (Beijing Institute of Technology)** Allocation method of micromirror array for deep ultraviolet illumination system
IWAPS2024-P-32	**Wenhe Yang, Jing Li, Guanghua Yang, Jinyuan Song (Zhejiang University)** Potential Application of Mueller Matrix Spectroscopic Ellipsometry

	for Alignment in Advanced Lithography
IWAPS2024-P-33	**Yingxiao Li, Zhinan Zeng (Shanghai Institute of Optics and Fine Mechanics)** Study on EUV mask blank inspection with multi-wavelength high harmonic generation EUV source
IWAPS2024-P-34	**Hongwei Huang, Haolan Wang, Yuyang Liu, Sikun Li (Shanghai University, Shanghai Institute of Optics and Fine Mechanics)** TransUNet-Based End-to-End Proximity Effect Correction for Electron Beam Lithography
IWAPS2024-P-35	**Biao Wang, Qiancheng Wang, Bo Feng (Hunan University)** Dummy-filled nTSV-first Process and Its Application in Backside Power Delivery Networks (BSPDN)
IWAPS2024-P-36	**Kaisheng Chen (Shanghai Optical Lithography Engineering Corp.)** Fresnel Diffraction by Rectangular Aperture: A Non-approximate Integral Theorem and Aperture Pattern Correction
IWAPS2024-P-37	**Hongbin Chen, Feifeng Huang, Qiancheng Wang, Biao Wang, Bo Feng (Hunan University)** Low Temperature Oxidation for nanoTSV-last Process in BSPDN
IWAPS2024-P-38	**Zhao Chen, Feifeng Huang, Biao Wang, Qiancheng Wang, Bo Feng (Hunan University)** Atomic Layer Deposition of Ru in nanoTSV for Low- resistivity Electrical Connections
IWAPS2024-P-39	**Feifeng Huang, Qiancheng Wang, Biao Wang, Bo Feng (Hunan University)** Enabling Backside Interconnects for Power Delivery Via High-Precision Integration of nTSV-middle with the Buried Power Rails
IWAPS2024-P-40	**Jingyu Chen, Puzhen Li, Yudan Su, Weixuan Zeng , Shisheng Xiong (Fudan University， Zhangjiang laboratory)** Integration of Deep Learning for Nonlinear Spectral Decomposition of in Situ interfaces Analysis
IWAPS2024-P-41	**Zhiyong Wu, Jiacheng Luo, Qingshu Dong, Jiaxiang Li, Xingran Xu, Zili Li, Weihua Li, Yan Zhang, Shisheng Xiong (Fudan University，Zhangjiang laboratory)** Quadruple hole multiplication by Directed Self-assembly of Block Copolymer
IWAPS2024-P-42	**Jiacheng Luo, Zhiyong Wu, Zili Li, Yan Zhang, Shengxiang Ji, Shisheng Xiong (Fudan University, Zhangjiang laboratory, Changchun Institute of Applied Chemistry)** Influence of sidewall affinity on the directed self-assembly for contact hole multiplication
IWAPS2024-P-43	**Kangpeng Huang, Wenhao Wang, Jiacong Zhao, Siyu Feng, Zhaoyang Lan, Zhensheng Zhang, Xuefeng Song, Dapeng Yu (Southern University of Science and Technology, Shenzhen Institute for Quantum Science and Engineering, Hefei National**

	Laboratory) Application of path planning in vector scanning electron beam lithography
IWAPS2024-P-44	**Eddy Liu, Steven Zeng, Fangyi Shi, Yue Li, Terry Pan, and Jinbo Liu (Cansemi, Optimlitho)** Rigorous Simulation for Impact of Wafer Topography on Critical Dimension
IWAPS2024-P-45	**Xin Sun, Jun Ke,and Xu Ma(Beijing Institute of Technology)** Thermal Microscopic Imaging based on Diffusion Models for Super-resolution Inspection
IWAPS2024-P-46	**Ziqi Li, Lisong Dong, Xiaojing Su, Wei Zhao, Yayi Wei, Lijie Zhang (IMECAS, UCAS, STIC)** A fast method for aerial image blur evaluation
IWAPS2024-P-47	**Jingjing Li, Yi Tong, Guangjian He, Junyu Lu and Yu Wang (GIICS)** A methodology for random placement of unit patterns to identify potential design and process optimizations

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