2018 e-Manufacturing & Design Collaboration Symposium (eMDC 2018)

Hsinchu, Taiwan 7 September 2018



IEEE Catalog Number: ISBN: CFP1896T-POD 978-1-5386-5594-8 Copyright © 2018, The Taiwan Semiconductor Industry Association (TSIA) All Rights Reserved

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP1896T-POD
ISBN (Print-On-Demand):	978-1-5386-5594-8
ISBN (Online):	978-986-91715-4-0

Additional Copies of This Publication Are Available From:

Curran Associ	ates, Inc
57 Morehouse	Lane
Red Hook, NY	7 12571 USA
Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com



Table of Contents

T1	Al and Big Data Analytics for Wafer Fab Energy Saving and Chiller Optimization
	to Empower Intelligent Manufacturing 1 Chen-Fu Chien ^{1,2} , Ying-Jen Chen ³ , Ya-Tung Han ¹ , Meng-Ke Hsieh ³ , Chi-Ming Lee ¹ , Taylor Shih ⁴ , Mao-Yung Wu ⁴ , Wen-Wei Yang ⁴
	¹ National Tsing Hua University, Taiwan, ² Artificial Intelligence for Intelligent Manufacturing Systems (AIMS) Research Center, MOST, Taiwan, ³ DALab Solutions x Associates Co., Ltd., Taiwan, ⁴ Macronix International Co., Ltd., Taiwan
Т2	AI Applications for Green Manufacturing 5 Stock Chang, Keung Hui, KH Tsai, CC Chuang, Leo Ke, Evan Wu, SY Sheen Taiwan Semiconductor Manufacturing Company, Ltd.
Т3	Machine Learning and Big Data in optical CD metrology for process control10Barak Bringoltz, Eitan Rothstein, Ilya Rubinovich, YongHa Kim, Noam Tal, OdedCohen, Shay Yogev, Ariel Broitman, Eylon Rabinovich, and Tal ZaharoniNova measuring instruments
Τ4	Recurrent Reinforcement Learning for Predictive Overall EquipmentEffectiveness14Da-Yin Liao ¹ , Wen-Pao Tsai ² , Hsuan-Tseng Chen ² , Yao-Po Ting ² , Chieh-Yu Chen ¹ ,Hsing-Chi Chen ¹ , Shi-Chung Chang ¹ ¹ National Taiwan University, ² Taiwan Semiconductor Manufacturing Co.
Τ5	Apply RPA (Robotic Process Automation) in Semiconductor SmartManufacturing18Ssu Chieh Lin, Lian Hua Shih, Damon Yang, James Lin, Ji Fu KungUnited Microelectronics Corporation
Т6	Process Window Optimization by Die to Database e Beam Inspection 21 <i>Tuung Luoh, Ling-Wuu Yang, Tahone Yang, Kuang-Chao Chen</i> Macronix International Co. Ltd.
Τ7	Resolving Wrong Die Picked Thru Development Of Sequentialbased Application for Die Sorter Equipment 25 Wiljelm Carl K. Olalia, Samuel T. Suaverdez, Mark Anthony O. Velasco ON Semiconductor Philippines Inc.
Τ8	The Value and Effectiveness of Sensor Trace Analytics in Solving Yield ImpactIssues: A Case Study 29Kim Kok Gan, Hein Mun Lam, Michael Zhao, Joe Lee, Tom HoBISTel

Т9	Smart GDBC Screening for High Quality IPD 33 Hao Chen, Hung-Chih Lin, and Min-Jer Wang Taiwan Semiconductor Manufacturing Company, Ltd
T10	Shop Floor Optimization through Job Scheduling and Machine Automation37Yuwen ZhangSingapore University of Technology and Design
T11	IDENTIFICATION AND CONTROLLING SOURCES OF DIE CHIPPINGS ON WAFER LEVEL CHIP SCALE PACKAGE (WLCSP) PROCESS 42 Glenn T. Placido ON Semiconductor Philippines Inc.
T12	Smart Manufacturing Stakeholders and Their Requirements 46 Alan Weber Cimetrix Incorporated
T13	Queue Time Reduction in Wafer Fab Process through Lean Six Sigma Approach 49 <i>Eric KERK & Chih Ming CHAN</i> GLOBALFOUNDRIES
T14	On the Decomposition of Bias Terms in Mixed Multi-Product Multi-Tool APC Operations 53 Keung Hui, Leo Ke, SY Sheen Taiwan Semiconductor Manufacturing Company, Ltd.
P1	A Microlens Reactive Ion Etching Process Study on CMOS Image Sensor 59 Wen-Hao Lo, Pin-Chieh Huang, Cheng-Han Ting, Kuo-Fang Huang, Tz-Shiuan Tzeng, Tz-Shiuan Lin, Shih-Ping Lee Powerchip Technology Corporation
Ρ2	Electrical and Reliability Characteristics of LPRTO and ISSG Oxide as Tunnel dielectric in SONOS Applications 62 Yi-Ping Lin, Chia-Hsin Liu, Tsung-Hui Chou, Chia-Hsin Tsai Powerchip Technology Corporation
Р3	 Method and application of metrology tool alignment for semiconductor cross FABs 65 Tang-Chi Wang, Ya-Chuan Chan Powerchip Technology Corporation
Ρ4	Multi-Products, Process and Machine Control Chart Application in Semiconductors 67 Wu Cheng June, Wei Jui Chen

Powerchip Technology Corporation

P5 A practical Quality control System for raw material through COA data analytics on Semiconductor Manufacturing 70 *Ricky Leu, Demeter Chen* Powerchip Technology Corporation