

BEN STURGEON AWARDS 2008 and 2009

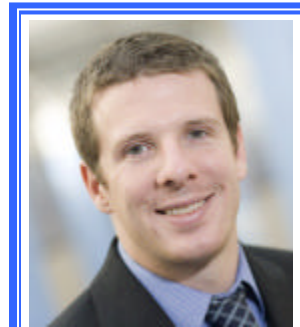
The Ben Sturgeon Award is made annually by the Society for Information Display, to individuals or groups who have made a significant contribution to the development of displays.

The Ben Sturgeon Award 2008 was won by Professor Ifor Samuel of the University of St Andrews. As reported on Page 3 of this newsletter, the award was presented to Professor Samuel by the chapter chairman, Dr Richard Harding, Merck Chemicals Ltd at the organic electronics meeting at Imperial College in September 2008. During the meeting, Ifor presented a paper on his work entitled, 'Using photophysical measurements to improve organic light-emitting materials and devices'.

Ifor read physics at Cambridge University where he was awarded his MA and PhD in Physics at Cambridge. After finishing his PhD, he worked for France Telecom in Paris for two years, investigating the non linear optical properties of organic materials. He then returned to Cambridge for a year, where he received a Royal Society University Research Fellowship and took up a position at the University of Durham until August 2000 when he moved to the University of St Andrews. In 2001 he started the Organic Semiconductor Centre to encourage collaboration between physicists and chemists in developing the next generation of organic semiconductors and the wider field of organic electronics.

The Ben Sturgeon Award for 2009 has been awarded to Dr Edward Buckley. He is Vice President of Business Development at Light Blue Optics, a privately-owned company developing miniature projection systems for consumer electronics and automotive applications.

Edward graduated with a first class Masters degree in Electrical and Electronic Engineering from University College London. Following that, he began his Ph.D. research into real-time holographic projection systems at Cambridge University in 2003. While at Cambridge, he



Dr Edward Buckley

jointly invented a method for real-time holographic laser projection on which the company Light Blue Optics was founded in 2004.

Now based in Light Blue Optics' development facility in Colorado Springs, Edward is responsible for US and Far East business development activities, working with global OEM customers and strategic

development partners.

Prior to Light Blue Optics, he worked with a variety of organisations, including a telecommunications consultancy and a multinational aerospace and defence company.

Nominations now called for:

BEN STURGEON AWARD 2010

http://www.sid.org/chapters/uki/ben_sturgeon.html

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SOCIETY FOR INFORMATION DISPLAY

UK & IRELAND CHAPTER

NEWSLETTER

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Chairman's Report

Sally Day

As the new incoming chairman the first thing to say is many thanks to Richard Harding who has had to step down from the chairmanship of the SID/UK because he has transferred to Korea with Merck. I would like to wish him well with this change of scene. I hope that I will be able to continue with as much success as he and other chairmen before have done, which of course is only possible with the wonderful, and entirely voluntary, support of the rest of the committee.

A prime example of this was the very successful meeting held in Cambridge on 30th April. This was an inspiring meeting on future technologies and gave a real sense of the developments that are going on and that are wished for in displays. There is no doubt that the way in which electronic displays are used and the numbers of displays is changing dramatically and quickly.

In spite of the recession, many new displays are being installed. In particular, 3D is now in many local cinemas, with the decision by Disney to release all their animated films in 3D. Many new electronic displays are being used in advertising and information with, for example, many of the newly refurbished escalators in the underground in London being furnished with tens of displays to be seen as you travel up the escalator. With both 3D and the moving advertising boards it is interesting to see the way in which the challenge to generate new content for these is being met and I think there is still much to be learnt to find effective ways to use these new media. It is certainly an exciting area to be working in and there is still much to do to improve and develop displays. I hope that we will see many of you at our UK meetings as well as at other SID events to talk about these developments.



Dr Sally Day

SID Organic Electronics UK 2009

28 – 29 September 2009, Imperial College

This is the third annual meeting on this topic to be held at Imperial College, London and it will include oral and poster presentations from both Industry and Academia. All aspects of organic semiconductors and their use in displays and other technologies will be covered.

Power-Saving in Displays

5 January 2010, Sharp Laboratories of Europe

Reducing unnecessary power-consumption in displays is becoming increasingly important both as we become more environmentally aware and demand longer battery lives from our ever-slimmer portable devices. This meeting aims to cover many aspects of reducing power consumption in displays from bistable, reflective and projection displays, to high-efficiency backlights and harnessing ambient solar power

Touch-Panels in Displays

6 January 2010, Sharp Laboratories of Europe

Touch panels enable direct interaction between the user and the display and are becoming commonplace in many consumer and industrial applications. A wide range of touch technologies exists, including resistive, capacitive and optical, with options for single or multi-touch and for finger or stylus input. This meeting aims to explain the benefits and limitations of the various touch-panel technologies, so that the attendee can judge which technology might be most appropriate for their application.

CONTENTS

Chairman's Report	1
Forthcoming meetings.....	1
Review of organic electronics for displays 2009...2	
Ben Sturgeon Awards 2008 and 2009	4
Contact Information.....	4

SID ORGANIC ELECTRONICS UK 2008

Report on the two-day meeting at Imperial College, London on 16-17 September 2008 by Alasdair Campbell

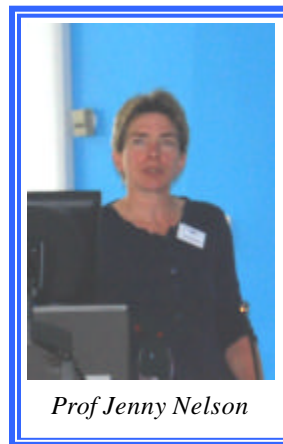
SID ORGANIC ELECTRONICS FOR DISPLAYS 2009

Imperial College, 28-29 September 2009

SID Organic Electronics UK 2008, organised by the UK & Ireland Chapter of the SID, was held at Imperial College London on 16th and 17th of September, 2008. It was the second Organic Electronics meeting, the first being held in 2007 in Imperial's Centenary Year. This annual meeting covers all aspects of the area including OLEDs, OTFTs, polymers and small molecules, display electronics, oxides for electrodes and TFTs, OPVs for power generation, device modelling, printing and fabrication methods.

The meeting opened with a Plenary address by Professor Dago de Leeuw from Philips, Eindhoven. Dago headed Philip's OTFT research and development programme from the early 1990's. His talk was on **Organic non-volatile memories**, where he discussed Philip's breakthrough in the area of non-transistor/non-MIS capacitor based memory. These simple bistable devices consist of a metal contact, an oxide layer (e.g. aluminium oxide), an organic semiconductor layer (e.g. a standard light-emitting polymer) and a top metal contact. They work by resistive switching, the application of high and low voltage pulses turning the device between high and low conducting states. The organic layer acts as a series resistance allowing soft breakdown of the oxide layer. These resistive-switching organic memory devices can store data for many months and open up a whole new area of organic semiconductor technology.

This was followed by invited talks by Professor Jenny



Prof Jenny Nelson

Nelson, Imperial and Professor Franky So, University of Florida. Jenny's talk was on **Multi-scale modelling of charge transport in disordered organic semiconductors**. By considering the detailed physics of charge transport (e.g. transfer integrals, renormalisation energies), chemical structure and physical morphology (e.g. amorphous, polycrystalline) she could understand and model the mobility of important organic

semiconductors such as Alq₃ and P3HT. Franky So, who headed Osrams OLED research programme at Palo Alto before moving to Florida, talked on **Charge balance in organic light emitting device**. Franky showed that the efficiency of multilayer small-molecule blue phosphorescent OLEDs is very sensitive to the triplet energy of the hole transport layer material but not that in the electron transport layer.

After lunch, the afternoon session opened with an invited presentation by Professor Donal Bradley, FRS, Head of the Department of Physics, Imperial. Donal was co-discoverer of the first polymer LED, co-founder of CDT and won the SID Jan Rajchman Prize in 2005. His talk titled **Molecular Electronic Materials and Devices** was on new electrodes

for polymer OLEDs, which included air-stable metal oxides for both anode (eg. MoO₃) and cathode (eg. ZrO₂) as well as a new vapour-phase deposited, high-conductivity PEDOT allowing the fabrication of ITO free, flexible polymer OLEDs. This was followed by contributed presentations from Dr Marie-Beatrice Madec, University of Manchester on **Thin Film Morphology Study with a View toward Ink Jet Printable Organic TFT** and by Helder Barbosa, University of Minho on **Quantum Molecular and Mesoscopic Modelling of Organic Devices**.

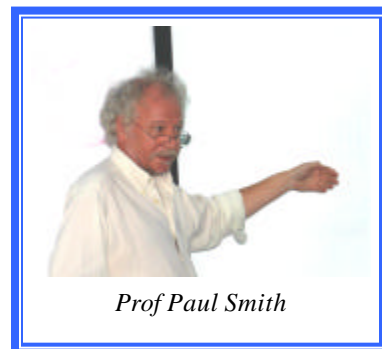
Following coffee and tea, the second afternoon session continued with an invited presentation by Professor Paul Smith, ETH Zurich. Paul, co-founder of UNIAX in Santa Barbara, talked on **Bringing (Semiconducting) Polymers to Order**. He discussed in detail the interrelationship

between the chain entanglement distance and molecular length and the mobility in P3HT, and how by using traditional methods such as high pressure or melt-polymerization, we could dramatically increase crystallinity and thus mobility in semiconducting polymers. This was followed by a contributed presentation from Dr Natalie Stingelin-Stutzmann, QMUL / ETH Zurich on **Binary Organic Photovoltaic Blends: A Simple Rationale for Optimum Compositions**. The first day's presentations then ended with an invited talk from Professor Iain Underwood, MicroEmissive Displays Ltd on **P-OLED / CMOS Microdisplays: from technology to product**. He described in detail, his experience of setting up a display company, from developing the technology through to producing the product and taking it to the market place, before ending with an inspired appeal to the young researchers in the audience to do it themselves.

The first day closed with the poster session and drinks reception. Over 20 posters were presented from different Universities such as St Andrews, Hull, Surrey, QMUL, Imperial, ETH Zurich and Kyung Hee, Korea. Topics covered all aspects of organic electronics.

Merck offered a £500 prize for the Best Student Poster presented at the meeting. The posters were of a very high quality and the judges found this a very difficult decision to make. It was finally decided to split the prize. The two people awarded were Ms Rupa Das for **A plastic substrate based, ITO-free, multilayer polymer photodiode fabricated using stamp transfer printing** and Mr Paul Wöbkenberg for **High mobility, low-voltage oxide semiconductor transistors and circuits**.

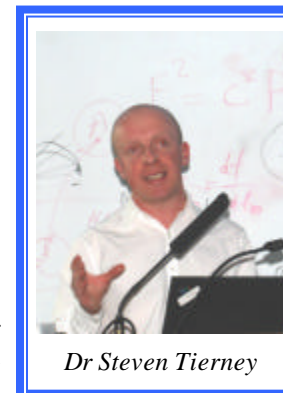
The second day opened with invited presentations from Professor Poopathy Kathirgamanathan, OLED-T and



Prof Paul Smith

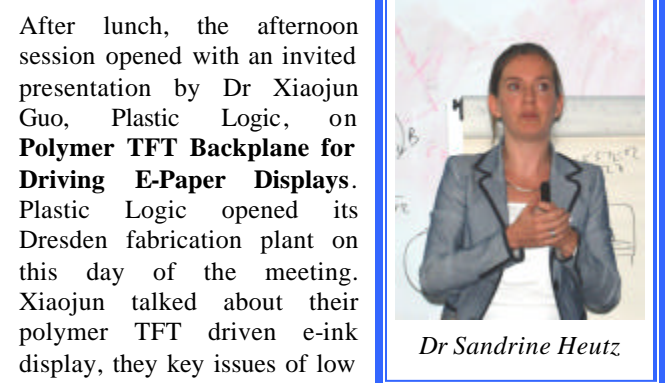
Professor Mike Turner, University of Manchester. Poopathy's talk was on **Charge Transporters for AM-OLED's: Strategies and Performance** where he described the development of small-molecule electron-injection and transport-layer materials for multilayer OLEDs. Mike talked about **Higher throughput methods for making, purifying and testing soluble organic semiconductors**, where he discussed the rapid development of polymers for OTFTs such as poly(triarylamines) for gas sensors. This session was ended by a contributed presentation from Dr Harry Zervos, IDTech Ex, on **Organic Electronics Forecasts for the Display Industry** pointing to the developing multibillion dollar market for organic electronic products.

After coffee and tea the second morning session continued with an invited presentation by Dr Steven Tierney, Merck on **Organic semiconductor development for TFT and PV applications**. Steve discussed the key issues of performance, stability and processability, discussed Merck's target products of formulations developed for different printing techniques, as well as their new generation three solution-processable materials with a mobility >2 cm²/Vs. This was followed by contributed presentations from Dr Salvatore Gambino, University of St Andrews, on **Charge transporting properties of a family of highly phosphorescent iridium(III) cored dendrimers with carbazole dendrons** and Dr Sandrine Heutz, Imperial, on **Spin Coupling in Flexible Molecular Films**.



Dr Steven Tierney

After lunch, the afternoon session opened with an invited presentation by Dr Xiaojun Guo, Plastic Logic, on **Polymer TFT Backplane for Driving E-Paper Displays**. Plastic Logic opened its Dresden fabrication plant on this day of the meeting. Xiaojun talked about their polymer TFT driven e-ink display, they key issues of low weight, flexibility and robustness, the operation of their OTFTs and the launch of their product in 2009. This was followed by contributed presentations from James Ball, Imperial, on **Low-voltage, low-power organic transistors and complementary circuits based on solution processable semiconductors and self-assembled nano-dielectrics** and Dr Dolores Caras-Quintero, University of Manchester on **Self-Assembled monolayers for molecular transistors**.



Dr Sandrine Heutz

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The second afternoon session started with an invited

presentation by Dr Kazuhito Tsukagoshim, AIST on **Selective organization of solution-processed OTFTs**. Using UV patterning of self-assembled monolayers, he showed how it was possible to pattern high performance OTFTs on flexible substrates by simple spin-coating.

The Merck Best Student Poster prize was then awarded to Paul Wöbkenberg, Imperial by the chapter Chair, Dr Richard Harding, who is also from Merck. The other winner Ms Rupa Das, Imperial was unable to be present.



Joint winner, Paul Wöbkenberg receiving the Merck Best Student Poster from Dr Richard Harding, Chapter Chair

The final presentation of the meeting was the Ben Sturgeon Award Lecture 2008. This award is made annually by the UK & Ireland Chapter to an individual (or group) who have made a significant contribution to the development of displays. For his work on polymer and dendrimer OLEDs over a number of years, Professor Ifor Samuel from the University of St Andrews received the award for 2008. The award was presented by the Chair of the UK & Ireland Chapter, Dr Richard Harding. Ifor's lecture was entitled **Using photophysical measurements to improve organic light-emitting materials and devices**.



Prof Ifor Samuel receiving the Ben Sturgeon Award from Dr Richard Harding, Chapter Chair

The meeting organiser, Mrs Bhavna Patel was then thanked for her very hard work in organising the event. Finally, the meeting was closed with a short address and thanks to the speakers and attendees by the meeting Chair, Dr Alasdair Campbell.