



EuroDisplay 2013

(33rd International Display Research Conference)

Organic Electronic Workshop Programme
Imperial College London, UK

Monday 16th September 2013

8.00 Registration Opens
Workshop Session 1

Room: SAF LT G34

9.30 Welcome and Opening Remarks
Workshop Chair

9.35 **Design Concepts of Organic Semiconductors for Plastic Electronics**
Peter Skabara (University of Strathclyde)

10.10 **Solution Processable OLEDs**
Anna Hayer (Merck KGaA)

10.45 Refreshment break
SAF Foyer

Room: SAF LT G34

11.15 **Putting the Active Matrix in AMOLED**
Ian Underwood (University of Edinburgh)

11.50 **From Lab to Fab - how to make polymer OLED micro-displays**
Alastair Buckley (University of Sheffield)

12.25 **Organic Semiconductor Lasers**
Ifor Samuel (University of St Andrews)

13.00 Lunch break
SAF Foyer

Room: SAF LT G34

14.00 **Organic Field-Effect Transistors**
Gilles Horowitz (École Polytechnique Paris)

14.35 **Thin Film Circuits on Foil**
Soeren Steudel (IMEC)



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- 15.10 **Towards Roll-to-Roll Fabrication of Electronic Functions on Plastic Films**
Gerhard Klink (Fraunhofer EMFT)
- 15.45 Refreshment break
SAF Foyer

Room: SAF LT G34

- 16.15 **Optimising OPV for Energy Harvesting Applications**
Jonathan Halls (Solar Press Ltd)
- 16.50 **PrintoCent – enabling commercialization of OLAE in Roll-to-Roll manufacturing**
Ilkka Kaisto (VTT)
- 17.25 **Thanks and Closing Remarks**
Workshop Chair



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Imperial College London, UK
Conference Programme

Tuesday 17 September 2013

| | | |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:00 | Registration SAF Building Foyer | |
| 09:00 | Session 1: Welcome and opening , Room: SAF LT G16 | |
| | G Weaver, SID Chair: I Sage | |
| 09:15 | (plenary) Plastic electronics materials development: challenges and solutions J Burroughes, Cambridge Display Technology, UK | |
| 10:00 | (plenary) Current trends in liquid crystal for display applications and beyond M Heckmeier, Merck KGaA Darmstadt, Germany | |
| 10:45 | Refreshment break | |
| | Session 2 , Room: SAF LT G16 OLED & LED 1 Chair: J Li | Session 3, Room: SAF LT G34 DISPLAYS 1 Chair: M Harding |
| 11:15 | (invited) Corrugated structures for OLED light extraction F So, University of Florida, USA | (invited) A contact lens with built-in display: science fiction or not? H De Smet, Ghent University, Belgium |
| 11:40 | (invited) Circularly polarised organic light emitting diodes using conventional light emitting polymers and a chiral small molecule dopant M Fuchter, Imperial College London, UK | (invited) High brightness reflective display for light and radiation control of green buildings D Chu, Centre for Advanced Photonics and Electronics, UK |
| 12:05 | (invited) Probing exciton recombination in efficient, single-layer organic light-emitting devices R Holmes, University of Minnesota, USA | (invited) Reflective colour displays A Geisow, HP Laboratories, USA |
| 12:30 | Lunch break | |
| 14:00 | Session 4 - Poster session: Demonstrators | |
| | P.1 3D Picture quality improvement by compensating luminance uniformity degradation in multi-view autostereoscopic 3D display Y Lee, LG Electronics, South Korea | |
| | P.2 (Withdrawn) 360 Degree Integral-Floating Display using Hexagonal Lens Array and Hidden Point Removal Operator M-U Erdenebat, Chungbuk National University, South Korea | |



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P.3 Floating display with interactive virtual touch module

J-C Liou, Industrial Technology Research Institute, Taiwan

P.4 The development of the integrated holographic recording head for synthesized 3D hologram recording

A Morozov, Samsung R&D Institute, Russia

P.5 (*Withdrawn*) A novel measurement method of multi-view 3D display for determining optimum viewing distance (OVD)

K-H Yoon, Korea Institute of Science and Technology, Korea

P.6 Feasibility study of digital driving for AMOLED displays

P Volkert, Saarland University, Germany

P.7 A LTPS TFT compensation pixel circuit for simultaneous emission driving high definition AMOLED display

M-K Han, Seoul National University, Korea

P.8 A novel AMOLED pixel circuit for compensating of deviation of threshold voltage of p-channel Poly-Si TFTs

H-J Chung

Kumoh National Institute of Technology, Korea

P.9 Diffraction on anisotropic substrates with sinusoidal surface microrelief

A Belyaev, Moscow Region State University, Russia

P.10 Design of freeform lenses for illumination

N Petrov, Russia

P.11 BLU inspection machine

T Nam, LG Display, South Korea

P.12 Wide gamut LED lamps for high brightness AMLCD backlighting

N Soschin, Corporation Eltan LTD, Russia

P.13 Patterning of OSC materials for minimizing of parasitic currents

B Coombs, The Centre for Process Innovation, UK

P.14 Flaw detection for small-pixel IGZO-based TFT array medical display panel

Y C Wang, National Chiao Tung University, Taiwan

P.15 A 3D Moiré display

V Saveljev, Korea Institute of Science and Technology (KIST), Korea

P.16 Consideration of multi-lines simultaneous scanning method using optical wavelength multiplexing for display device with huge number of pixels

T Muroi, Japan Broadcasting Corporation, Japan

P.17 A spherically shaped display for use as an artificial iris

J De Smet, Centre for Microsystems Technology (CMST), Belgium

P.18 A novel method of decision on the optimal display gamma curve through the characteristics of display and image

M W Lee, Samsung Electronics Co. LTD, Korea

P.19 AI nanostructured coatings as alternatives to metal oxide and transparent semiconductors

A Stsiapanau, Belarusian State University of Informatics and Radioelectronics, Belarus



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P.20 Surface modification of ITO coated PET foil for material printing

J Maslik, Bata University in Zlín, Czech Republic

P.21 Normal and reverse mode light scattering properties in polymer stabilized nematic liquid crystals

R Yamaguchi, Akita University, Japan

P.22 Fast ferroelectric liquid crystal display with novel photo-aligned layer

Q Guo, Hong Kong University of Science and Technology, Hong Kong

P.23 Distribution of dye molecules orientation in photoaligning layer vs. incidence angle of polarized light beam

V Belyaev, Moscow Region State University, Russia

P.24 New concept for the design, synthesis and application of nanostructured anisotropic materials and conductive and alignment coatings for high efficient displays and photonic devices

V Bezborodov, Belarusian State Technological University, Belarus

P.25 Viewing-angle analysis of novel 4-domain advanced super dimensional switching (ADSDS) mode LCD

J Yao, BOE Technology Group Co., China

P.26 Optically and thermally controllable light scattering based on double-side poly(N-vinylcarbazole) films-coated dye-doped liquid crystal cell

K-T Cheng, National Central University, Taiwan

P.27 Features of polarization diffraction gratings switching under the influence of bipolar electric pulses

H Margaryan, Yerevan State University, Armenia

P.28 The enhancement of outdoor contrast for industrial AM LCDs

A Stsiapanau, Belarusian State University of Informatics and Radioelectronics, Belarus

P.29 Improvement of LED luminous efficacy in driving by pulse current utilizing optical electric generation of the LED

Y Sano, Toyo University, Japan

P.30 Heterogeneous plated metals for display elements and technologies of high reliability

V Kurmashev, Minsk Institute of Management, Belarus

P.31 Optoelectronic properties of MEH-PPV thin films influenced by their thickness

P Urbanek, Tomas Bata University in Zlín, Czech Republic

P.32 Synthesis and characterization of a solution processable hybrid organic-inorganic high-K dielectric for low-voltage OFET applications

E Verrelli, University of Hull, UK

P.33 Large-area printed transparent electrodes for flexible organic light emitting diodes

X Wang, Imperial College London, London

P.34 Optical properties and structure of HDPCVD silicon dioxide

A Yasunas, Belarusian State University of Informatics and Radioelectronics, Belarus

P.35 Improved stability of solution-processed ZnO thin film transistor post-treated by ultra violet annealing step

T Kang, Hanyang University, Korea

P.36 Optimization of H₂O annealing for high performance low temperature solution-processed oxide thin film transistors

J-S Lee, Seoul National University, Korea



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P.37 The effect of bias-temperature stress on threshold voltage instabilities in a-IGZO under light illumination and their modeling equation

S Seok, POSTECH, Korea

P.38 Electrical and optical stabilities of amorphous InGaZnO thin films for flexible sensing transistors

Y Li, Xi'an Jiaotong University, China

P.39 Optimizing the deposition rate of vacuum-grown n-octylphosphonic acid monolayer for low-voltage thin-film transistors

S Gupta, University of Strathclyde, UK

P.40 A reconfigurable switched-capacitor resistor for proximity touch sensor readout circuits

Y-M Lee, Sun Moon University, South Korea

P.41 Predicting change in cell gap in LCD panels subjected to touch force

K H Vepakomma, Corning Incorporated, USA

P.42 Increasing rewriting speed of optical rewritable e-paper by process optimization

J Sun, Hong Kong University of Science and Technology, Hong Kong

15:30 Refreshment break

Session 5, Room: SAF LT G16
OLED & LED 2
Chair: F So

Session 6, Room: SAF LT G34
LCD
Chair: H de Smet

16:00 **(invited) Highly efficient blue organic light emitting diodes from a halogen free phosphorescent platinum complex**

J Li, Arizona State University, USA

(invited) What expected for UHDTV display
 Y Kusakabe, NHK Science & Technology Research Laboratories, Japan

16:25 **(invited) Molecular states in amorphous organic semiconductor films used in OLEDs**

D Yokoyama, Yamagata University, Japan

(invited) A review of liquid crystal displays on plastic

J Harding, Plastic Logic, UK

16:50 **Simulation of visual quality for transparent OLED displays**

Y Park, LG Display, South Korea

Florescent cholesteric liquid crystal display with self-compensation function

J Kim, Samsung Display Co. Ltd., South Korea

17:10 **Highly color-saturated quantum dot light emitting devices using cadmium-free quantum dots**

C Ippen, Fraunhofer IAP, Germany

Full color field-sequential color display based on electrically suppressed helix FLC

M Ying, Hong Kong University of Science and Technology, Hong Kong

17:30 Reception and poster session



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Wednesday 18 September 2013

| | | |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 08:30 | Registration | |
| | Session 7 – Flexible Circuitry 1 - Room: SAF LT G16 | |
| | Chair: T Jackson | |
| 09:00 | (plenary) Low-temperature, solution-processible organic and oxide semiconductors for flexible electronics | |
| | H Sirringhaus, University of Cambridge, UK | |
| 09:45 | (invited) Solution-processed transparent semiconductors for plastic optoelectronics | |
| | T Anthopoulos, Imperial College London, UK | |
| 10:10 | (invited) Solution processed oxide semiconductors for high mobility thin-film-transistors | |
| | J Jang, Kyung Hee University, South Korea | |
| 10:35 | Refreshment break <i>and announcement of Best Poster Award and Ben Sturgeon Award.</i> | |
| | Session 8, Room: SAF LT G16 | Session 9, Room: SAF LT G34 |
| | TRANSISTORS | LIQUID CRYSTALS |
| | Chair: T Anthopoulos | Chair: D Chu |
| 11:05 | (invited) PEALD ZnO TFTs for Flexible Displays | (invited) Unique parameters of display cells based on new FLC, and prospects of their applications |
| | T Jackson, Pennsylvania State University, USA | I Kompanets, Lebedev Physical Institute, Russia |
| 11:30 | (invited) Managing and understanding transistors variations on flexible foil: The key for designing organic flexible microprocessors, RF-ID tags on foil and rollable display backplanes | (invited) Experimental and theoretical modeling of liquid crystal orientation on aligning film surfaces |
| | J Genoe, IMEC, Belgium | V Belyaev, Moscow Region State University, Russia |
| 11:55 | Nanoimprinted organic electrochemical transistors and inverters | Liquid crystal gratings technologies and ferroelectric liquid crystal based gratings |
| | T Rothländer, Joanneum Research Forschungsgesellschaft mbH, Austria | Y Ma, Hong Kong University of Science and Technology, Hong Kong |
| 12:15 | Self-aligned oxide thin-film transistors fabricated utilizing an excimer laser and the dependence of their characteristics on irradiation conditions | Heat dissipation performance of laser backlight for liquid crystal television displays |
| | M Nakata, Japan Broadcasting Corporation (NHK), Japan | A Nagase, Mitsubishi Electric Corporation, Japan |
| 12:35 | Lunch | |



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Session 10, Room: SAF LT G16
 AMOLED & OLED
 Chair: R Holmes

Session 11, Room: SAF LT G34
 DISPLAYS 2
 Chair: I Kompanets

- 14:05 **(invited) Recent progress in OLED and OLED driving Organic Devices**
 K Leo, TU Dresden, Germany
- 14:30 **(invited) Trends in high resolution OLED microdisplays**
 G Haas, MicroOLED, France
- 14:55 **(invited) Bridged-grain thin film transistors for AMOLED**
 H S Kwok, Hong Kong University of Science and Technology, Hong Kong
- 15:20 **Oxide-TFT driven flexible display using highly efficient phosphorescent OLED**
 G Motomura, Japan Broadcasting Corporation (NHK), Japan
- 15:40 Refreshment break

- (invited) Enhanced pixel technology for holographic projection displays**
 T Wilkinson, University of Cambridge, UK
- (invited, Ben Sturgeon Award winner) Phase only holographic head up displays**
 J Christmas, Two Trees Photonics Ltd, UK
- (invited) Hybrid GaN/organic microdisplays and their use in spatially multiplexed optical communications**
 M Dawson, University of Strathclyde, UK
- High performance large area projected capacitive touch screen using double layered metal mesh electrodes**
 T Ono, Mitsubishi Electric Corporation, Japan

Session 12, Room: SAF LT G16
 FLEXIBLE CIRCUITRY 2
 Chair: J Jang

Session 13, Room: SAF LT G34
 BACKLIGHTS
 Chair: T Wilkinson

- 16:10 **(invited) Organic and oxide transistors on thin plastic foils – for displays and beyond**
 G Gelinck, Holst Centre, The Netherlands
- 16:35 **(invited) Towards roll-to-roll fabrication of short-channel organic thin film transistors**
 K Solehmainen, VTT, Finland
- 17.10 **Close**
- 18:15 Special Event – Thames Dinner River Cruise
(Departing from Westminster Pier)

- (invited) Energy efficient LED backlight technology**
 J Gourlay, Design LED Products, UK
- (invited) Experimenting with backlights**
 A Travis, Microsoft, USA
- Close**

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Thursday 19 September 2013

Session 14, Room: A Lowe
MEASUREMENT AND SENSORS
Chair: A Lowe

Session 15, Room: SAF LT G34
3D 1
Chair: S Day

- 09:00 **(invited) Imaging colorimeter for color calibration of phone & tablet displays**
P Boher, ELDIM, France
- 09:25 **Image quality enhancement for mobile display under outdoor environment**
J Jang, LG Display, South Korea
- 09:45 **Ultra large field of view and high magnification imaging video colorimeter**
TBA, ELDIM, France
- 10:05 **Modeling and characterization of a-Si:H-based hybrid sensor and display pixel array circuits**
N Papadopoulos, University of Waterloo, Canada

- (invited) Augmented reality and 3D displays using pico-projectors**
H Urey, Koc University, Turkey
- Head tracked retroreflecting 3D display**
P Surman, De Montfort University, UK
- Large high-definition multi-view display with wide observation area**
T Ishinabe, Tohoku University, Japan

10:25 Refreshment break

Session 16, Room: SAF LT G16
MATERIALS
Chair: R Pretot

Session 17, Room: SAF LT G34
3D 2
Chair: H Urey

- 10:55 **(invited) Readily processable high mobility polymer semiconductors**
S Tierney, Merck, UK
- 11:20 **New process for patterned retarder fabrication**
A Trofimova, Belarusian State University, Belarus
- 11:40 **Low operation voltage, high aspect ratio, position controlled Transfer Mold carbon nanotube field emitter arrays**
M Nakamoto, Shizuoka University, Japan
- 12:00 **A method for passivating low-cost reactive copper grid in high efficiency OLED lighting tiles**
A Doust, Cambridge Display Technology, UK
- 12:20 Lunch

- (invited) Ultrathin solution-processed charge injection layer for efficient polymer LEDs**
J S Kim, Imperial College London, UK
- Head tracked dynamic exit pupil multi-user autostereoscopic display**
P Surman, De Montfort University, UK
- Disparity selection in stereoscopic image**
J Kim, LG Display, South Korea
- 3D Auto-stereoscopic display using pico-projectors and rotating screen**
O Eldes, Koc University, Turkey



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Session 18, Room: SAF LT G16
NANOTECHNOLOGY
Chair: S Tierney

Session 19, Room: SAF LT G34
OFET & OLED
Chair: J-S Kim

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|-------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 | (invited) Transparent and semiconducting monolayered films for display applications C Mattevi, Imperial College London, UK | (invited) Industrial Aspects of Material Development for Organic Field Effect Transistors: High mobility organic R Pretot, BASF, Switzerland |
| 14:25 | (late news) Waveguide based display technology at BAE Systems I Wilmington, BAE Systems, UK | (late news) Large-area printed transparent electrodes for flexible organic light emitting diodes X Wang, Imperial College London, UK |
| 14:45 | (invited) Graphene Future Emerging Technology T Hasan, University of Cambridge, UK | (late news) Back-channel-etch process flow for a-IGZO TFTs M Nag, IMEC, Belgium |
| 15:10 | Refreshment break | |
| 15:40 | Close of Meeting | |