

China Display / Asia Display 2011

Kunshan, China, November 7–9, 2011



PROCEEDINGS OF CHINA DISPLAY / ASIA DISPLAY 2011

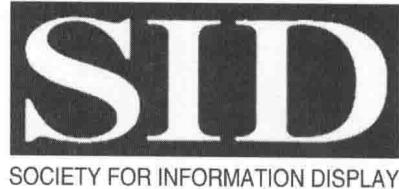
Edited by

Baoping Wang

Southeast University, China



SOUTHEAST UNIVERSITY PRESS

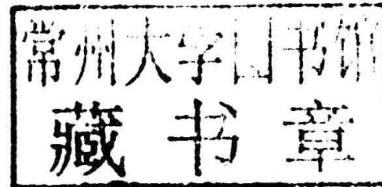


PROCEEDINGS OF CHINA DISPLAY / ASIA DISPLAY 2011

Edited by

Baoping Wang

Southeast University, China



图书在版编目 (CIP) 数据

2011年中国显示 / 亚洲显示会议论文集 =

Proceedings of China Display / Asia Display 2011 :

英文 / 王保平主编. --南京：东南大学出版社，

2011.11

ISBN 978-7-5641-3042-8

I . ①2… II . ①王… III . ①显示设备—国际会议—

亚洲—2011—文集—英文 IV . ①TN873-53

中国版本图书馆CIP数据核字 (2011) 第215894号

Proceedings of China Display / Asia Display 2011

Copyright © 2011 by Southeast University Press

All rights reserved. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher.

Printed in Changzhou, China

ISBN 978-7-5641-3042-8

Organized by

Society for Information Display
The People's Government of Kunshan

Co-organized by

Tsinghua University
Southeast University
Shanghai Jiao Tong University
Kunshan Bureau of Science and Technology
Kunshan Association for Science and Technology
Kunshan Industrial Technology Research Institute
SEMI
China Optics and Optoelectronics Manufacturers Association LCB
Science and Technology on Electro-optic Control Laboratory

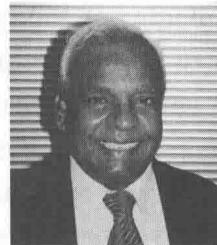
Supported by

Chinese Vacuum Society
Jiangsu Vacuum Society
SID Beijing Chapter
SID Hong Kong Chapter
SID Taipei Chapter
Kunshan New Flat Panel Display Technology Center Co., Ltd
Kunshan Visionox Display Co., Ltd
National Flat Panel Display Technology Engineering Research Center, China
Kunshan KETD Optoelectronic Village
Advanced Display
China FPD Digest
International Optoelectronics And Displays
FPDWIN

FOREWORD

2011 China Display/Asia Display: Beginning of a new era

We welcome you all for participating in **China Display/Asia Display 2011**, to be held in Kunshan, China. Asia Display is one of the three premier display research conferences that rotates among the countries in Asia. The other two are Eurodisplay and International Display Research Conference (IDRC) which rotates among the countries in the Americas. This year Asia Display is significant in that it is colisted with **China Display** for the first time. It is a momentus event of great importance because of the world's attention on the migration of display manufacturing to China. A proliferation of LCD manufacturing plants in China is expected and the entire world is keenly watching the development as it unfolds.



Munisamy Anandan

Hoi-Sing Kwok

This year's conference has a strong technical program with well known invited speakers who are well recognized all over the world. Two of the plenary talks are worth mentioning here. The conference commences with a plenary talk by Larry Tannas on the evolution of flat panel displays. Larry has been growing with flat panel displays and hence the attendees have the precious opportunity of knowing the nearly 50 years of history of displays. The second plenary talk is on "OLED Displays and Lighting-prospects and challenges" by Ching Tang, the inventor of OLED. Ching Tang's vision of OLED in displays and lighting will be extremely interesting to know, both from the viewpoint of challenges the OLED technology is facing and the prospects in the context of the dominating LCD technology. We are fortunate to have the inventor himself addressing the challenges that the OLED is exposed to.

There are several other plenary talks that are truly interesting. These plenary talks set the stage for many technical sessions that follow. The technical sessions are decorated by several invited talks by world experts in the respective fields. It is a rare opportunity for all of you to update the information on the latest exciting and emerging display technologies and display systems, especially when the information comes from those who spent decades of their professional experience in specialized fields. There are plenty of contributed papers in all fields of display technologies and systems. As TFT-LCD is a dominant technology, there are three sessions devoted to LCDs and TFTs. In this

session there are papers on TFT that relates to LCD as well as OLED. In these sessions there are papers that deal with the backplane issues of AMOLED and the progress on oxide TFT. This is in line with the progress taking place in these areas. There is a special session on E-Paper and this session papers on flexible and rollable displays from different technologies are presented with emphasis on application to eBook reader.

One of the hottest technologies of today is 3D and there is a special session devoted to 3D. In this session there are papers emphasizing stereoscopic and auto-stereoscopic displays. As the present day consumer prefers glassless 3D, it is interesting to see the papers on this subject. There are two sessions on OLED/LED, although most papers in these sessions are on OLED. This emerging technology, that is expected to challenge LCD, is fully covered in these sessions with emphasis on displays as well as lighting. One can see the energy efficient phosphorescent OLED papers in these sessions.

There are two sessions called, ‘New types and others’. One can find several interesting papers related to touch technology, smart phone displays, MEMS- based displays and human factors. A special session is devoted to ‘Laser Display’. This is rare and new for a conference like Asia Display and is a well needed session. There are interesting papers on 3D Laser display and Lasers themselves. There are two sessions on ‘PDP/FED’ and the papers on PDP focus on the most needed efficiency improvement of PDPs. There are many papers on FED from China and it appears China is taking the challenge on FEDs. There are two ‘poster sessions’ comprising all the technologies mentioned above. Poster sessions are the most interactive sessions and the active participation can be seen only at these sessions. One should not miss these sessions. The crest of the future display research is in these sessions.

We hope that you will enjoy this conference and take home the benefit of the latest information provided at this conference on various areas of display technologies and systems, especially the status of China’s display industry. In time, we believe that China Display will become an important forum for the dissemination of the latest manufacturing and display technologies.

Munisamy Anandan

President of SID

Hoi-Sing Kwok

China Display/Asia Display 2011 Co-chair

CONTENTS

Plenary Talk 1

K1-1	Flat Panel Displays In the Beginning And How They Evolved.....	1
	<i>Lawrence E. Tannas, Jr.</i>	
	Tannas Electronics, Orange	
K1-2	OLED Displays and Lighting - Prospects and Challenges.....	3
	<i>Ching-Wan Tang</i>	
	University of Rochester, USA	
K1-3	Displays, Light and Lighting Convergence and Leverage in the Industry.....	4
	<i>Kees van der Klaauw</i>	
	Philips Lighting, BG Professional Luminaires, Mathildelaan 1, Eindhoven, the Netherlands	
	<i>Piet Derkx</i>	
	Philips Lighting, Global Technology, Shanghai, China	

Plenary Talk 2

K2-1	Advances in 3D Displays Using Scanned Light.....	7
	<i>Brian T. Schowengerdt</i>	
	Department of Mechanical Engineering, University of Washington, Seattle , USA	
K2-2	Some Key Issues to Smart TV.....	11
	<i>Xiaolin YAN</i>	
	TCL CORPORATE RESEARCH, Shenzhen, Guangdong, China	
K2-3	AUO Green Production.....	16
	<i>Wells Lin</i>	
	AU Optronics Corporation, Corporate Sustainability & Environment Department, Senior Manager	
	<i>YILin Wei</i>	
	AU Optronics Corporation, Corporate Sustainability & Environment Department, Manager	
	<i>Yvonne Tai</i>	
	AU Optronics Corporation, Corporate Sustainability & Environment Department, Engineer	
	<i>Yorkson Chu</i>	
	AU Optronics Corporation, AUSZ Site, MD	

Session 1 TFT-LCD 1

S1-1	ZnO Thin-Film Transistor with Boron-Implanted Source/Drain Regions.....	21
	<i>Z. Ye, L. Lu and M. Wong</i>	
	The Department of Electronic and Computer Engineering	
	The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China	
S1-2	My Three-Decade Investigation of Ions in EPDs and LCDs.....	25
	<i>Kei-Hsiung Yang</i>	
	Institute of Imaging and Biomedical Photonics, College of Photonics,	
	Chiao Tung University, Taiwan, China	
S1-3	Ultrathin a-IGZO TFTs with High Performance.....	28
	<i>M. Mativenga, H. M. Kim, D. Geng, M. J. Seok, and J. Jang</i>	
	Advanced Display Research Center, Kyung Hee University, 1 Hoegi-dong, Dongdaemun-gu , Korea	

S1-4	Source-gated transistors for improved current-mode pixel drivers.....	32
	<i>R. A. Sporea, J. M. Shannon, S. R. P. Silva</i>	
	Advanced Technology Institute, University of Surrey, Guildford, Surrey, GU2 7XH, U.K	
	<i>X. Guo</i>	
	Displays and Lighting Centre, Shanghai Jiao Tong University, Shanghai, 200240, China	
S1-6	Optimization Algorithm for Local Dimming of EdgeLit TVs towards High Contrast and Low Power Consumption	36
	<i>Chihao Xu</i>	
	Institute of Microelectronics, Saarland University , Germany	
S1-7	Design of Integrated Gate Drivers with LTPS TFTs for Low Power Consumption.....	42
	<i>Zhong-Yuan Wu, Li-Ye Duan, Jun Li, Gang Wang</i>	
	Future Technology Group, BOE Co.,Ltd, China	

Session 2 TFT-LCD 2

S2-1	Recent progress of backplane technologies for AMOLED.....	46
	<i>Min-Koo Han, Sun-Jae Kim and Sung Hwan Choi</i>	
	School of Electrical Engineering, Seoul National University Seoul, Korea	
S2-2	Low-Flicker and High-Transmission MVA LCDs with Improved Row-Inversion IC for Low-Power High-Performance Applications	52
	<i>Hiap L. Ong and Juishu Chou</i>	
	Kyoritsu Optronics Co., Ltd. 7 Fl, No. 38-5. Tian Mu East Road. , Taiwan, China	
S2-3	Large Scale PECVD Systems for Low Temperature Polysilicon Based Display Applications.....	56
	<i>Qunhua Wang, Weijie Wang, Young Jin Choi, Beom Soo Park, Gaku Furuta, Soo Young Choi, Robin Tiner, Suhail Anwar, Shinichi Kurita, John White</i>	
	AKT Display CVD, Applied Materials 3101 Scott Boulevard	
S2-4	Microcrystalline Silicon, a Right Material for Reliable Electronic Devices Fabricated at T<180°C.....	58
	<i>T. Mohammed-Brahim</i>	
	Institut d'Electronique et de Telecommunications de Rennes (IETR), UMR-CNRS 6164, Université de Rennes I, 35042 Rennes Cedex, France	
S2-5	Degradation Mechanisms of Low Temperature Poly-Si Thin-Film Transistors under Circuit Applications	62
	¹ <i>Mingxiang Wang*</i> , ¹ <i>Xiaowei Lu</i> , ² <i>Huaisheng Wang</i> , ³ <i>Meng Zhang</i> , ¹ <i>Chunseng Hu</i> , ¹ <i>Jie Zhou</i> , ¹ <i>Min Xue</i> , ³ <i>Man Wong</i>	
	¹ Dept. of Microelectronics, Soochow University, Suzhou, China *Email: Mingxiang_wang@suda.edu.cn	
	² Dept. of Electronic Information, Nanjing Institute of Railway Technology, Suzhou, China	
	³ Dept. of Electronic and Computer Engineering, the Hong Kong University of Science and Technology, Kowloon, Hong Kong, China	
S2-6	1/f Noise Characterization of Metal-Induced Crystallized Poly-Si Thin-Film Transistors.....	66
	<i>Yang Shao, Mingxiang WANG, Xiaowei Lu, and Xiaohong Sun</i>	
	Dept. of Microelectronics, Soochow University, Suzhou, 215006, China	

Session 3 TFT-LCD 3

S3-1	Emerging Polymer-Stabilized Blue Phase Liquid Crystal Display.....	69
	<i>Jin Yan, Hui-Cheng Cheng, Linghui Rao, Takahiro Ishinabe and Shin-Tson Wu</i>	
	College of Optics and Photonics, University of Central Florida, Orlando, USA	
S3-2	Newly developed materials and devices for LCDs.....	73
	<i>Hirofumi Kondo</i>	
	Sony Chemical & Information Device Corporation, R&D Division 1078 Kamiishikawa, Kanuma, Japan	
S3-3	P-channel Bridged-grain (BG) Excimer Laser Annealing (ELA) poly-Si TFTs with various BG implantation dosages.....	78

S. Y. Zhao, Z. G. Meng, W. Zhou, M. Wong and H. S. Kwok
Center for Display Research and Department of Electrical and Electronic Engineering
The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China

S3-4	Fast Ferroelectric Liquid Crystal Display.....	81
	<i>Vladimir Chigrinov, Eugene Pozhidaev, Abhishek Srivastava, Guo Qi, Anatoli Murauski, and Hoi Sing Kwok</i>	
	Center for Display Research and Department of Electrical and Electronic Engineering	
	The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China	
S3-5	Polarizer-Free 2-Face Viewable Display Using Dye-Doped Liquid Crystal.....	82
	<i>Chao Ping Chen^{1,2,3}, Bingyu Si^{1,2}, Tean-Sen Jen^{1,2}, Xiaojun Guo³, and Yikai Su³</i>	
	¹ R&D Center, Infovision Optoelectronics Co. Ltd., Kunshan, Jiangsu, China	
	² Jiangsu FPD Technology & Research Institute, Kunshan, Jiangsu, China	
	³ Department of Electronic Engineering, Shanghai Jiao Tong University, Shanghai, China	
S3-6	A Novel Shift Register Using Dual-gated a-IGZO TFTs.....	86
	<i>D. Geng, M.J. Seok, M. Mativenga, J. Jang</i>	
	Department of Information Display and Advanced Display Research center, Kyung Hee University, Dongdaemoon-ku, Seoul 130-701, Korea	

Session 4 E-Paper

S4-1	The Recent Development in Flexible AMOLED.....	90
	<i>Janglin Chen, Cheng-Chung Lee, Glory Chen, Chung-Wen Wu, Jia-Chong Ho</i>	
	Display Technology Center (DTC), Industrial Technology Research Institute (ITRI),	
	Rm 277, Bldg 15, 195, Sec. 4, Chung Hsing Rd, Chutung, Hsinchu, Taiwan, 31040, China	
S4-2	Rollable displays for use in ultra-mobile devices.....	91
	<i>Pieter J.G. van Lieshout, John C.A. Hamers, Frank J. Stommels, Fred J. Touwslager, Erik van Veenendaal, H. Edzer A. Huitema</i>	
	Polymer Vision B.V., Kastanjelaan 1000, 5616 LZ Eindhoven, the Netherlands	
S4-3	Materials for the microencapsulated electrophoretic display.....	94
	<i>P.P. Yin, G. Wu, H.Z. Chen*</i>	
	MOE Key Laboratory of Macromolecule Synthesis and Functionalization, State Key Lab of Silicon Materials, &	
	Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China (E-mail: hzchen@zju.edu.cn)	
S4-4	Visual Fatigue Difference Analysis between Reflective and Emissive Backlight of Electronic-Book Readers	96
	<i>B.J. Wen*, Y.Y. Lai, and T.C. Tsai</i>	
	Center for Measurement Standards, Industrial Technology Research Institute	
	<i>M.T. Ke, and C.Y. Chen</i>	
	Graduate Institute of Electronic Engineering, Yunlin University of Science and Technology	
	<i>T.S. Liu</i>	
	Department of Mechanical Engineering, Chiao Tung University	
S4-5	Fabrication process of flexible phosphorescent OLED by ink-jet printing method.....	99
	<i>T. Shimizu, M. Suzuki, H. Fukagawa, G. Motomura, Y. Nakajima, M. Nakata, H. Sato, Y. Fujisaki, T. Takei, T. Yamamoto, H. Fujikake</i>	
	NHK Science and Technology Research Laboratories	
S4-7	Development of Novel Electronic Inks for Print-Like Color Reflective Display.....	103
	<i>Zhang-Lin Zhou¹, Qin Liu², Jong-Souk Yeo², Gregg Combs², Brad Benson², Mary Parent¹, Jun Yang¹, Jeff Mabeck², Sity Lam¹, Yoocharn Jeon¹, Dick Henze¹, Tim Koch²</i>	
	¹ Hewlett Packard Labs, 1501 Page Mill Road, Palo Alto, CA 94304, USA	
	² Hewlett Packard Company, 1070 NE Circle Blvd, Corvallis, Oregon 97330, USA	
S4-8	Silkkink™ Technology for Multi-stable Trans-Reflective Color Displays.....	107
	<i>SUN Gang, WAN Li-fang, TIAN Li Halation Photonics Corporation</i>	
	A4-101 Biobay Science Park, 218 Xinghu Street, SIP, Suzhou, 215123, China	

S4-9	Novel Method for Fabricating Flexible Active Matrix Organic Light Emitting Diode (AMOLED) Displays	112
	<i>L. Zhao*, H. Luo, P. Mei, J. A. Brug, F. Gomez-Pancorbo, E. Holland, W. Jackson, M. Jam, A. Jeans, J. Maltabes, C. M. Perlov, M. Smith, S. W. Trovinger, R. E. Elder, C. P. Taussig</i>	
	HP Labs, 1501 Page Mill Rd. Palo Alto, CA, 94304 USA	
	<i>R. Garcia, M. Almanza-Workman, H.-J. Kim, O. Kwon</i>	
	Phicot Inc., Palo Alto, California, USA	

Session 5 HMD

S5-1	Estimation and prediction for moving object pose	116
	<i>C.K. Sun, P.F. Sun, Z.M. Zhang, P. Wang</i>	
	State Key Laboratory of Precision Measuring Technology and Instruments, Tianjin University, Tianjin, China	
S5-2	Pilot study of display format compatibility in cockpit	123
	<i>Xueqin Hao, Xiaochao Guo, Shuang Bai, Jian Du, Yu Bai, Juan Liu, Ruoyong Wang, Chunmei Gui</i>	
	Institute of Aviation Medicine, Beijing 100142, China	
S5-3	A Method to Quantize Parallax Adjustment for Head-Mounted Displays	127
	<i>S.J. Yang, X.X. Li, C.H. Liu</i>	
	Luoyang Research Institute of Electro-optical Equipment, AVIC, Luoyang, 471009, China	
S5-4	Fixed time prediction for moving object pose in three-dimensional space	133
	<i>C.K. Sun, C. Sun, P. Wang, Z.M. Zhang</i>	
	State Key Laboratory of Precision Measuring Technology and Instruments, Tianjin University, China	
S5-5	Holography and Holographic Display	139
	<i>Quanxin Ding</i>	
	Science and Technology on Electro-optic Control Laboratory	
S5-6	Color Virtual Display Based on Planar Waveguide with Transmission Volume Holograms	143
	<i>Hui Liu, Zhenrong Zheng*, Haifeng Li, Xu Liu</i>	
	State Key Laboratory of modern Optical Instrumentation, Zhejiang University, China	

Session 6 3D

S6-1	Microlens array with controllable lens shape for integral imaging display	147
	<i>J. Xia, X. C. Zhou, D. Qu, Q. R. Li, C. F. Miao</i>	
	School of Electronic Science and Engineering, Southeast University, Si Pai Lou 2, Nanjing, China	
S6-2	Crosstalk homogeneity measurement of different types of 3D displays	151
	<i>Pierre Boher, Thierry Leroux, Thibault Bignon and Ludivine Cave</i>	
	ELDIM, 1185 rue d'Epron, 14200 Herouville St Clair, France	
S6-3	A large screen and high resolution autostereoscopic 3D	155
	<i>projection display based on two lenticular sheets</i>	
	<i>Lin Qi, Qiong-Hua Wang, and Wu-Xiang Zhao</i>	
	School of Electronics and Information Engineering, Sichuan University, China	
	State Key Laboratory of Fundamental Science on Synthetic Vision, Sichuan University, China	
S6-4	Holographic 3D display based on polymer-dispersed liquid-crystal thin films	158
	<i>Zhenghong He^{1,2}, Hongyue Gao¹, Qiang Shi¹, Qingyu Cui¹, Xiao Li¹, Yikai Su¹</i>	
	¹ SEIEE, Center for Opto-electronic Materials and Devices, Shanghai Jiao Tong University, National Engineering Lab of TFT-LCD Materials and Technologies, China	
	² School of Physical Science and Technology, Southwest University, China	
S6-5	Real 3D display based on the light field modulation	161
	<i>Xu Liu and Haifeng Li</i>	
	State key laboratory of modern optical instrumentation, Zhejiang University, China	
S6-6	Stereoscopic 3D Display with Patterned Retarder	164
	<i>Chung-Yung Lee, Man-Chun Tseng, Tsz-Kin Ho and Hoi-Sing Kwok</i>	

S6-7	Evaluation Metric for Binocular Luminance Difference.....	168
	<i>Kuo-Chung Huang^{1,2}, Chou-Lin Wu¹, Fu-Hao Chen¹, Lang-Chin Lin¹, Kuen Lee¹, and Hoang Yan Lin²</i>	
	¹ Industrial Technology Research Institute, Hsinchu,Taiwan, 310, China	
	² Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering, Taiwan University, Taipei, Taiwan 106, China	
S6-8	Crosstalk Measurement Investigation of Glasses Type Stereoscopic Displays.....	172
	<i>Y.T. Chen</i>	
	Department of Optics and Photonics, Central University, Jhongli City, 32001, Taiwan, China	
	<i>B.J. Pong, Y.Y.Lai, T.C. Tsai, B.J. Wen</i>	
	Center for Measurement Standards, Industrial Technology Research Institute, Hsinchu City , Taiwan, China	
	<i>and M. Ou-Yang</i>	
	Department of Electrical Engineering, Chiao-Tung University, Hsinchu City, Taiwan, China	

Session 7 OLED 1

S7-1	LED: Light Extraction Techniques.....	175
	<i>M. Anandan</i>	
	Organic Lighting Technologies LLC, Austin, USA	
S7-2	Investigation on AMOLED Based on ZnO:In:Nd Thin Film Transistors.....	178
	<i>L. F. Lan, M.Xu, J.H.Zou, H.Tao, L.Wang, M. Li, H. Xu, D.X.Luo, S.F.Yu, S.H.Bai, C.F.Wang, R.X.Xu, J.B.Peng*</i>	
	Institute of Polymer Optoelectronic Material and Devices, Guangzhou, 510640, China (* psjbpeng@scut.edu.cn)	
	State Key Laboratory of Luminescent Materials and Devices (South China University of Technology) New Vision Opto-Electronic Technology Co., Ltd, Guangzhou 510640, China	
S7-3	Highly Efficient Blue Electrophosphorescent Device Using a Weak Electron Transporting Material.....	181
	<i>Lixin Xiao, * Xing Xing, Lingling Zheng, Boyuan Qi, Zhijian Chen, Bo Qu, Qihuang Gong*</i>	
	State Key Laboratory for Mesoscopic Physics and Department of Physics, Peking University, Beijing, China	
S7-4	Small Molecule OLED Micro-displays	182
	<i>Amalkumar P. Ghosh, Tariq A. Ali, and Ilyas I. Khayrullin</i>	
	eMagin Corporation, 2070 Route 52, Hopewell Junction, USA	
S7-5	Analysis of the interface between soluble and vacuum deposited organic layers in hybrid blue device.....	185
	<i>Dong-hee Nam, Hee-jin Kim, Hak-min Lee, Young-gu Lee, James(Jueng-Gil) Lee, Byung-chul Ahn</i>	
	OLED R&D Center, LG Display Co., Ltd., Paju-si, Gyeonggi-do, Korea	
	<i>Su Jin Baek, Jun Ho Youn, Jin Jang</i>	
	Department of Information Display and Advanced Display Research Center, Kyung Hee University, Hoegi-dong, Dongdaemun-gu, Seoul, 130-701, Korea	
S7-6	A New Pixel Design for Compensating OLED Degradation and Non-uniformity of TFT.....	187
	<i>Zhong-Yuan Wu, Gang Wang, Tian Xiao</i>	
	Future Technology Group, BOE Co.,Ltd	
	No.9 Dize Road, BDA, Beijing, China	
S7-7	High-performance flexible organic light emitting diodes on plastic substrate.....	190
	<i>Can Zhang, Liu Song, Yan Rui Li, Guo Hui Zhang</i>	
	Visionox Tech. Ltd. Beijing, 100085, China	
	<i>Lian Duan, and Yong Qiu</i>	
	Key Lab of Organic Optoelectronics & Molecular Engineering of Ministry of Education Department of Chemistry, Tsinghua University, China	

Session 8 OLED 2

S8-1	Phosphorescent OLEDs: Lighting our way with an Energy Efficient Solution for Displays and Lighting.....	194
	<i>Peter A. Levermore, Vadim Adamovich, Ruiqing Ma, Michael S. Weaver, Mike Hack, and Julie J. Brown</i>	

Universal Display Corporation, 375 Philips Boulevard, Ewing, NJ, 08618, USA

S8-2	Development of OLED Technology – Opportunities & Challenges for China.....	200
	<i>C. H. Chen</i>	
	Chief Scientist, Beijing Aglaia Technology & Development Co., Ltd Beijing, China&Centre for Advanced Luminescence Materials (CALM), Honorary Dir. Hong Kong Baptist University, China	
S8-3	TFT Backplane Based on Amorphous Oxide Semiconductor.....	201
	<i>L. F. Lan, M. Xu, J.H.Zou, H.Tao, L.Wang, M. Li, H. Xu, D.X.Luo, S.F.Yu, S.H.Bai, C.F.Wang, R.X.Xu, J.B.Peng*</i>	
	Institute of Polymer Optoelectronic Material and Devices, Guangzhou, 510640 China (* psjbpeng@scut.edu.cn)	
	State Key Laboratory of Luminescent Materials and Devices (South China University of Technology)New Vision Opto-Electronic Technology Co., Ltd, Guangzhou, 510640, China	
S8-4	Highly efficient electron injection and transport materials.....	204
	<i>Lian Duan ^{a,b}</i>	
	^a Key Laboratory of Organic Optoelectronics and Molecular Engineering of Ministry of Education, Department of Chemistry, Tsinghua University, Beijing, 100084, China	
	^b Visionox Tech. Ltd., Beijing, 100085, China	
S8-5	Hybrid Driving Scheme of a-Si TFT pixel circuit for AMOLEDs.....	208
	<i>Xiaoming Liu¹, Congwei Liao¹, Tao Chen¹, David Dai², Smart Chung², T. S. Jen² and Shengdong Zhang^{1*}</i>	
	¹ Shenzhen Graduate School, Peking University, Shenzhen 518055, China	
	² Institute of Jiangsu (IVO) FPD Technology & Research, InfoVision Optoelectronics (Kunshan) Co., Ltd, Kunshan, China	
S8-6	Novel transparent cathode application in transparent lighting and transparent display.....	212
	<i>Yan Bo Dong, Jing Xie, Guo Hui Zhang, Xue Yan Ren Visionox Tech. Ltd. Beijing, 100085, China Lian Duan, Yong Qiu</i>	
	Key Lab of Organic Optoelectronics & Molecular Engineering of Ministry of Education	
	Department of Chemistry, Tsinghua University, Beijing, 100084, China	

Session 9 Laser Display

S9-2	PPLN chips for watt level low-cost efficient green lasers.....	215
	<i>Yang Lu¹, Qingyang Xu¹, Liang Ma², Yi Gan³, Chang-qing Xu^{1,2,3}</i>	
	¹ C2C Link Corporation ¹ ; CQ Laser Technologies Co., Ltd. ² ; McMaster University ³	
S9-3	High Power Al-free InGaAsP quantum well Laser Diodes of 808nm wavelength.....	217
	<i>Peixu Li^{1,2}, Kai Jiang^{1,2}, Xin Zhang¹, Qingmin Tang¹, Wei Xia^{1,2}, Shuqiang Li^{1,2}, Zhongxiang Ren¹, Xiangang Xu^{1,2}</i>	
	¹ Shandong Huaguang Optoelectronics Co., Ltd, Jinan, China	
	² The State Key Lab of Crystal Material, Shandong University, Jinan, China	
S9-4	Green Light Generation Based on Periodically Poled MgO:LiNbO₃ Waveguides.....	221
	<i>Jian Sun, Yi Gan, Chang-qing Xu</i>	
	Department of Engineering Physics, McMaster University 1280 Main Street West, Hamilton, ON L8S4L7, Canada	
S9-5	Development on Laser Display Technology.....	225
	<i>Y. Bi, Y. Qi, Y.W. Wang, G. Zheng, B.X. Yan, H. Cheng, M.Y. Sun, T. Fang, B. Wang</i>	
	Academy of Opto-Electronics, Chinese Academy of Science, Beijing, China	
	<i>Y. Qi, M.Y. Sun</i>	
	Graduate School of Chinese Academy of Science, Beijing, China	
	<i>Y. Zhang</i>	
	Phoebus Vision Opto-Electronics Technology Ltd, Beijing, China	
S9-6	Effort on Greeting New Era of Laser Display.....	230
	<i>Fei Xing, Beikai Zeng</i>	
	Laser Department of Siasun Robot & Automation Co.,Ltd	
S9-7	Design of Optical Engine Based on Laser Source and SELFOC Lens for Micro Projector.....	234
	<i>W.B. Chen, D.W. Rui, Z.L. Lin, and K.C. Qi</i>	
	School of Optoelectronic Information, University of Electronic Science and Technology of China, Chengdu,	

Session 10 PDP 1

- S10-1** **Developing Ca_xMg_{1-x}O(CMO) Protecting Layer for High Luminous Efficacy PDP.....239**
Qun (Frank) Yan, Zhengxian Lu, Fangli Xing, Xin Zhang, Cuizhen Tang, Liguo Chen, and Xinqun Deng
Research and Development Center Sichuan Shiji shuanghong Display Device Co. Ltd 11 Xinxi Road, Haidian District, Beijing 100085, China
Bin Li and Dequan Peng
Engineering Center Sichuan Changhong Electric Co., Ltd.35 Mian Xing East Road, Mianyak, Sichuan,62100, China
- S10-2** **Advances in Materials Research for Displays From Serendipity to Materials by Design.....242**
H. Tolner, Y. Tu, Q. Li, Q.F. Li, L. L. Yang, W. J. Kuang, P. P. Zhang, B.P.Wang
Display Center, School of Electronic Science and Engineering, Southeast University, 210096, Nanjing, China
- S10-3** **Researches on Preparation Methods for Surface-conduction Electron-emitter Display.....250**
LIU Ting, ZHOU Zi-yun, WU Sheng-li, HU Wen-bo
Key Laboratory for Electronic Physics and Devices of the Ministry of Education of China, Shaanxi, Xi'an 710049, China
- S10-4** **Realization of Ultra-High Luminous Efficacy PDP.....256**
Ki-Woong Whang, Hee-Woon Cheong, Byung-Joo Oh, Tae-Ho Lee and Ohyung Kwon
Plasma Laboratory, Department of Electrical Engineering and Computer Science,Seoul National University, 599 Gwanak-ro, Gwanak-gu, Seoul, 151-742, Korea
- S10-5** **Latest Technologies for Achieving High Luminous Efficiency in Panasonic Plasma Display Panels.....260**
K. Yoshino, R. Murai, and M. Kitagawa
Panasonic Corporation, AVC Networks Company, 1-1 Matsushita-cho, Ibaraki, Osaka 567-0026, Japan
- S10-6** **Calculation of Secondary Electron Emission Coefficient from MgO and CaO.....264**
Q.F.Li, Y.Tu , H.Tolner, L.L.Yang
Display R&D centre, School of Electronic Science and Engineering, Southeast University,Nanjing, China

Session 11 PDP 2

- S11-1** **The Bendable Super Large Area Film Display by the Plasma Tube Array Technologies: The Technologies, Application and Market.....267**
T. Shinoda, K. Awamoto M. Ishimoto, and H. Hirakawa
Shinoda Plasma Co.,Ltd., Kobe-city Hyogo-pref., Japan
- S11-2** **Performance Study of Field Emission Backlight Unit and Display.....271**
Tailiang Guo, Yun Ye, He Lin, Xiaojing Xiao, Chunyan Hong
Institute of Optoelectronic Display Technology, School of Physics and Communication Engineering, Fuzhou University, 350002, Fuzhou, Fujian, China
- S11-3** **Influence of Structural Parameters on the Working Property of Under-gate FED with Focus Electrode.....275**
Zhongmei Huang, Xuefei Zhong, Zhaowen Fan
School of Electronic Science and Engineering, Southeast University, China
- S11-4** **Field Emission of Seed Electrons from MgO nano-crystals for AC PDPs.....279**
Keun-Ho Choi, Sang-Young Kim and Yong-Seog Kim
Dept. of Materials Science and Engineering, Hongik University, Korea
- S11-5** **Fast Motion Detection Based on Intensity Difference between Image Frames.....282**
Yao-gong Wang, Zhen-Tao Tu, Yi Li, Jin-Fu Huang, Xiao-Ning Zhang
Key Laboratory of Physical Electronics and Devices of the Ministry of Education, Xi'an Jiaotong University, China
- S11-6** **Field emission display using one-dimensional nanomaterial field emitters**
Jun Chen, Shaozhi Deng, Ningsheng Xu**
State Key Laboratory of Optoelectronic Materials and Technologies, Guangdong Provincial Key Laboratory of

Session 12 Others 1

S12-1	Characterization of Electronic Displays: Current Methods to Human Centered Approaches as EEG Brainwave Monitoring.....	287
	<i>Lauren Palmateer</i>	
	646 Laguna Street San Francisco, CA, 94102	
	<i>Juan Acosta-Urquidi</i>	
	Scotts Valley, CA 95066	
	<i>Victor Pellegrini Mammana</i>	
	Director: Center for Information Technology Renato Archer (CTI) Campinas, Brazil	
	<i>Daniel den Engelsen</i>	
	Visiting Professor at Southeast University in Nanjing and University of Electronic Science and Technology of China in Chengdu; Senior Scientist at Associação Brasileira de Informática Campinas, Brazil and Centro de Tecnologia da Informação Renato Archer Campinas, Brazil	
	<i>Jeannie Williams</i>	
	Optegen Inc. Amherst Massachusetts	
S12-2	Speaking Abstract China Display / Asia Display 2011.....	293
	<i>Dr. Nesbitt Hagood, Founder and CTO</i>	
	Low Power MEMS Display for Tablets and Smartphones	
S12-3	A Cholesteric LCD Module with Front-Light Guide.....	295
	<i>C. Y. Fang, C. H. Yeh, C. F. Hsu, Y. C. Tseng, P. Y. Chang, W. C. Wang</i>	
	WINTEK Corporation, No. 10, Chien-Kuo Road, TEPZ Tantzu, Taichung, 427, Taiwan, China	
S12-4	Why watching 3D displays may result in some discomfort?.....	299
	<i>I. Heynderickx</i>	
	Philips Research Laboratories, High Tech Campus 34, 5656 AE Eindhoven, The Netherlands	
	Engineering, Mathematics and Computer Science, Mekelweg 4, 2628 CD Delft, the Netherlands	
	<i>M. Lambooij</i>	
	BG TV Innovation Site Eindhoven, High Tech Campus 37, 5656 AE Eindhoven, the Netherlands	
S12-5	Legibility comparison between reflective and illuminant displays.....	303
	<i>Sheng-Po Wang, Jia-Xing Lin, Kuo-Jui Hu, Yu-Sheng Tsai</i>	
	DTC, Industrial Technology Research Institute, Hsinchu 310, Taiwan, China	
S12-6	Advanced PVD Technology and Manufacturing Solutions for Touch Screen Panels.....	307
	<i>T.W. Zilbauer, N. Morrison, M. Bender, T. Deppisch, J. Grillmayer, A. Hellmich, H. Krauss, U. Muehlfeld, G. Orgeich, F. Schnappenberger, R. Weber</i>	
	Applied Materials GmbH & Co. KG Siemensstraße 100, 63755 Alzenau, Germany	
S12-7	Display Quality for Smart-Phone Displays.....	311
	<i>Rui Gong, Binyu Wang, Haisong Xu</i>	
	State Key Laboratory of Modern Optical Instrumentation, Zhejiang University, China	
	<i>M. Ronnier Luo</i>	
	Department of Colour Science, University of Leeds, Leeds LS2 9JT, UK	

Session 13 Others 2

S13-1	AMOLED Forecast Update OLED Forecast update Focus on Select End-Markets.....	315
	<i>Vinita Jakhanwal</i>	
	Director of Small Medium Research IHS iSuppli 2901 Tasman Drive, Suite 201, Santa Clara, Ca 95054	
S13-2	The Consideration of the Human Factors in Display Evaluation.....	317
	<i>Xiaohua Li, Yuan Cui, Xiaowei Yang</i>	
	College of Electronic Science and Engineering, Southeast University, Nanjing, Jiangsu, China	
S13-3	Characterization of Capacitive Touch Sensor Structures by Device/Circuit Mixed-mode Simulations.....	321

R. Liu, Z. Hou, X. Xu, L. Feng, and X. Guo

Department of Electronic Engineering, Shanghai Jiao Tong University, China

Y. Chen

Tianma Microelectronics, 889 Huiqing Road, Pudong New District Shanghai, China

S13-4	A Novel Display Module with Touch and Condenser Functions.....	325
	<i>C. F. Hsu, T.Y. Hsieh, C. Y. Fang, Y. C. Tseng, P. Y. Chang, W. C. Wang</i>	
	Innovative Technology Research and Development Center, WINTEK Corporation Taichung City, 42701, Taiwan, China	
S13-5	Modeling of Ambilight Using a LED Luminance Distribution Method.....	329
	<i>Zhenping Xia¹, Kees Teunissen², Xiaohua Li¹</i>	
	¹ Dong Fei R&D Centre, School of Electronic Science and Engineering, Southeast University, Nanjing, China	
	² Philips Consumer Lifestyle, BG-TV Innovation site Eindhoven, the Netherlands	
S13-6	Concept for Eliminating HOT SPOT Mura in Edge-Type LED TV BL.....	333
	<i>Che-Chang Hu; Kuang-Yao Chang; Qian Cao</i>	
	Optical Design Development Dept. of Shenzhen China Star Optoelectronics Technology CO., LTD, China	
S13-7	Interfacial Modification and Memory Effect in Pentacene-based Phototransistors.....	336
	<i>Xiaohui Liu, Yong Qiu, Guifang Dong*</i>	
	Key Lab of Organic Optoelectronics & Molecular Engineering, Department of Chemistry, Tsinghua University, China	

Poster 1

P1-1	Analysis of impacts of partitioning of scanning LED backlight on motion picture response of LCD panels.....	337
	<i>Weidong Liu, Xingseng Chen, Yu Chen, Mingsheng Qiao</i>	
	Research and Development Center of Hisense Electric, Co., Qingdao, China	
P1-2	Light Leakage Analysis of Twisted Nematic Mode Liquid Crystal Displays.....	340
	<i>Ji Ma, Xin Ye, and Rongge Sun</i>	
	Shanghai SVA-Optronics Co., Ltd, Shanghai, 200233, China	
P1-3	Fast Response TN-LCDs Using Ultra Short Pitch LC Materials.....	344
	<i>Kohki Takatoh, Aya Harima, Yuya Kaname and Mitsuhiro Akimoto</i>	
	Department of Electrical Engineering, Faculty of Engineering, Tokyo University of Science, Yamaguchi 1-1-1, Daigaku-dori, Sanyo-Onoda, Yamaguchi, 756-0884, Japan	
P1-4	Design Challenge of 1440-channel TFT Source Driver for Smart Phones, using Data Compression for Embedded Display Memory.....	348
	<i>H.M. Lam, T.K. Ng, W.H. Szeto, W.K. Cheng, X.X. Lu, J. Chen, W.C. Chan, C.F. Lee, W.C. Chan, K.K. Leung, C.Y. Ng, and W.Y. Lai</i>	
	Solomon Systech Limited Hong Kong Science Park, Shatin, Hong Kong, China	
P1-5	Predicting performance of reflective metallic wire-grid polarizer application in LCDs.....	352
	<i>H. Q. Cui, T.C. Chung, Tean-Sen Jen</i>	
	LCD R&D Center, Infovision Optoelectronics Corp., KunShan, &Jiangsu (IVO) Flat Panel Display Technology Research Institute, Jiangsu, China	
	<i>Z.C. Ye</i>	
	National Engineering Lab of TFT-LCD Material and Technologies, Shanghai Jiao Tong University, Shanghai, China	
	<i>H. Q. Cui, W. Hu, X.W. Lin, and Y.Q Lu</i>	
	Nanjing National Laboratory of Microstructures, Nanjing University, China	
P1-6	Influence of Deep States in Active Layers on the Performance of Amorphous In-Ga-Zn-O Thin Film Transistors.....	356
	<i>Junfei Shi, Chengyuan Dong and Yikai Su</i>	
	Center for Opto-electronic Materials and Devices, National Engineering Lab of TFT-LCD Materials and Technologies, Shanghai Jiao Tong University, Shanghai 200240, China	

P1-7	Solution Triple-Gate TFT LCD Product Flicker Issue after Reliability Testing.....	360
	<i>Song Fang, Hui long Zheng, Chia-Te Liao, Te-Chen Chung, and Tean-Sen Jen</i>	
	LCD Research and Development center, InfoVision Optoelectronics (Kunshan) Co., Ltd, Jiangsu, China Institute of Jiangsu (IVO) Flat-Panel-Display Technologies, Jiangsu, China	
P1-8	Effects of Electric Field Polar on the Disclination Lines of Liquid Crystal in the Fringe Field	362
	<i>Y.Q.Li, W. J. Dai, C. T. Liao, T. C. Chung, T. S. Jen</i>	
	Institute of Jiangsu (IVO) FPD Technology & Research, InfoVision Optoelectronics (Kunshan) Co., Ltd, No.1, Longteng Road, Kunshan, China	
P1-9	Interface Reaction Mechanism between ITO and SiNx in PECVD.....	366
	<i>W. J. Dai, Y.Q.Li, C. T. Liao, T. C. Chung, T. S. Jen</i>	
	Institute of Jiangsu (IVO) FPD Technology & Research, InfoVision Optoelectronics (Kunshan) Co., Ltd, No.1, Longteng Road, Kunshan, Jiangsu 215301, China	
P1-10	Fast Response Ferroelectric Liquid Crystal with low Driving Voltage for Field Sequential Color Display....	370
	<i>Qi Guo¹⁾, E. P. Pozhidaev^{1,2)}, A. K. Srivastava¹⁾, Tao Du¹⁾, Fan Fan¹⁾, V. G. Chigrinov¹⁾</i>	
	¹⁾ Center for Display Research, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China	
	²⁾ P.N. Lebedev Physical Institute of Russian Academy of Sciences, Leninsky pr. 53, Moscow, 19991, Russia	
P1-11	Effects of channel composition and gate dielectrics on the stability of a-IGZO TFTs.....	373
	<i>J.K. Yao¹, S.D. Zhang^{1,2)*}</i>	
	¹ Shenzhen Graduate School, Peking University, Shenzhen 518055, China	
	² Institute of Microelectronics, Peking University, Beijing 100871, China	
P1-12	An Improved Surround Adaptive Metric for Dynamic Range of Liquid Crystal Displays.....	377
	<i>Weige Lu, Haisong Xu</i>	
	State Key Laboratory of Modern Optical Instrumentation, Zhejiang University, China	
	<i>M. Ronnier Luo</i>	
	Department of Colour Science, University of Leeds, Leeds, LS2 9JT, UK	
P1-13	Non absorbing polarizer- converter.....	381
	<i>Tsvetkov V.A., WANG Xiaoqian*, Du Tao, and Chigrinov V.G.</i>	
	Hong Kong University of Science and Technology, CWB, Kowloon, Hong Kong, China	
P1-14	Study on LC Fresnel Phase Plate Utilized as Color Filter.....	384
	<i>Wang Xiaoqian*, Fan Fan, Tsvetkov V.A., Chigrinov V.G.</i>	
	The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China	
P1-15	Data Signal Induced Feed-through Effects in Integrated a-Si:H Gate Driver.....	389
	<i>Congwei Liao, Tao Chen, Xiaoming Liu and Shengdong Zhang</i>	
	Shenzhen Graduate School, Peking University, Shenzhen 518055, China	
	<i>David Dai, Smart Chung and T. S. Jen</i>	
	Jiangsu (IVO) FPD Technology & Research, InfoVision Optoelectronics (Kunshan) Co., Ltd, Kunshan 215301, Jiangsu, China	
P1-16	High Performance RF Sputtering Deposited ZnO Thin-Film Transistors.....	393
	<i>Shao-Juan Li¹, Dedong Han¹, Lei Sun¹, Yi Wang¹, Ru-Qi Han¹ and Shengdong Zhang^{2)*}</i>	
	¹ Institute of Microelectronics, Peking University, Beijing 100871, China	
	² Shenzhen Graduate School, Peking University, Shenzhen 518055, China	
P1-17	Low-temperature materials and thin film transistors for flexible electronics.....	397
	<i>Y.L. Li, X. He, X. Lin, B.B Jiang, S.J. Li, S.D. Zhang</i>	
	School of ShenZhen Graduate, Peking University, Shenzhen, School of Electronics Engineering and Computer Science, Peking University, Beijing, China	
P1-18	New Organosilicon Olygomer Films for NLC Alignment.....	401
	<i>Victor V. BELYAEV, and Alexey S. SOLOMATIN</i>	
	Education & Science Lab for Theoretical and Applied Nanotechnology, Moscow Region State University	
	<i>Vera G. MAZAEVA, and Sergey N. Natsyuk</i>	

State R&D Institute of Organoelement Compounds Chemistry and Technology, Moscow, Russia

Artem A. GORBUNOV

Russian People Friendship University, Moscow, Russia

Alexander A. MURAVSKII, and Anatoly A. MURAVSKII

Institute of New Materials Chemistry of National Academy of Sciences of Byelorussia, Minsk, Byelorussia

- P1-19 Diffraction on birefringent substrates with periodical micrelief.....405**
Victor V. BELYAEV, **, Alexey Y. MERKULOV*, and Andrey A. BELYAEV**
*Moscow Region State University, Moscow, Russia, ** Russian People Friendship University, Moscow, Russia
- P1-20 Measurement of Anchoring Energy of Stacked Alignment Layers.....409**
Chao Ping Chen^{1,2,3}, Xianzhu Tang^{1,2}, Te-Chen Chung^{1,2}, Tean-Sen Jen^{1,2}
¹R&D Center, Infovision Optoelectronics Co. Ltd., Kunshan, Jiangsu, China
²Jiangsu FPD Technology & Research Institute, Kunshan, Jiangsu, China
³Department of Electronic Engineering, Shanghai Jiao Tong University, Shanghai, China
- P1-21 Backlight Luminance Pre-compensation to Reduce Clipping Artifacts in LED Backlight.....411**
Zhentao Tu, Kuntao Ma, Rentao Zheng, Xiaoning Zhang
Key Laboratory of Physical Electronics and Devices of the Ministry of Education, Xi'an Jiaotong University, China
- P1-22 Effect of Chiral Dopant on Blue Phase Liquid Crystal.....415**
En-Wei Zhong, Jian-Gang Lu, Ji-Liang Zhu, Xiong-Fei Sun, Shui-Bin Ni*
National Engineering Lab of TFT-LCD Materials and Technologies, Department of Electronic Engineering, Shanghai Jiao Tong University, China
- P1-23 Glass Surface Bump Impact on Performance of Liquid Crystal Displays.....419**
John Liang, Xiangqing Zhang, Robert Schweiger, Tina Proulx*
Corning Display Technologies, Corning Incorporated, Corning, NY USA
*School of Foreign Languages, Dalian Maritime University, Dalian, Liaoning, China
- P1-24 Edge-lit LCD TV with a Novel Single Layer Brightness Enhancement and Light Diffusing Structures.....423**
Xiaoqiao Wu, Zhijian Lu, TS Jen, CT Lee, Bingyu Si, Xing Yang
R&D Center, InfoVision Optoelectronics Co., Ltd ,Jiangsu,Kunshan,China BRIVU Technology Co.,Ltd. Jiangsu,Danyang,China
- P1-25 Moisture Related Instability in p-Type Low Temperature Polycrystalline Silicon Thin Film transistors.....427**
*Meng ZHANG, Wei ZHOU, Shuyun ZHAO and *Hoi Sing KWOK*
Center for Display Research and Department of Electronic and Computer Engineering The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China
- P1-26 New Experimental Results on Electro-Optical Effects of Ionic Impurities in Twisted Nematic Liquid Crystal Displays.....431**
*Hsin-Hsu Chen and Kei-Hsiung Yang**
Institute of Lighting and Energy Photonics, *Institute of Imaging and Biomedical Photonics College of Photonics, Chiao Tung University, Taiwan, China
- P1-27 Simulation the Dynamic Property of Dielectric Oil on Thin Film Based on Dielectrophoretic Forces.....435**
*Di Qu, Jun Xia**
School of Electronic Science and Engineering, Southeast University, Nanjing, China
- P1-28 A Study of Measuring Method for Energy Consumption of Electronic Paper Displays.....439**
Shih-Fang Chen, Hsiu-Ju Tsai, and Hsin-Da Yeh*
Center for Measurement Standards (CMS), Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan , China*Corresponding author, Shih-Fang Chen
- P1-29 Roll-to-Roll e-Paper Status and Applications.....442**
Jyh-Wen Shiu, Wan-Wen Chiu, Chen-Chu Tsai, Chieh-Yi Huang and Janglin Chen
Display Technology Center, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan, 310, China
- P1-30 Flexible Electrodes using Single-Wall Carbon Nanotubes Patterned on Paper Substrate.....446**