

2016 23rd International Workshop on Active-Matrix Flatpanel Displays and Devices (AM-FPD 2016)

**Kyoto, Japan
6-8 July 2016**



**IEEE Catalog Number: CFP1693R-POD
ISBN: 978-1-5090-1258-9**

**Copyright © 2016, International Society of Functional Thin Film Materials and Devices (FTFMD)
All Rights Reserved**

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

IEEE Catalog Number:	CFP1693R-POD
ISBN (Print-On-Demand):	978-1-5090-1258-9
ISBN (Online):	978-4-9908753-0-5

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

CURRAN ASSOCIATES INC.
proceedings
.com

CONTENTS

Wednesday, July 6

Opening Session (13 : 00 ~ 13 : 15)

Chairperson : H. Tanabe, *NLT Technologies, Japan*

Welcome Address

H. Hamada, *Kinki Univ., Japan*

Award Presentation

Session 1 : Keynote Address (13 : 15 ~ 14 : 15)

Chairpersons : H. Okada, *Univ. of Toyama, Japan*
H. Tanabe, *NLT Technologies, Japan*

13:15 (1-1)	AM-FPDs will Make Further Progress with 8K System and Olympic Games (Invited) T. Kurita, <i>NHK Media Technol., Japan</i>	1
13:45 (1-2)	Recent Progress on Perovskite Solar Cells and Our Materials Science (Invited) A. Wakamiya, <i>Kyoto Univ., Japan</i>	5

Session2 : Novel Application of TFTs (14 : 15 ~ 15 : 20)

Chairpersons : S. -H. Jin, *Incheon Nat'l Univ., Korea*
A. Heya, *Univ. of Hyogo, Japan*

14:15 (2-1)	Nanomaterial-Based Flexible and Wearable Sensor Sheets (Invited) K. Takei, <i>Osaka Prefecture Univ., Japan</i>	9
14:40 (2-2)	Evaluation of pH Sensors Using Self-Aligned Four-Terminal Planar Embedded Metal Double-Gate Low-Temperature Polycrystalline-Silicon Thin-Film Transistors on Glass Substrate H. Ohsawa, H. Suzuki, S. Kuwano, A. Hara, <i>Tohoku Gakuin Univ., Japan</i>	11
15:00 (2-3)	Brain-Like Synaptic Operations of Thin-Film Transistors Using In-Ga-Zn-O Active Channel and PVP-SBA Electrolytic Gate Insulator Y. -M. Kim ¹ , E. -J. Kim ¹ , W. -H. Lee ¹ , J. -Y. Oh ² , S. -M. Yoon ¹ , ¹ <i>Kyung Hee Univ., Korea,</i> ² <i>Electronics & Telecommunication Res. Inst., Korea</i>	15

— Coffee Break —

Session 3 : Novel Application on Photovoltaics (15 : 35 ~ 16 : 45)

Chairpersons : A. Masuda, *AIST, Japan*
T. Itoh, *Gifu Univ., Japan*

15:35 (3-1)	Solar Radiation Forecast with Machine Learning (Invited) X. Shao, S. Lu, H. F. Hamann, <i>IBM, USA</i>	19
16:00 (3-2)	Local Photovoltaic Characterization of Si Thin Film Solar Cells (Invited) T. Itoh, <i>Gifu Univ., Japan</i>	23
16:25 (3-3)	Lateral Thin-Film Poly-Si Solar Cell Prepared By Low Temperature Ni Silicide-Induced Crystallization Z. Kiaee, S. K. Joo, <i>Seoul Nat'l Univ., Korea</i>	N/A

Late News (16:45 ~ 17:15)

16:45 (L-1)	Charge Effects of Ultrafine FET with Nanodot Type Floating Gate T. Ban ¹ , S. Migita ² , Y. Uraoka ³ , S. Yamamoto ¹ , ¹ <i>Ryukoku Univ., Japan</i> , ² <i>Nat'l Inst. of Advanced Industrial Sci. and Technol., Japan</i> , ³ <i>Nara Inst. of Sci. and Technol., Japan</i>	29
17:00 (L-2)	Novel Bi-Direction Gate Driver Circuit for Active-Matrix LCDs with In-Cell Touch Structures P. -S. Chen, Y. -T. Liu, C. -L. Lin, <i>Nat'l Cheng Kung Univ., Taiwan</i>	31

Author Interviews (17 : 15 ~ 17 : 45)

Banquet (18 : 00 ~ 20 : 00)

Thursday, July 7

Symposium 1

Development and Future Innovation of TFT Technology (9 : 15 ~ 10 : 45)

Chairpersons :	S. -M. Yoon, <i>Kyung Hee Univ., Korea</i> M. Furuta, <i>Kochi Univ. of Technol., Japan</i>	
9:15 (S1-1)	Development of Organic Semiconducting Technology to Realize Low Driving Voltages (Invited) M. He ² , C. Wang ¹ , W. -Y. Lee ¹ , D. Kong ¹ , R. Pfattner ¹ , W. Niu ² , J. R. Matthews ² , A. Wallace ² , Z. Bao ¹ , ¹ <i>Stanford Univ., USA</i> , ² <i>Corning Incorporated, USA</i>	33
9:45 (S1-2)	Large-Area Solution-Printed Metal Oxide Electronics (Invited) W. -J. Lee, S. Park, M. -H. Yoon, <i>Gwangju Inst. of Sci. and Technol., Korea</i>	N/A
10:15 (S1-3)	Single-Walled Carbon Nanotubes (SWNTs); History and Future Prospects for Electronic Applications (Invited) S. H. Jin, <i>Incheon Nat'l Univ., Korea</i>	38

— Coffee Break —

Symposium 2

Thin-Film Materials for Sensing Devices (11 : 00 ~ 12 : 20)

Chairpersons :	H. Naito, <i>Osaka Prefecture Univ., Japan</i> H. Kajii, <i>Osaka Univ., Japan</i>	
11:00 (S2-1)	A Tube-in-a-Tube Semiconductor (Invited) A. L. Ng, Y. Wang, <i>Univ. of Maryland, USA</i>	42
11:30 (S2-2)	Graphene Field-Effect Transistor for Biosensor (Invited) K. Matsumoto, R. Hayashi, Y. Kanai, K. Inoue, T. Ono, <i>Osaka Univ., Japan</i>	45
12:00 (S2-3)	Reduction of Graphene Oxide by Atomic Hydrogen Annealing A. Heya, N. Matsuo, <i>Univ. of Hyogo, Japan</i>	47

— Lunch —

Symposium 3

Next-Generation Thin-Film Solar Cells (13 : 35 ~ 15 : 05)

Chairpersons :	K. Ohdaira, <i>JAIST, Japan</i> T. Suemasu, <i>Univ. of Tsukuba, Japan</i>	
13:35 (S3-1)	Optoelectronic Properties and Photo-Physics of Large Grain Hybrid Perovskites (Invited) A. D. Mohite, W. Nie, J. C. Blancon, H. Tsai, G. Gupta, <i>Los Alamos Nat'l Lab., USA</i>	49
14:05 (S3-2)	Recent Progress in BaSi ₂ Solar Cells (Invited) T. Suemasu, <i>Univ. of Tsukuba, Japan</i>	52
14:35 (S3-3)	Fabrication of Earth-Abundant CZTS Thin Film Solar Cells (Invited) H. Katagiri, K. Jimbo, <i>Nat'l Inst. of Technol., Nagaoka College, Japan</i>	54

Author Interviews (15 : 05 ~ 15 : 35)

Poster Session (15 : 35 ~ 18 : 00)

Chairpersons : H. Okada, *Univ. of Toyama, Japan*
R. Hattori, *Kyushu Univ., Japan*
S. Horita, *JAIST, Japan*
H. Naito, *Osaka Prefecture Univ., Japan*
K. Ohdaira, *JAIST, Japan*

FPDp

(P-1)	Highly Efficient and Inverted Tandem Organic Light-Emitting Devices Using a MoO ₃ /Al/MoO ₃ Charge Generation Layer T. -H. Yeh ¹ , P. -C. Chang ¹ , Y. -Z. Li ² , S. -W. Liu ¹ , S. -B. Chen ² , C. -C. Lee ² , ¹ <i>Ming Chi Univ. of Technol., Taiwan</i> , ² <i>Nat'l Taiwan Univ. of Sci. and Technol., Taiwan</i>	56
(P-2)	Optimal Parameters for Parallax Multi-Viewer Curved Autostereoscopic Display Y. -J. Yang ¹ , W. -C. Lin ¹ , Y. -J. Chen ¹ , K. -C. Huang ² , H. Y. Lin ¹ , ¹ <i>Nat'l Taiwan Univ., Taiwan</i> , ² <i>Industrial Technol. Res. Inst., Taiwan</i>	60
(P-3)	Block-Based Content Adaptive Backlight Controller VLSI Design for Local Dimming LCDs S. -L. Chen ¹ , H. -J. Tsai ¹ , T. -L. Lin ¹ , H. -Y. Lee ² , ¹ <i>Chung Yuan Christian Univ., Taiwan</i> , ² <i>Abbeymorney HK Limited., Hong Kong</i>	63
(P-4)	Factorial Designs of Multi-Coatings for Induced Stresses of Advanced Flexible Displays C. -C. Lee, <i>Chung Yuan Christian Univ., Taiwan</i>	67
(P-5)	Novel a-IGZO Pixel Circuit Adopting External Circuit for Use in 3-D AMOLED Displays M. -X. Wang, P. -S. Chen, C. -L. Lin, <i>Nat'l Cheng Kung Univ., Taiwan</i>	69
(P-6)	Mesh-Based Hologram Synthesis for Holographic Wavefront Printer J. Hong, Y. Kim, S. Hong, C. Shin, H. Kang, <i>Korea Electronics Technol. Inst., Korea</i>	72
(P-7)	Novel Pixel Circuit to Enlarge Operation Voltage for Blue-Phase Liquid Crystal Displays C. -H. Chang, C. -L. Lin, P. -S. Chen, <i>Nat'l Univ. of Cheng Kung, Taiwan</i>	75
(P-8)	Extraction Efficiency of Organic Light Emitting Diodes with Two-Dimensional Photonic Quasi-Crystal Structure M. -Y. Chang, C. -C. Lin, M. -Y. Huang, <i>Nat'l Sun Yat-Sen Univ., Taiwan</i>	78
(P-9)	Overview of Design Considerations for Electrophoretic E-Paper and Strategies for Achieving Full-Color B. -R. Yang, <i>Sun Yat-Sen Univ., China</i>	81
(P-10)	A New AC Biased Pixel Circuit for Active Matrix Organic Light-Emitting Diode Displays C. Wang, X. Meng, H. -M. Lam, H. Lu, S. Zhang, <i>Peking Univ., China</i>	85
(P-11)	High Performance Green Exciplex OLED W. -Y. Hung, P. -Y. Chiang, <i>Nat'l Taiwan Ocean Univ., Taiwan</i>	89
(P-12)	New PCT Host to Achieve High Efficiency Blue Phosphorescent Organic Light Emitting Diode H. -J. Gao ¹ , Y. -H. Hung ¹ , T. -L. Chiu ¹ , Y. -C. Li ² , J. -J. Huang ² , H. -C. Ho ³ , C. -F. Lin ⁴ , J. H. Lee ² , M. -K. Leung ² , ¹ <i>Yuan Ze Univ., Taiwan</i> , ² <i>Nat'l Taiwan Univ., Taiwan</i> , ³ <i>Industrial Technol. Res. Inst., Taiwan</i> , ⁴ <i>Nat'l United Univ., Taiwan</i>	93
(P-13)	Novel Benzimidazole/Carbazole Hybrid Ambipolar Molecules and Application in PhOLEDs J. -J. Huang ¹ , Y. -H. Hung ² , L. -K. Yun ¹ , M. -K. Leung ¹ , T. -L. Chiu ² , J. H. Lee ¹ , ¹ <i>Nat'l Taiwan Univ., Taiwan</i> , ² <i>Yuan Ze Univ., Taiwan</i>	96
(P-14)	Blue Phosphorescent Organic Light-Emitting Diode with Triazole Host Achieving High Current Efficiency Y. -H. Lan ¹ , Y. -C. Bai ² , N. -J. Chen ¹ , J. -J. Huang ¹ , B. -Y. Lin ¹ , C. -H. Hsiao ¹ , M. -K. Leung ¹ , M. -K. Wei ² , C. -F. Lin ³ , T. -L. Chiu ⁴ , J. -H. Lee ¹ , ¹ <i>Nat'l Taiwan Univ., Taiwan</i> , ² <i>Nat'l Dong Hwa Univ., Taiwan</i> , ³ <i>Nat'l United Univ., Taiwan</i> , ⁴ <i>Yuan Ze Univ., Taiwan</i>	99
(P-15)	Flexible Green Phosphorescent Organic Light-Emitting Devices on Copy Paper Substrates M. -Y. Ha, D. -Y. Yoon, D. -Y. Park, S. -J. Choi, D. -G. Moon, <i>Soonchunhyang Univ., Korea</i>	102

(P-16)	Device Performances of Exciplex Organic Light-Emitting Diodes with Different Emitting Layer Thickness B. -Y. Lin ¹ , Y. Hsiao ¹ , M. -Z. Lee ¹ , P. -C. Tseng ¹ , T. -L. Chiu ² , C. -F. Lin ³ , J. -H. Lee ¹ , ¹ Nat'l Taiwan Univ., Taiwan, ² Yuan Ze Univ., Taiwan, ³ Nat'l United Univ., Taiwan 104	104
(P-60)	Efficient Red Phosphorescent OLEDs Employing 2-Phenylcarbazoles-Based Hole Transport Materials C. -H. Chang ¹ , G. Krucaite ² , D. Lo ¹ , Y. -L. Chen ¹ , C. -C. Su ¹ , T. -C. Lin ¹ , J. V. Grazulevicius ² , L. Peciulyte ² , S. Grigalevicius ² , ¹ Yuan Ze Univ., Taiwan, ² Kaunas Univ. of Technol., Lithuania107	107
(P-L1)	Reducing Roll-Off Effect of Efficient Green Quantum-Dot Light-Emitting Diodes via Composition-Gradient Thick-Shell Quantum Dots H. -T. Vu ¹ , Y. -K. Su ¹ , C. -Y. Huang ² , H. -C. Yu ¹ , R. -K. Chiang ³ , C. -J. Chen ³ , ¹ Nat'l Cheng Kung Univ., Taiwan, ² Nat'l Taitung Univ., Taiwan, ³ Far East Univ., Taiwan111	111
(P-L2)	High Efficiency Blue Phosphorescent Organic Light-Emitting Diode Using Tetraphenylsilane Core Molecule as Host Material C. -P. Chen ¹ , C. -H. Huang ¹ , J. -H. Lee ¹ , C. -F. Lin ² , T. -L. Chiu ³ , M. -K. Leung ¹ , ¹ Nat'l Taiwan Univ., Taiwan, ² Nat'l United Univ., Taiwan, ³ Yuan Ze Univ., Taiwan113	113
(P-L3)	High Current Gain Organic Upconversion Device Using Sublimated Chloroaluminum Phthalocyanine as a Charge Generation Layer Y. -Z. Li ¹ , C. -J. Shih ¹ , E. -H. Chen ¹ , B. -C. Huang ¹ , C. -C. Lee ¹ , J. -Y. Guo ² , S. -W. Liu ² , ¹ Nat'l Taiwan Univ. of Sci. and Technol., Taiwan, ² Ming Chi Univ. of Technol., Taiwan 115	115
(P-L4)	Bright Yellow Up-Conversion in a LaOF Containing Er ³⁺ and Yb ³⁺ K. Ohyama, T. Nonaka, S. Yamamoto, Ryukoku Univ., Japan117	117
TFTp		
(P-17)	High-Performance Low-Temperature P-Channel Polycrystalline-Germanium Thin-Film Transistors via Continuous Wave Laser Crystallization C. -Y. Wu, Y. -S. Li, C. -H. Chou, H. -C. Cheng, Nat'l Chiao Tung Univ., Taiwan 119	119
(P-18)	Self-Aligned Metal Double-Gate Junctionless P-Channel Low-Temperature Polycrystalline-Germanium Thin-Film Transistors with a Thin Germanium Channel on a Glass Substrate A. Hara, Y. Nishimura, H. Ohsawa, Tohoku Gakuin Univ., Japan 123	123
(P-19)	Withdrawn	
(P-20)	Characteristics of Amorphous In-Ga-Zn-O Thin-Film-Transistors with Channel Layer Deposited by Bias Sputtering M. Zhang, X. Xiao, X. Ju, X. Zhang, S. Zhang, Peking Univ., China 127	127
(P-21)	Comparison of N ₂ and Ar Plasma Treatment for Source/Drain Formation in Self-Aligned Top-Gate Amorphous InGaZnO Thin Film Transistor H. Lu, C. Ren, X. Xiao, Y. Xiao, C. Wang, S. Zhang, Peking Univ., China131	131
(P-22)	Oxygen Partial Pressure and Annealing Temperature Influence on the Performance of Back-Channel-Etch Zinc Tin Oxide Thin Film Transistors Y. Xiao, X. Xiao, L. Zhang, X. Ju, H. Lu, S. Zhang, Peking Univ., China135	135
(P-23)	Impact of Wet Etchant with Different PH Value on the Performance of Back-Channel-Etch a-IGZO Thin-Film-Transistor C. Ren, H. Lu, X. Xiao, W. Deng, Y. Xiao, S. Zhang, Peking Univ., China 139	139
(P-24)	1/f Noise Characteristics of P-Channel Tin Monoxide Thin-Film Transistors C. -Y. Jeong, H. -J. Kim, J. -H. Lee, S. -D. Bae, H. -I. Kwon, Chung-Ang Univ., Korea143	143
(P-25)	Light Illumination Effect in AlZTO/IZO Dual-Channel TFTs H. -S. Choi ¹ , J. -H. Yang ² , J. H. Choi ² , C. -S. Hwang ² , S. H. Cho ² , S. Jeon ³ , ¹ Chosun Univ., Korea, ² Electronics Telecommunications Res. Inst., Korea, ³ Korea Univ., Korea146	146
(P-26)	Estimation of Threshold Voltage Shift in a-IGZO TFTs under Different Bias Temperature Stress by Improved Stretched-Exponential Equation X. Ju, X. Xiao, Y. Xiao, S. Zhang, Peking Univ., China 149	149

(P-27)	Enhancement of Gate-Bias and Current Stress Stability of P-Type SnO Thin-Film Transistors with SiN _x /HfO ₂ Passivation Layers S. -M. Hsu ¹ , Y. -S. Li ¹ , M. -S. Tu ¹ , J. -C. He ¹ , I. -C. Chiu ¹ , P. -G. Chen ^{1, 2} , M. -H. Lee ² , J. -Z. Chen ¹ , I. -C. Cheng ¹ , ¹ Nat'l Taiwan Univ., Taiwan, ² Nat'l Taiwan Normal Univ., Taiwan153
(P-28)	Physics-Based Modeling of Gate-Leakage Current in AlGaIn/GaN High Electron Mobility Transistors X. Ma, F. Yu, W. Deng, J. Huang, <i>Jinan Univ., China</i> 157
(P-29)	Withdrawn
(P-30)	Correlation between Contact Angle and Electrical Properties in Pentacene and C6-DNT-V-Based Organic Thin Film Transistors S. Shaari ^{1, 2} , S. Naka ¹ , H. Okada ¹ , ¹ Univ., of Toyama, Japan, ² Univ. Malaysia Perlis, Malaysia160
(P-31)	Interface Engineering for Improving the Electrical Stability and Photoelectric Effects of Organic Memory Transistors Y. -F. Wang, S. -K. Peng, P. -K. Huang, H. -L. Chen, W. -Y. Choua, <i>Nat'l Cheng Kung Univ., Taiwan</i> .163
(P-32)	Withdrawn
(P-33)	Withdrawn
(P-34)	Withdrawn
(P-35)	Hybrid-Type Temperature Sensor Using Thin-Film Transistors Generating Rectangle Output Waveform - Operating Confirmation by Actual Experiment - H. Hayashi, K. Kito, S. Kitajima, T. Hori, T. Matsuda, M. Kimura, <i>Ryukoku Univ., Japan</i> 166
(P-36)	Evaluation of the Infrared-Ray Sensors Using Poly-Si TFTs K. Kito ¹ , S. Kitajima ¹ , T. Matsuda ¹ , M. Kimura ¹ , M. Tamura ¹ , M. Inoue ² , ¹ Ryukoku Univ., Japan, ² Huawei Technologies Japan K.K., Japan168
(P-37)	Characteristic Evaluation of Photo-Induced Current by Infrared Light Irradiation in Low-Temperature Poly-Si TFT S. Kitajima ¹ , K. Kito ¹ , T. Matsuda ¹ , M. Kimura ¹ , M. Inoue ² , ¹ Ryukoku Univ., Japan, ² Huawei Technologies Japan K.K., Japan171
(P-38)	Investigations on Device Design Parameters of All-Oxide Transparent Charge-Trap Memory Thin-Film Transistors D. -J. Yun, H. -B. Kang, S. -M. Yoon, <i>Kyung Hee Univ., Korea</i>175
(P-39)	Neural Network Using FPGA for Neurons and IGZO Thin Films for Synapses Y. Koga ¹ , T. Matsuda ¹ , M. Kimura ^{1, 2} , ¹ Ryukoku Univ., Japan, ² Nara Inst. of Sci. and Technol., Japan .179
(P-L5)	Growth of Single Crystal Stripe in Si Film on Rolled Flexible Substrate by Micro-Chevron-Shaped CW Laser Scanning W. Yeh, S. Moriyama, <i>Shimane Univ., Japan</i>181
(P-L6)	Highly Stable Top Gate Top Contact ITZO TFT Deposited by Using High Density Plasma Sputtering J. H. Ahn ¹ , K. H. Lee ¹ , J. C. Do ² , W. W. Park ² , S. -H. K. Park ¹ , ¹ Korea Advanced Inst. of Sci. and Technol., Korea, ² Advanced Vacuum and Clean Equipment Optimizer, Korea183
(P-L7)	Low-Temperature Poly-Si TFTs with Sputtered HfO ₂ Gate Stack on Glass Substrate A. Hara, T. Meguro, <i>Tohoku Gakuin Univ., Japan</i> 185
(P-L8)	Electrical Stability of Flexible a-IGZO TFT Under Strained Condition M. M. Hasan, M. M. Billah, J. Jang, <i>Kyung Hee Univ., Korea</i>187

TFMDp

(P-40)	Formation of nc-Si in SiO _x by Flash Lamp Annealing N. Yoshioka ¹ , A. Heya ¹ , N. Matsuo ¹ , Y. Nakamura ² , G. Yokomori ² , M. Yoshioka ² , K. Kohama ³ , K. Ito ³ , ¹ Univ. of Hyogo, Japan, ² USHIO INC., Japan, ³ Osaka Univ., Japan	189
(P-41)	Large-Grain Sn-Doped Ge (100) on Insulator by Aluminum-Induced Crystallization at Low- Temperature for Flexible Electronics M. Sasaki, M. Miyao, T. Sadoh, Kyushu Univ., Japan	191
(P-42)	High Optical Conversion Capability within the Interface between Graphene and Si under Zero Bias and Visible to Near Infrared Regime C. -C. Hsiao ¹ , M. -Q. Wei ¹ , T. -T. Ren ¹ , B. -Y. Chen ² , M. -Y. Li ² , J. -M. Liou ² , F. -H. Ko ¹ , Y. -S. Lai ² , ¹ Nat'l Chiao Tung Univ., Taiwan, ² Nat'l Nano Device Labs., Taiwan	194
(P-43)	Study on Graphene Formation by Hot Mesh Deposition S. Fuji, A. Heya, N. Matsuo, Univ. of Hyogo, Japan	197
(P-44)	Investigation of the Effects of Mg Incorporation into Solution-Processed InZnO Semiconductor Thin Films for UV Photodetectors C. -Y. Tsay, P. -H. Wu, Feng Chia Univ., Taiwan	199
(P-45)	Thickness Effect of IGZO Layer in Light-Addressable Potentiometric Sensor C. -H. Chen, C. -M. Yang, L. -B. Chang, C. -S. Lai, Chang Gung Univ., Taiwan	203
(P-46)	Investigation of Electrical Characteristics of Multi-Thin-Film Metal Electrodes Deposited on Flexible Polydimethylsiloxane Substrates by Using an Automatic Folding Test System P. -C. Wang ¹ , B. -J. Wen ² , T. -Y. Lee ¹ , P. -H. Hung ² , H. Y. Chen ³ , ¹ Nat'l Tsing Hua Univ., Taiwan, ² Nat'l Taiwan Ocean Univ., Taiwan, ³ Industrial Technol. Res. Inst., Taiwan	206
(P-L9)	Multi-Functional Touch Sensors with Strained P(VDF-TrFE) Deposited on Metal Oxide Thin Film Transistor T. Jin ¹ , J. Ryu ¹ , H. S. Kang ² , K. No ¹ , S. -H. K. Park ¹ , ¹ Korea Advanced Inst. of Sci. and Technol., Korea, ² LG Display, Korea	209
(P-L10)	All-Solid-State Electrochromic Device Integrated with Near-IR Blocking Layer for Image Sensor and Energy-Saving Glass Application M. -C. Wang, Y. -C. Chen, M. -H. Hsieh, W. -F. Tsai, D. -J. Jan, Inst. of Nuclear Energy Res., Taiwan	211
(P-L11)	Performance Enhancement of Pt/ZnO/Pt Resistive Random Access Memory (RRAM) with UV-Ozone Treatment D. -L. Chen ¹ , H. -C. Yu ¹ , C. -C. Yang ¹ , Y. -K. Su ^{1,2} , C. -W. Chou ¹ , J. -L. Ruan ³ , ¹ Nat'l Cheng Kung Univ., Taiwan, ² Kun Shan Univ., Taiwan, ³ Nat'l Chung Shan Inst. of Sci. and Technol., Taiwan	213

PVp

(P-47)	Numerical Modeling of Device Structure for FeS ₂ Thin Film Solar Cells S. Uchiyama, Y. Ishikawa, Y. Kawamura, Y. Uraoka, Nara Inst. of Sci. and Technol., Japan	215
(P-48)	High Photothermal Properties in Silicon Nanostructures T. -T. Ren ¹ , M. -Q. Wei ¹ , C. -C. Hsiao ¹ , B. -Y. Chen ² , M. -Y. Li ² , J. -M. Liou ² , F. -H. Ko ¹ , Y. -S. Lai ² , ¹ Nat'l Chiao Tung Univ., Taiwan, ² Nat'l Applied Res. Labs., Taiwan	219
(P-49)	Improving Optical and Electrical Properties of Micropillar and Black-Si Solar Cells by Combining Them into a Superstructure J. Shieh, C. Y. You, J. M. Liu, C. C. Chiu, Nat'l United Univ., Taiwan	222
(P-50)	Doping Profile Control of Epitaxial-Like Si Emitting Layer for the Application of c-Si Solar Cells C. -C. Lee, Y. -L. Hsieh, T. T. Li, J. -Y. Chang, Nat'l Central Univ., Taiwan	225
(P-51)	Microwave Rapid Heating Used for Diffusing Impurities in Silicon K. Ota ¹ , S. Kimura ¹ , M. Hasumi ¹ , A. Suzuki ² , M. Ushijima ² , T. Sameshima ¹ , ¹ Tokyo Univ. of Agriculture and Technol., Japan, ² Tokyo Electron Limited, Japan	228
(P-52)	Dye Sensitized Solar Cells with Carbon Mixed Conducting Polymer Counter Electrodes C. -F. Lin ¹ , C. -L. Chen ¹ , P. -H. Chen ¹ , H. -C. Han ² , K. -Y. Chiu ³ , Y. O. Su ³ , ¹ Nat'l United Univ., Taiwan, ² Res. Ctr. for Applied Sci., Taiwan, ³ Nat'l Chi Nan Univ., Taiwan	232

(P-53)	Gallium-Doped Zinc Oxide Films as Transparent and Conductive Substrates Applying in Dye-Sensitized Solar Cell C. Li, S. Hou, <i>Kochi Univ. of Technol., Japan</i>236	236
(P-54)	Sol-Gel Process ZnO Thin Film as the Electron Transport Layer in Inverted Polymer Solar Cell M. -Y. Chang, C. -C. Lin, C. -K. Huang, <i>Nat'l Sun Yat-Sen Univ., Taiwan</i>239	239
(P-55)	ITO-Free Inverted Small Molecule Solar Cells M. -Y. Lin ¹ , S. -H. Wu ² , Y. -L. Kang ³ , Y. -C. Chang ² , C. -W. Chu ² , ¹ <i>Chung Yuan Christian Univ., Taiwan</i> , ² <i>Res. Ctr. of Applied Sci., Taiwan</i> , ³ <i>Nat'l Taiwan Univ., Taiwan</i>243	243
(P-56)	Effects of Molybdenum Trioxide Thickness of Organic Photovoltaic with Silver Anode C. -L. Lin ¹ , T. -L. Chiu ¹ , C. -H. Chen ² , C. -F. Lin ³ , J. H. Lee ² , ¹ <i>Yuan Ze Univ., Taiwan</i> , ² <i>Nat'l Taiwan Univ., Taiwan</i> , ³ <i>Nat'l United Univ., Taiwan</i>246	246
(P-57)	Fully Printable Mesoscopic Perovskite Solar Cells; Effect of NiO Layer on the Device Performance N. Peiris ^{1,2} , G. Mizuta ¹ , H. Kanda ¹ , T. Nishina ¹ , S. Ito ² , H. Segawa ¹ , ¹ <i>The Univ. of Tokyo, Japan</i> , ² <i>Univ. of Hyogo, Japan</i>249	249
(P-58)	Investigation of High Efficiency Methyl Ammonium Lead Halide Perovskite-Si Tandem Solar Cell S. M. Iftiqar, J. Yi, <i>Sungkyunkwan Univ., Korea</i>251	251
(P-59)	Perovskite/P-Type Crystal Silicon Tandem Solar Cells H. Kanda ¹ , A. Uzum ¹ , H. Nishino ² , S. Ito ¹ , ¹ <i>Univ. of Hyogo, Japan</i> , ² <i>Osaka Gas Corp., Japan</i>254	254
(P-L12)	Low-Pressure Hybrid Chemical Vapor Deposition for Efficient Perovskite Solar Cells and Module M. -H. Li, P. -S. Shen, J. -S. Chen, Y. -H. Chiang, P. Chen, T. -F. Guo, <i>Nat'l Cheng Kung Univ., Taiwan</i>256	256

Friday, July 8

Special Session : New Driving Technologies (9 : 15 ~ 10 : 25)

Chairpersons :	R. Hattori, <i>Kyushu Univ., Japan</i> M. Mitani, <i>Sharp Corp., Japan</i>	
9:15 (SP-1)	In-Cell Capacitive Touch Panel Structures and Their Readout Circuits (Invited) S. -H. Lee, J. -S. An, S. -K. Hong, O. -K. Kwon, <i>Hanyang Univ., Korea</i>	258
9:40 (SP-2)	High-Definition In-Cell Touch Panel with Parallel Scanning Method (Invited) K. Tada, K. Kida, S. Yamagishi, T. Maruyama, J. Mugiraneza, Y. Sugita, H. Kawamori, T. Saitoh, H. Shioe, <i>Sharp Corp., Japan</i>	262
10:05 (SP-3)	Blue-Phase Pixel Circuit Design to Enlarge Operation Voltage and Combine Polarity Inversion with a-IGZO Thin-Film-Transistors C. -E. Wu, C. -L. Lin, M. -X. Wang, <i>Nat'l Cheng Kung Univ., Taiwan</i>	266

— Coffee Break —

Session 4 : High-Performance TFTs (10 : 40 ~ 11 : 50)

Chairpersons :	M. -H. Yoon, <i>Gwangju Inst. of Sci. and Technol., Korea</i> S. Horita, <i>JAIST, Japan</i>	
10:40 (4-1)	Understanding of Carrier Transport in High-Performance Solid Phase Crystallized Poly-Si Nano-Wire Transistors (Invited) M. Oda, K. Sakuma, Y. Kamimuta, M. Saitoh, <i>Toshiba Corp., Japan</i>	270
11:05 (4-2)	Radio Frequency Electronics in a-IGZO TFT Technology (Invited) K. Ishida ¹ , T. Meister ¹ , R. Shabanpour ¹ , B. K. Boroujeni ¹ , C. Carta ¹ , G. Cantarella ² , L. Petti ² , N. Münzenrieder ^{2,3} , G. A. Salvatore ² , G. Tröster ² , F. Ellinger ¹ , ¹ <i>Technische Universität Dresden,</i> <i>Germany,</i> ² <i>Swiss Federal Inst. of Technol., Switzerland,</i> ³ <i>Univ. of Sussex, United Kingdom</i>	273
11:30 (4-3)	Ultrahigh-Performance Poly-Si Thin Film Transistor Using Multi-Line Beam Continuous-Wave Laser Lateral Crystallization T. T. Nguyen, M. Hiraiwa, T. Hirata, S. Kuroki, <i>Hiroshima Univ., Japan</i>	277

— Lunch —

Session 5 : Perovskite Photovoltaics (13 : 00 ~ 13 : 40)

Chairpersons :	C. Li, <i>Kochi Univ. of Technol., Japan</i> T. Miyadera, <i>AIST, Japan</i>	
13:00 (5-1)	Laser Deposition for the Controlled Co-Deposition of Organolead Halide Perovskite T. Miyadera, T. Sugita, H. Tampo, K. Matsubara, M. Chikamatsu, <i>Nat'l Inst. of Advanced Industrial Sci. and Technol., Japan</i>	280
13:20 (5-2)	Internal Resistance of Perovskite Solar Cells under Low Illuminance Conditions I. Raifuku ¹ , Y. Ishikawa ¹ , S. Ito ² , Y. Uraoka ¹ , ¹ <i>Nara Inst. of Sci. and Technol., Japan,</i> ² <i>Univ. of Hyogo, Japan</i>	283

Session 6 : Advanced Processing and Devices (13 : 40 ~ 14 : 20)

Chairpersons :	Y. Wang, <i>Univ. of Maryland, USA</i> T. Matsuda, <i>Ryukoku Univ., Japan</i>	
13:40 (6-1)	Surface Passivation of Crystalline Silicon by Heat Treatment in Liquid Water T. Motoki ¹ , K. Yasuta ¹ , H. Suzuki ¹ , T. Nakamura ¹ , M. Hasumi ¹ , T. Sameshima ¹ , T. Mizuno ² , ¹ <i>Tokyo Univ. of Agriculture and Technol., Japan,</i> ² <i>Kanagawa Univ., Japan</i>	286
14:00 (6-2)	Electroluminescence Emission Patterns of Organic Light-Emitting Transistors Based on Crystallized Fluorene-Type Polymers H. Kajii, T. Ohtomo, Y. Ohmori, <i>Osaka Univ., Japan</i>	290

Session 7 : Basic Properties of Oxide TFTs (14 : 35 ~ 15 : 40)

Chairpersons : K. Ishida, *Technische Universitaet Dresden, Germany*
Y. Terai, *JOLED, Japan*

14:35 (7-1)	High Mobility SnO ₂ TFT for Display and Future IC (Invited) A. Chin ¹ , C. W. Shih ¹ , C. F. Lu ² , W. F. Su ² , ¹ Nat'l Chiao Tung Univ., Taiwan, ² Nat'l Taiwan Univ., Taiwan	294
15:00 (7-2)	Why High-Pressure Sputtering must be Avoided to Deposit a-In-Ga-Zn-O Films K. Ide, M. Kikuchi, M. Sasase, H. Hiramatsu, H. Kumomi, H. Hosono, T. Kamiya, <i>Tokyo Inst. of Technol., Japan</i>	298
15:20 (7-3)	Comparative Study on Light-Induced Negative-Bias Stress Stabilities in Amorphous In-Ga-Zn-O Thin Film Transistors with Photoinduced Transient Spectroscopy K. Hayashi, M. Ochi, A. Hino, H. Tao, H. Goto, T. Kugimiya, <i>Kobe Steel, Japan</i>	302

Closing Remarks (15 : 40 ~ 15 : 45)

Author Interviews (15 : 45 ~ 16 : 15)