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SOCIETY FOR INFORMATION DISPLAY

SID-ME Chapter and Le Club Visu Joint Spring 2005 meeting and SID-MEC General Meeting "Micro-displays, Projection and Large Area Displays" Ghent University, March 10-11, 2005

The SID-ME Chapter and Le Club Visu joint Spring 2005 meeting on "Micro-displays, projection and large area displays" took place at Ghent University in Belgium. Ghent is a beautiful town where many historic buildings and medieval churches in excellent condition give the center its special atmosphere. It hosts a large university with more than 27 thousand students, with growing numbers in the beta-faculties over the last years. Professor Herbert De Smet of the Microsystems group in the ELIS department, the meeting chair, together with Alain Dore, vice-chair from Le Club Visu and meeting co-chair, organized the meeting. Herbert De Smet opened the meeting and welcomed the participants on behalf of the organizing chapters. The conference comprised 15 oral presentations, the SID-MEC general meeting, a tour of the new clean room facilities of the micro-systems group, a visit to BARCO Company and the conference dinner event at the "Pakhuis". About 60 people attended the meeting. J. Kimmel, the regional vice-president, noted that joint chap-

ter meetings are really a good idea and strengthen the European display community.

Session 1, March 10, afternoon

D. Kreye. (Fraunhofer Institute for Photonic Microsystems, Dresden, Germany) evaluated different OLED stacks for an active matrix OLED micro-display on CMOS substrate. The influence of stack design on electrical and optical cross talk was established. A nip type OLED stack and cathode materials that have no native oxide are favored for integration of OLED technology on CMOS substrates.

H. Murat (TFCG Microsystems group, Ghent University, Belgium) discussed a LED based projector where time sharing of pulsed LEDs increases lumen output within the same etendue. Several configurations were presented. Although a 36% gain is achieved in a two LED system, the luminance is rather low in

comparison with a UHP lamp. However, the method can be extended to 4,8,16 or more LEDs at the price of a larger and more complicated optical architecture.

S. Hergert (Chair of Display Technology, University of Stuttgart, Germany) talked about inorganic alignment layers based on oblique sputtered SiO₂. Using a sputtering tool with a tilted target and an aperture for beam formation the technique can be applied on large substrates. The pretilt can be adjusted by modifying the angle of deposition and domain free orientation was achieved.

V.G. Chigrinov (Hong Kong University of Science and Technology, Hong Kong, China) presented new developments in photo-aligning with azo-dye layers. Photo-alignment allows fine patterning and the azo-dye materials are promising candidates for a new generation of high resolution LCDs. Uniform alignment and voltage holding ratio and anchoring energy similar to poly-imide are achieved.

Session 2 March 10, afternoon SID-ME Chapter Student Award

At this SID-MEC Spring Meeting the second edition of the SID-ME Chapter Student Award was given. The first edition was given at last years Fall meeting, but from now on this award will be given yearly in the Spring Meeting of the SID-ME Chapter (see also announcement below). This year's award is given to N. Benson (Chair of Display Technology, University of Stuttgart, Germany) for his contribution on design and realization of an LTPS active matrix liquid crystal display that was presented in this session. The clear and highly informative talk explained the route towards display realization via innovative active matrix layout, active matrix simulation, a novel transistor process using deposited source/drain contacts, and several process issues that needed to be addressed in this project.



The 2005 SID-ME Chapter Student Award winner N. Benson (left) and Prof. K. Skarp (right) from the award committee.

Session 3, March 10, afternoon

H. De Smet (TFCG Microsystems group, Ghent University, Belgium) gave a talk on liquid crystal on silicon for low cost optical system: LCOS4LCOS in short writing. The concept of the optical engine with color sequential operation of a single LCOS with mixed mode TN, a fast response time, HDTV resolution and integrated driving function involves balancing of many cost/performance trade offs. A high brightness of 600 cd/m² and good contrast of 500:1 has been realized, and improvements are ongoing.

J. Meyer (JENOPTIK LDT GmbH, Jena, Germany) discussed the components and performance of laser display systems for large area projection. An RGB laser system with R=628 nm, G=532 nm and B= 446 nm allows representation of a color gamut that goes beyond the possibilities of LCD, DLP and CRT projectors. Also laser projection is particularly suited for projection on curved surfaces. These unique features warrant a market position in domes and flight simulators.

J. Vanfleteren (TFCG Microsystems group/ IMEC, Ghent University, Belgium) gave an overview of the status and roadmap of the European FP6 Flexidis project. A large number (20) of companies/institutions contributes in the 2004-2008 timeframe. Towards the end a rollable electrophoretic display demonstrator and a flexible video OLED demonstrator are envisaged.

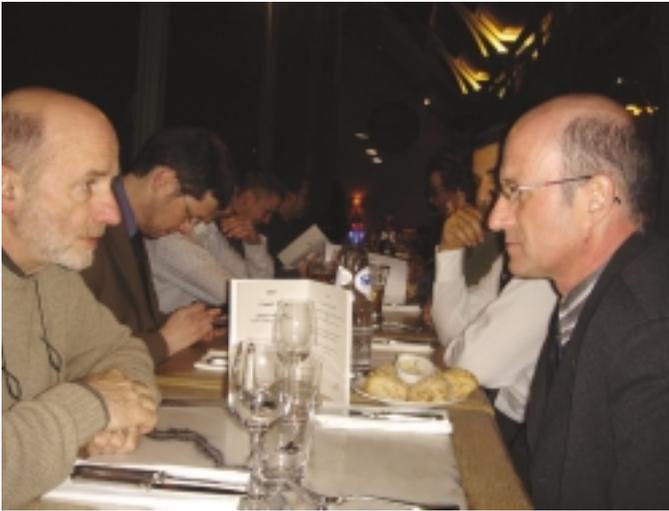
T. Bert (TFCG Microsystems group, Ghent University, Belgium) talked about hexagonal patterns in electrophoretic displays for electronic paper. For high enough values of the applied voltage (> 10 V) the hectic movement of the particles during switching stabilizes in a few seconds into a hexagonal pattern, where the pigments do not completely cover the electrode surface. Electro-hydrdynamic theory can explain the pattern formation mechanism and indicates the parameter control required to avoid the occurrence of the phenomenon.

Lab Tour Chair of Display Technology

In conjunction with this SID-MEC meeting a lab tour around the new clean room, officially opened 16 February 2005, was organized. The TFCG Microsystems group and the Photonics Research group at Ghent University share this clean room. The fully furnished room measures 590 m², class 100-100.000. Such facilities are essential for display research. For instance, this facility enables the assembly of complete micro-displays, including inorganic LC alignment layer deposition, cell filling and electrical interconnection, for different ongoing research projects. The facilities for designing the silicon back-planes with the active matrix and the integrated drivers are also available in Ghent (spin-off company Gemidis), but silicon processing is subcontracted to external foundries.

Conference dinner

The celebrated SID-MEC conference dinner event took place in the attractive restaurant "Pakhuis". This is located in the centre of Ghent allowing also a "taste of Ghent at night" for the participants. The dinner was very good, and enabled lively and profound discussions, also about serious display matters. The benefits for the European display activity of a joint chapter meeting with a joint chapter dinner go without saying.



A. Van Calster (SID-ME, left) and H. Doyeux (Le Club Visu, right) having a profound display discussion during dinner.

Session 4 March 11, morning

F. Delauzun (Thales Avionics, France) presented a talk about microdisplays for avionics. The head up-, head down- and helmet mounted displays for avionic applications come with high-level specifications. For instance, a small pitch of 10-15 micrometer, high brightness of 10.000 to 20.000 cd/m², together with long display life can be required. For several reasons, lifetime (HTPS-LCD) or limited etendue (DMD), the mainstream technologies are not suited. The market is typically several thousand displays/year. This combination poses a problem and there is no source in Europe. The strategic relevance was noted.

K. Skarp (Dalarna University, Borlange, Sweden) presented a study of inkjet printing of materials for liquid crystal displays. Inkjet printing is a digital, non-contact, additive technique and as such very suited for roll-to-roll processing. The adjusting of the dispersions and the print head for the application of organic electrodes (PEDOT-PSS) and photo-polymerizable polymer (LPP) alignment layers was discussed. A nice looking demonstrator of a prototype display in a smart card containing these layers illustrated the state of the art.

S. Valyukh (Dalarna University, Borlange, Sweden) talked about measurement of flexible LC-cells. As previously demonstrated for glass cells a developed semiautomatic system can derive important LC cell parameters such as cell gap and twist angle from an optical interference pattern. Several methods to com-

pensate for the anisotropic plastic substrates in the case of flexible cells were evaluated.

SID-MEC General Meeting

K. Skarp (SID-MEC chair) chaired the SID-MEC general meeting, where the activities of the chapter were reported. The election of the officers of the SID-ME chapter for the coming period took place. All officers volunteered to run for another term, and the proposed candidates were elected unanimously. The composition of the Chapter committee remains as follows: Kent Skarp (Chair), Gerrit Oversluizen (Vice-Chair), Herbert de Smet (Secretary), Jutta Rasp (Treasurer).

The SID-MEC membership is roughly constant, fluctuating somewhat in line with SID conference activity and attendance. December 31st the membership number was 563, and the SID-MEC chapter remains the second largest chapter. An active participation of its members is indicated by the consistently high attendance at the biannual SID-MEC spring and fall meetings.

The treasurer's report shows a healthy closing cash credit at 31-12-2005. Two members audited and approved the administration. The healthy financial condition results from sound management and companies and universities taking part of the organisation cost. The main expenditures are the SID-MEC student award and the production & circulation of the newsletter and the CD-ROM containing the proceedings of the chapter meeting.

Also the upcoming meetings were announced. Eurodisplay'05 will be in September in Edinburgh, and the SID-MEC Spring'06 meeting is to be held on 9 and 10 of March at the high Tech Campus in Eindhoven; see also below.

Session 5, March 11, morning

H. Van Hille (Barco Company, Kortrijk, Belgium) explained the concept of Barco's large LED displays. Bright RGB light emitting diodes with saturated colours allow the representation of full colour video in bright daylight. An issue in uniformity of colour and brightness is caused by LED typical batch-to-batch variation. Barco solved this by a LED colour signature system that uses stored an updated colour and brightness value passports for each individual LED. The results were convincingly demonstrated at the Barco visit; see below.

M. Boukerche (European Commission, Belgium) gave an overview of the European projects funded in the 6th Framework Program and indicated the status and options for the 7th Framework Program. Europe is relatively strong in organic electronics and printing technology.

E. Maiser (DFF, German Flat Panel Display Forum) discussed recent advances in the ADRIA project. The ADRIA project

stands for Advanced Display Research Integration Action and involves work packages on context mapping, road mapping, education etc. The project is well underway to create a "one-stop-shop" for FPD in Europe.

Barco visit

Friday afternoon there was an opportunity to visit Barco Company in Kortrijk. The visit was very well prepared, starting with a plenary introduction on Barco's activities and subsequent demonstrations on each of the subjects in small groups. Barco is a global operating company and world leader in professional markets in which it offers display and visualization solutions. It has more than 4000 employees with well over 800 in R&D. The sales amount about 600 million/year with a sound profit. Barco is illustrative for a European (Belgium) based display company that exploits a profitable business because it can add much value in the trajectory from component to system. There are 5 pillars: view, media & entertainment, presentation & simulation, control rooms, and vision. Typical products are large (and smaller) LED video screens (see photo), LED modular light blocks, LCD based large screens for security and monitoring or traffic control and high resolution high contrast monitors for medical application. The expertise of Barco projection for digital cinema is renowned and also the 3D projection system is a frontrunner. The demonstrations were quite impressive and appreciated very much by the visitors. The visit ended with snacks/drinks and informal discussions, and a good feeling about the contribution of displays and display industry to the society.



An impressive large LED video screen at the Barco demo room.

Closing remarks

The SID-ME Chapter and Le Club Visu joint Spring 2005 Meeting turned out a very good combination of high quality contributions and informative and inspiring visits to display research and manufacturing facilities. The stimulating environ-

ment of a modern university, with WIFI connection in the meeting room, yet located in an historic town was appreciated very much by the participants. This conference content and atmosphere shows that the European display society is both active and attractive.

Gerrit Oversluizen



SOCIETY FOR INFORMATION DISPLAY

SID News

The Society for Information Display is in a great shape to take on the challenges of the developing display industry and research landscape. It is financially in a healthy shape, the SID officers are working enthusiastically to advance the field in their own regions and chapters, and the SID symposium and other SID conferences have been successful events during the last years. SID has ventured into including the business landscape and applications of displays in the major events, and this development has received great support from the membership. The membership numbers have not risen at the rate of the industry growth however, and we wish to remind everyone of the membership benefits you get by staying as a full-paid member. The benefits are summarized on the newly designed SID website www.sid.org. I would like to highlight the Senior Member grade especially, as one of the rewards of staying on as an active member. Please review the Senior Member grade qualifications on the SID website, as they might apply to you. Sooner or later they will!

In the European region, we are always also looking for nominations for SID awards and prizes. We feel that the lack of nominations for these awards is a major hurdle for getting recognition for European efforts in the display field. I encourage anyone to look into the major advances in displays that have their origin in European research, and send your suggestions of principal researchers or industry leaders that have contributed to the work, to the Chapter officers. We can then enter the formal nomination process and hope to get more awards to distinguished European members of SID.

European cooperation is also going on in many areas outside the SID framework. The first joint Chapter meeting of SID-

MEC and SID France/Club Visu was the first joint event in the Western European area. The Eastern European Chapters have a long tradition of organizing joint conferences. I welcome any suggestions in how to increase the interchapter collaboration in the SID European region.

I wish you all a good spring time, and I hope to see many of you in the SID '05 Symposium in Boston, Eurodisplay 2005 in Edinburgh, and many other meetings that the European

Region has to offer. Please look for further information on the SID website. Remember, if you have forgotten your password to the member area, please contact Jenny Needham at the SID Headquarters, best by e-mail: jenny@sid.org.

With Best Regards,
Jyrki Kimmel
European Regional VP, SID

Coming Events:

Eurodisplay 2005, The 25th International Display Research Conference,

September 19-22, 2005, Edinburgh, Scotland

Visit the website for latest information: access via

<http://www.eurodisplay-2005.org> or

<http://www.sid.org>

SID MEC Spring'06 Meeting

9-10 March 2006, at the High Tech Campus in Eindhoven

**Special Topics: Display Signal Processing,
3D Displays, Flexible Displays and Electronic-Paper.**

Visit the website for latest information: access via

<http://www.sid.org> in second half of 2005.

SID-ME Chapter committee

The SID-ME Chapter committee is now formed by:

Prof. Dr. K. Skarp (chair), Dalarna University, Forskargatan 3,
SE-781 70 Borlänge, Sweden

Tel.: +46-23-778628 Mobile: +46-70-6214175

E-mail: ksa@du.se

Dr. G. Oversluizen (vice-chair), Philips Research, Prof. Holstlaan
4, 5656 AA, Eindhoven, The Netherlands,

Tel.: +31 40 2742454, Fax: +31 40 274 43 35,

E-mail: gerrit.oversluizen@philips.com

Prof. Dr. H. De Smet (secretary), University of Gent,
St.-Pietersnieuwstraat 41, B-9000 Gent, Belgium,

Tel.: +32 9 264 3459, Fax: +32 9 264 35 94,

E-mail: Herbert.desmet@elis.rug.ac.be

J. Rasp (treasurer), Flat Panel Displays, Alpenstrasse 12,
Postfach 1208, D-85619 Feldkirchen, Germany.

Tel.: +49 8990955494, Fax: +49 8990955495

E-mail: jutta.rasp@fpdisplays.com

Additional members of the SID ME Chapter committee are:

Dr. Michael E. Becker, Display-Metrology & Systems, Marie-Alexandra Str. 44,

D 76135 Karlsruhe-Germany, Tel./Fax: +49 721 981 2268

E-mail: m.Becker@display-metrology.com

Dr. W. Becker, Merck KGaA

Frankfurter Str. 250, D-64293 Darmstadt, Germany,

Tel.: +49 6151 72 7360 ; Fax: +49 6151 72 3132

E-mail: werner.becker@merck.de

Prof. Dr.-Ing. E. Lüder, University of Stuttgart, Pfaffenwaldring 47, D-70550 Stuttgart-Vaihingen, Germany,

Tel.: +49 711 68 57 330 or +49 711 68 57 332,

Fax: +49 711 685 7311,

E-mail: ernst.lueder@ins.uni-stuttgart.de

Prof. Dr. P. Maltese, University La Sapienza, Via Marmorata 169, I-00153 Roma, Italy, Tel.: +39 644 585 428, Fax: +39 647 42 647.

Dr. M. Schadt, Rolic Research Ltd, Gewerbestrasse 18, CH-4123 Allschwil, Switzerland,

Tel.: +41 61 487 22 22, Fax: +41 61 487 22 88

E-mail: martin.schadt@rolic.com

Dr. D. Theis, Siemens AG, Tel.: +49 89 636 40550, Fax.: +49 89 636 40554, E-mail: dietmar.theis@siemens.com

Dr. P.G. Wierer, Balzers Thin Films, P.O. Box 1000, FL-9496 Balzers/Liechtenstein

Tel.: +423 388 47 42, Fax: +423 388 54 05

E-mail: wip@btf.balzers.net

Dr. J. Bruinink, Philips Research, Prof. Holstlaan 4, 5656 AA, Eindhoven, The Netherlands, Tel.: +31 40 2743989,

Fax: +31 40 274 43 35, E-mail: Jaap.Bruinink@philips.com

Dipl. Ing. F. Rochow (treasurer), LMT Lichtmesstechnik GmbH, Helmholtzstrasse 9, D-10587 Berlin, Germany,

Tel.: +49 30 393 40 28, Fax: +49 30 391 80 01,

E-mail: rochow@lmt-berlin.de

Prof. Dr. A. van Calster (secretary), University of Gent, St.-Pietersnieuwstraat 41, B-9000 Gent, Belgium,

Tel.: +32 9 264 33 90, Fax: +32 9 264 35 94,

E-mail: vancalster@elis.rug.ac.be

European officer(s) of the SID:

Dr.-Ing. N. Frühauf (director), Universität Stuttgart, Allmandring 3B, D-70550 Stuttgart-Vaihingen, Germany,

Tel.: +49 711 685 6922, Fax: +49 711 685 6924.

E-mail: norbert.fruehauf@lfb.uni-stuttgart.de

Lic. Tech. J. Kimmel (regional vice-president), Nokia Research Center, P.O. Box 100, FIN-33721 Tampere, Finland,

Tel.: +358 7180 35484, Mobile: +358 50 48 35484,

Fax: +358 7180 35322,

E-mail: jyrki.kimmel@nokia.com

SID payment.

The SID annual membership fee amounts US\$ 75. Please note that the membership is now a rolling membership, which means that it runs 12 months from the month in which the payment was made. For more information see the SID website www.sid.org.

We encourage our members to pay directly to SID-HQ in the USA, but if they want to pay to the ME-Chapter directly the annual fee should be EUR 90 **with all bank fees covered by the member !**

In case of direct payment to the SID-ME Chapter the payment in EURO should be done to

Account no.: 206 020 1104

at: Berliner Sparkasse, Berlin, Germany

Bank code: BLZ 100 500 00

Account name: Frank Rochow, SID-ME

Please indicated your name on the remittance papers.

The Newsletter.

If you want to place an article in the Newsletter, which is interesting for the European display society, please send it to:

G. Oversluizen, fax: +31 40 274 4335,

E-mail: gerrit.oversluizen@philips.com

