Chan-Chi Wang

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Employment

2020 – 2023 **R&D Optical Engineer**
Nano Patterning Technology Division, TSMC

Education

2018 – 2019 **M.Sc. in Advanced Chemical Engineering** with Distinction
Imperial College London, UK

2015 – 2018 **B.Eng. in Chemical Engineering** with First Class Honours
University of Manchester, UK

Research Experience

1.4nm Technology, Optimal Patterning Correction Department, TSMC

2023
- **Immersion Lithography: Off-Axis Illumination Source and Mask Optimization**
- **Illumination: XY-linear and Azimuthal Polarization Comparison**
- **High Transmission Attenuated Phase-Shift Mask (APSM) Evaluation**
- **Machine Learning Lithography Resist Model Implementation**

Achievements:
• Extended the minimum pitch of via hole pattern from 99nm to 93nm.
• Co-optimization of the illumination source, polarization, resist model, and mask design. Improved lithography pattern accuracy and tolerance to process variation by 20%.
• Pilot production of high transmission APSM showed further 20% improvement on lithography pattern precision without focus shift and undesired pattern print-out.

3nm Technology, Optimal Patterning Correction Department, TSMC

2022
- **Machine Learning Resist-to-Etch Bias Model Implementation**
- **Model-Based Sub-Resolution Assist Feature (SRAF) with Guidance Map Method**

2021
- **Automated Mask Repair Flow in Optical Proximity Correction (OPC) Algorithm**

Achievements:
• Calibrated both lithography and etch dimensions. Improved etch pattern accuracy by 50%.
• SRAF placements for contrast improvement with a defocus model while fulfilling photomask-making constraints. Improved lithography pattern accuracy and tolerance to process variation by 25%.
• Delivered verification model to identify potential risky layout. Automatic treatment of risky layout in OPC algorithm without significant software turnaround time increase. Improved lithography pattern accuracy by 40%.

Research Experience (continued)

Master's Project, Imperial College London

2019 **Modeling of Transport Phenomena in a Methane Reduction Wearable Device for Cattle**

Achievements:
• Modelling and optimization of the methane adsorption system in a methane reduction wearable device for cattle.
• Cooperated with ZELP ltd. to construct a computational model using COMSOL Multiphysics and optimize the geometry of the adsorption system. The model successfully described the momentum, heat, and mass transport.
• The optimized geometry effectively improved the heat transfer and adsorption/desorption efficiency of ZELP's device.

Skills

Languages	Strong reading, writing and speaking competencies in English and Chinese
Programming	Python, Linux Shell, Calibre DRC, LaTeX
Semiconductor	Resolution Enhancement Technologies, Optical Proximity Correction, Computational Lithography, Applied Machine Learning

Award

2016 **BP Perry Book Prize**, University of Manchester
Awarded to the top 10% highest achieving students