# 2019 Joint International Symposium on e-Manufacturing & Design Collaboration (eMDC 2019) & Semiconductor **Manufacturing (ISSM 2019)**

Hsinchu, Taiwan 6 September 2019



**IEEE Catalog Number: CFP19SSM-POD ISBN:** 

978-1-7281-4370-5

## Copyright © 2019, 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:
 CFP19SSM-POD

 ISBN (Print-On-Demand):
 978-1-7281-4370-5

 ISBN (Online):
 978-986-91715-5-7

ISSN: 1523-553X

#### Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



### 2019 Joint International Symposium on e-Manufacturing and Design

#### **Collaboration (eMDC) & Semiconductor Manufacturing (ISSM)**

#### **Table of Contents**

	Topic / Page	Authors	Association
N1	Feature Extractions from a High-dimension	Sumika ARIMA†, Huizhen	University of
	Low-samples Data for Multi-dimension	BU, Yuto ONUMA, Kotaro	Tsukuba
	Virtual Metrology1	HANDA, Takuya NAGATA	
N2	IC Test Quality Enhancement by Introducing	B.C. Wu	PETE KH
	Machine Learning6		NXP Semiconductors
N3	Mining factors impact wafer circuit probing	Ji Fu Kung, Yung Chien	United
	via neural network and statistics for	Kung, Jing Pei Lin, Ming	Microelectronics
	semiconductor device fabrication10	Wei Chen, Te Hsuan Chen,	Corporation
		Hsiao Ying Yang, Pei Wen	
		Chen	
N4	Optimizing Chiller Switch-on Time Interval for	Yu-Chu Tsai <sup>1</sup> , Chen-Fu	<sup>1</sup> National Tsing Hua
	Chiller Power Consumption Saving via Big	Chien <sup>1,2</sup> , Ying-Jen Chen <sup>3</sup> ,	University, Taiwan
	Data Analytics and Machine Learning	Meng-Ke Hsieh <sup>3</sup>	<sup>2</sup> Artificial
	Framework12		Intelligence for
			Intelligent
			Manufacturing
			Systems (AIMS)
			Research Center,
			MOST, Taiwan
			<sup>3</sup> DALab Solutions x
			Associates Co., Ltd.,
			Taiwan
N5	Process Control Technique to Dramatically	Saya Shimomura, Hiroaki	Toshiba Electronic
	Reduce Voids in Phosphorus-Doped Poly-	Kato, Tatsuya Shiraishi,	Devices & Storage
	Silicon for Trench Field-Plate MOSFETs16	Tetsuya Ohno, Toshifumi	Corporation
		Nishiguchi, Katsura	
		Miyashita, Kenya	
		Kobayashi	
N6	Optimizing Production Performance Through	KK Gan, Tom Ho, Joe Lee	BISTel America
	Trace-level Chamber Analysis20	KK Gan, Ioni Ho, Jue Lee	DISTEL AITIETICA
N7	Applications of Hybrid flowshop schedulings	Motoharu TANAKA, Keita	University of

	under dynamic constraints of queue time and capacities24	NISHIZAWA, Tomoki OHNO, Youhei OGAWA, Sumika ARIMA	Tsukuba
N8	Analysis for Dynamic Statistical Process Control with Interventions28	Lingyen Yeh, Zhe Yu Zheng, Shu Chun Huang	Sun Innovation Co., Ltd.
N9	Tungsten Gate Replacement Process Optimization in 3D NAND Memory32	Tuung Luoh, YuKai Huang, Chi-Min Chen, Yung-Tai Hung, Lin-Wuu Yang, Tahone Yang, Kuang- Chao Chen	Macronix International Co., Ltd.,
N10	Novel Manufacturing Process for Si Superjunction Power MOSFETs with Air Gap and Insulating Cap Layer36	Yuhki Fujino, Noboru Yokoyama, Takuya Yamaguchi, Hideki Okumura	Advanced Discrete Development Center, Toshiba Electronic Devices & Storage Corporation
N11	Electrical failure analysis using SEM Automated Process Inspection (API) System40	Yu-Chi Chen, Shih-Ping Lee, Bo-An Tsai, Chun-I Chan	Powerchip Semiconductor Manufacturing Corp
N12	A MEASUREMENT SYSTEM ANALYSIS RESEARCH FRAMEWORK FOR MEASUREMENT SYSTEM AND EMPIRICAL STUDY WITH AUTOMATION TIME-DOMAIN MEASUREMENTS43	Yu Mei Ling <sup>1</sup> , Ying-Jen Chen <sup>3</sup> , Chen-Fu Chie <sup>n1,2</sup>	<sup>1</sup> National Tsing Hua University, Taiwan <sup>2</sup> Artificial Intelligence for Intelligent Manufacturing Systems (AIMS) Research Center, MOST, Taiwan <sup>3</sup> DALab Solutions x Associates Co., Ltd., Taiwan
N13	Chemical-mechanical polishing (CMP) process of STI and DTI47	Ching-Yu Hsieh, Shih-Ping Lee, Tzu-Hsuan Tseng, Chih- Hao Chuang, Chien-Ying Chuang, Cheng-Hung Cheng, Hsin-Ying Tung, Pin-Chieh Huang, Chung-Tien Chou	Powerchip Semiconductor Manufacturing Corp
N14	The identification coding rules and the acceptance criteria of measuring instruments51	Chih-Jen Wang, Ya-Chuan	Powerchip Semiconductor

			Manfacturing
			Corporation
N15	A Bipolar ZrO2-Based Resistive RAM with	Ching Hua Chen, Chi-Yuan	Powerchip
	High Resolution Ratio under proposed	Ma, Yang ChenGhan, Shih-	Semiconductor
	method54	Chieh Pu, Lai Han Chao	Manufacturing
			Corporation