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**SOCIETY FOR INFORMATION DISPLAY**

## **International TFT Conference'07 in conjunction with SID MEC '07 Spring Meeting, and SID-MEC General Meeting CNR Headquarters, Rome, January 25-26, 2007**



The Istituto di Fotonica e Nanotecnologie (IFN) group of the Centro Nazionale di Ricerca (CNR) in Rome, Italy, hosted a combined SID-ME Spring meeting / 3rd International TFT Conference (ITC'07) on January 25-26, 2007. Guglielmo Fortunato, Senior Researcher at IFN-CNR, and his colleagues organized the meeting.

The two-day conference was divided into ten oral technical sessions, and

one poster session. The technical sessions were "Flexible electronics 1+2", "Poly-Si TFTs 1+2", "Crystallization", "Characterization and Modeling", "OTFTs", "Amorphous and Microcrystalline Silicon TFTs", "New TFT Technologies", and "Displays and Circuits". The conference consisted of 82 accepted papers, of which 52 were oral presentations, and 30 posters. There were 110 attendees.

After a brief welcome by Guglielmo Fortunato and Eliav Haskal (Philips Research, FlexiDis coordinator), the lively conference began with many questions and answers, which remained the case throughout the entire two days. Of course, one highlight was the conference dinner, held in the restaurant roof garden "Les Etoiles" overlooking the Saint Peter's Cathedral in Vatican City and the Castel Sant'Angelo in Rome, where an excellent Italian meal was enjoyed by the conference guests. Through the combination of the two conferences, the SID-ME chapter members were able to effectively exchange information and network with the mostly Asian attendees of the ITC'07. This unique chance was really appreciated by the entire conference!

Eliav Haskal

## Conference summary

This conference comprised 82 contributions with two sets of parallel sessions. In view of this large number the usual SID-MEC Newsletter summary, with a few lines devoted to each paper, where an attempt is made to recall the main message or most important result, is omitted. Instead, the programme with titles and authors is included below.

### ITC'07 / SID-MEC'07 Spring Meeting Conference programme January 25

#### Session 1: Opening Session (9:00 - 9:15)

##### 1.1: Welcome Address

G. Fortunato (CNR-IFN)

N. Fruehauf (Universität Stuttgart)

E. I. Haskal (Coordinator of FlexiDis Project - Philips Research, The Netherlands)

#### Session 2: Flexible electronics (1)

(9:15 - 10:35)(Session Chairman: E. Haskal)

##### 2.1: 9:15-9:40 (Invited) Flexible active matrix electrophoretic displays made with a standard a-Si:H TFT technology using the EPLaRTM process

T. Kretz<sup>1</sup>, E. Chuiton<sup>1</sup>, G. Gomez<sup>1</sup>, F. Mazel<sup>1</sup>, I. French<sup>2</sup>, I. J. Boerefijn<sup>3</sup>

<sup>1</sup> Thales Avionics LCD, MOIRANS, France

<sup>2</sup> Philips Research Laboratory, Redhill, UK

<sup>3</sup> Philips Applied Technologies, High Tech Campus 7, 5656AE Eindhoven, The Netherlands

##### 2.2: 9:40-10:05 (Invited) Flexible Thin-film Transistor for Display Application

C.C. Lee, Yung-Hui Yeh, Jia-Chong Ho

Process Technology Division, Display Technology Center, Industrial Technology Research Institute (ITRI)

##### 2.3: 10:05-10:20 Printed organic transistors and plastic MEMS switches for a large-area flexible wireless power transmission sheet

T. Someya<sup>1</sup>, T. Sekitani<sup>1</sup>, M. Takamiya<sup>2</sup>, Y. Noguchi<sup>1</sup>, S. Nakano<sup>1</sup>, T. Sakurai<sup>3</sup>.

<sup>1</sup> Quantum-Phase Electronics Center, School of Engineering, The University of Tokyo, Japan

<sup>2</sup> VLSI Design and Education Center, The University of Tokyo, Japan

<sup>3</sup> Center for Collaborative Research, The University of Tokyo, Japan

##### 2.4: 10:20-10:35 Low-temperature polysilicon Thin Film Transistors on Polyimide substrates for electronics on plastic

A. Pecora, L. Maiolo, M. Cuscunà, D. Simeone, A. Minotti, L. Mariucci and G. Fortunato. Istituto di Fotonica e Nanotecnologie (IFN), CNR, Rome, Italy

10:35 - 10:50 Coffee Break

#### Session 3: Polysilicon TFTs (1)

(10:50 - 12:25) (Session Chairman: P. Migliorato)

##### 3.1: 10:50-11:15 (Invited) Single-Grain Si TFTs and Circuits Fabricated through Advanced Excimer-Laser Crystallization

R. Ishihara, Vikas Rana, Ming He, Wim Metselaar and Kees Beenakker  
Delft University of Technology, The Netherlands

##### 3.2: 11:15-11:40 (Invited) Progress in Fabrication Processing of Thin Film Transistors

K. Yoshioka and T. Sameshima

Tokyo University of Agriculture and Technology, Tokyo, Japan

##### 3.3: 11:40-11:55 High-Performance Double-Gate LTPS Thin Film Transistors Fabricated by Excimer Laser Irradiation

Chun-Chien Tsai<sup>1</sup>, Hsu-Hsin Chen<sup>1</sup>, Yao-Jen Lee<sup>2</sup>, Kai-Fang Wei<sup>1</sup>, Jyh-Liang Wang<sup>1</sup>, Bo-Ting Chen<sup>1</sup>, and Huang-Chung Cheng<sup>1</sup>

<sup>1</sup> Department of Electronics Engineering and Institute of Electronics, National Chiao Tung University, Hsinchu, Taiwan

<sup>2</sup> National Nano Device Laboratories, Hsinchu, Taiwan, ROC

##### 3.4: 11:55-12:10 Fabrication of 3-Dimensionally Stacked Poly-Si TFT CMOS Inverter with High Quality Laser Crystallized Channel

Soon-Young Oh<sup>1</sup>, Chang-Geun Ahn<sup>1</sup>, Jong-Heon Yang<sup>1</sup>, Won-Ju Cho<sup>2</sup>, Woo-Hyun-Lee<sup>2</sup>, Hyun-Mo Koo<sup>2</sup>, Seong-Jae Lee<sup>1</sup>

<sup>1</sup> Nano-Bio Electronic Devices Team, Electronics and Telecommunications Research Institute, Daejeon, KOREA

<sup>2</sup> Electronic materials, Kwangwoon University, Seoul, KOREA

##### 3.5: 12:10 - 12:25 High quality LTPS CMOS TFTs produced with a five mask process and only one ion implantation step

P. Schalberger, H. Baur, S. Kohlenbecker, E. Persidis, and N. Fruehauf  
Chair of Display Technology, Universität Stuttgart, Germany

12:25 - 13:45 Lunch

#### Session 4: Flexible electronics (2)

(13:45 - 14:40) (Session Chairman: T. Noguchi)

##### 4.1: 13:45 - 14:10 (Invited) Thin-film transistor backplanes on flexible polymer and steel foil substrates

S. Wagner, A. Z. Kattamis, B. Hekmatshoar, K. H. Cherenack,

I-C. Cheng, H. Gleskova, J. C. Sturm. Department of Electrical Engineering, Princeton University, New Jersey (USA)

##### 4.2: 14:10 - 14:25 Near 100°C low temperature a-Si TFT array fabrication on flexible PES and PEN substrates

Ivan V. Nikulin, Tae Hyung Hwang, Hyung Il Jeon, Sang Il Kim, Nam Seok Roh, Seong Sik Shin

LCD R&D center, Samsung Electronics, Gyeonggi-Do, Korea

##### 4.3: 14:25 - 14:40 Mechanical stability of poly-Si TFT on flexible metal foil

Jun Hyuk Cheon, Jung Ho Bae, and Jin Jang

Department of Information Display and Advanced Display Research Center, Kyung Hee University, Seoul, Korea

14:40 - 14:55 Coffee Break

#### Session 5a: Crystallization

(14:55 - 16:35)(Session Chairman: R. Ishihara)

##### 5a.1: 14:55 - 15:20 (Invited) Location and Orientation Control of Si Thin-Film Grains Using Metal Nano-Imprint Seeding of

## Laser Annealing

T.Asano, and G. Nakagawa

Department of Electronics, Kyushu University, Fukuoka, JAPAN

### 5a.2: 15:20 - 15:35 **2D-projection-based method for forming uniform and high-quality poly-Si films via Sequential Lateral Solidification**

Brandon A. Turk<sup>1</sup>, Frank Simon<sup>2</sup> and Rainer Pätzel<sup>2</sup>

1 Coherent, Inc., 5100 Patrick Henry Drive, Santa Clara, USA,

2 Coherent, GmbH, Göttingen, Germany

### 5a.3: 15:35 - 15:50 **Growth of Si Crystalline in SiO<sub>x</sub> Films Induced by Millisecond Rapid Thermal Annealing Using Thermal Plasma Jet**

Tatsuya Okada, Seiichiro Higashi, Hirotaka Kaku, Takuya Yorimoto, Hideki Murakami and Seiichi Miyazaki

Department of Semiconductor Electronics and Integration Science

Graduate School of Advanced Sciences of Matter, Hiroshima University, Japan

### 5a.4: 15:50 - 16:05 **Growth Rate Measurement of Lateral Grains in Silicon Film During Excimer Laser Annealing**

Wenchang Yeh, Chunjun Zhuang, Dunyuan Ke

Department of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan, Republic of China  
January 25-26, 2007 - CNR Head

### 5a.5: 16:05 - 16:20 **Enlargement of Grain size of Poly-Si using Ferritin Protein with Ni Nanoparticles**

Y. Nanjo, Y. Uraoka, T. Fuyuki, M. Okuda, I. Yamashita<sup>1</sup>

Nara Institute of Science and Technology, Nara, Japan

1 ATRL, Matsushita Electric Industrial Co., Ltd., Seika, Kyoto (Japan)

### 5a.6: 16:20 - 16:35 **Hydrogen Effect in Excimer Laser Annealing of Hydrogen Modulation Doped a-Si Film**

A. Heya, K. Oda, T. Serikawa\*, N. Kawamoto\*\* and N. Matsuo

University of Hyogo, Japan

\*Osaka University, Japan

\*\*Yamaguchi University, Japan

## Session 5b: Characterization and modeling

(14:55 - 16:40)(Session Chairman:Y. Uraoka)

### 5b.1 14:55 - 15:10 **Hot carrier stress induced degradation of SLS ELA polysilicon TFTs - Effects of gate width variation and device orientation**

G. P. Kontogiannopoulos<sup>1</sup>, F.V. Farmakis<sup>1</sup>, D.N. Kouvatso<sup>1</sup>, G. J. Papaioannou<sup>2</sup> and A.T. Voutsas<sup>3</sup>

1 Institute of Microelectronics, NCSR Demokritos, Agia Paraskevi 15310, Greece

2 Physics Department, University of Athens, Athens 157 84, Greece

3 LCD Process Technology Laboratory, Sharp Labs of America, Camas, WA, USA

### 5b.2: 15:10 - 15:25 **Reliability for Joule effect in LTPS-TFTs with very thin gate oxide**

H. Ueno, Y. Sugawara, Y. Uraoka and T. Fuyuki, T. Serikawa\*

Graduate School of Materials Science, Nara Institute of Science and Technology, Japan

\*Joining and Welding Research Institute, Osaka University

### 5b.3: 15:25 - 15:40 **Degradation Mechanisms of NBTI and PBTI in Low-Temperature Poly-Si Thin-Film Transistors**

C.-Y. Chen<sup>1</sup>, J.-W. Lee<sup>2</sup>, W.-C. Chen<sup>3</sup>, H.-Y. Lin<sup>3</sup>, K.-L. Yeh<sup>3</sup>, S.-D. Wang<sup>1</sup>, T.-F. Lei<sup>1</sup>

1 Institute of Electronics, National Chiao Tung University, Taiwan, R. O. C.

2 National Nano Device Laboratory, Hsin-Chu, Taiwan, R.O.C.

3 Toppoly Optoelectronics Corp., Miao-Li, Taiwan, R. O. C.

### 5b.4: 15:40 - 15:55 **Effective Dopant Activation of Si film using ELA for Advanced Si TFT**

Takashi NOGUCHI

Dept. of Electrical and Electronics Engineering, University of the Ryukyus,

1 Senbaru, Nishihara, Okinawa-ken, Japan

### 5b.5: 15:55 - 16:10 **Investigation of the undershoot effect in polycrystalline silicon thin film transistors**

L. Michalas<sup>1</sup>, G.J. Papaioannou<sup>1</sup>, D.N. Kouvatso<sup>2</sup>, A.T.Voutsas<sup>3</sup>

1 Physics Department, National and Kapodistrian University of Athens, Greece

2 Institute of Microelectronics, NCSR "Demokritos", Aghia Paraskevi Attikis, Athens, Greece

3 LCD Process Technology Laboratory, Sharp Labs of America, Camas, WA, USA

### 5b.6: 16:10 - 16:25 **Universal compact model for long- and short-channel Thin-Film Transistors**

B. Iñiguez<sup>1</sup>, R. Picos<sup>2</sup>, D. Veksler<sup>3</sup>, A. Koudymov<sup>3</sup>, and M. S. Shur<sup>3</sup>, T.Ytterdal<sup>4</sup>, W. Jackson<sup>5</sup>

1 DEEEA, Universitat Rovira i Virgili, Avda. Paisos Catalans 26, Tarragona, Spain

2 Physics Department, Universitat de les Illes Balears, Palma de Mallorca, Spain

3 ECSE and Broadband Center, Rensselaer Polytechnic Institute, Troy, NY, USA

4 Department of Physical Electronics" to "Department of Electronics and Telecommunication, Norwegian University of Science and Technology, Trondheim, Norway

5 HP Labs, Palo Alto, CA, USA

### 5b.7: 16:25 - 16:40 **Analytical Model of Current-Voltage Characteristics in On-state Poly-Si TFT"**

Tadsahi Serikawa

Osaka University

## SID-Mid Europe Chapter Meeting

(Members only) (17:00)

**Poster session (16:40 - 18:10)**

### **P1: Novel Surface Treatment of Plastic Substrate using Atomic Hydrogen for Flexible Displays**

Akira Heya, Masahiko Sato and Naoto Matsuo

University of Hyogo, Japan

### **P2: High-Performance Self-Aligned Bottom-Gate LTPS TFTs Fabricated by Excimer Laser Irradiation with**

**P2: High-Performance Self-Aligned Bottom-Gate LTPS TFTs Fabricated by Excimer Laser Irradiation with Backside Exposure Photolithography**

C.C. Tsai, H.-H. Chen, Y.J. Lee<sup>1</sup>, K.F. Wei, J.L. Wang, B.T. Chen, H.C. Cheng  
Department of Electronics Engineering and Institute of Electronics,  
National Chiao Tung University, Hsinchu, Taiwan  
<sup>1</sup> National Nano Device Laboratories, Hsinchu, Taiwan, ROC

**P3: Improvement in Si/SiO<sub>2</sub> properties using atmospheric pressure plasma**

T. Miyamoto, Y. Sugawara, Y. Uraoka, T. Fuyuki, H. Kuroda<sup>1</sup>, K. Takashima<sup>1</sup>  
Nara Institute of Science and Technology, Nara 630-0192, Japan  
<sup>1</sup> e Square Co., Ltd., Kyoto, Japan

**P4: Hafnium oxide deposited at room temperature by reactive RF magnetron sputtering from a metallic target for thin film transistors**

Y.J. Choi<sup>1</sup>, C. Ducati<sup>2</sup>, Y. Fu<sup>1</sup>, S. P. Speakman<sup>3</sup> and A. J. Flewitt<sup>1</sup>  
<sup>1</sup> Electrical Engineering Division, Cambridge University, Cambridge, U.K  
<sup>2</sup> Department of Materials Science and Metallurgy, Cambridge University,  
Pembroke Street, Cambridge, U.K  
<sup>3</sup> 3T Technologies Ltd., 7, Essex, U.K

**P5: Fabricated Si Nanowire using Nanoimprint Method**

Jin-Woo HAN, Dong-Hun KANG, Chul-Ho OK, Dae-Shik SEO.  
Department of Electrical and Electronic Engineering College of  
Engineering, Yonsei University, Seoul, Korea

**P6: Low Temperature Formation of Si Oxide Thin Film for TFT by Reaction of Organosilicon polymer and Low Concentration Ozone Gas**

Kensuke NISHIOKA, Kouichi TORIYABE and Susumu HORITA  
Graduate School of Materials Science, Japan Advanced Institute of Science  
and Technology, Ishikawa, Japan

**P7: CMOS LTPS-TFTs by using CW laser crystallization**

Yong Duck Son, Kyung Dong Yang, Nam Kil Son, Eun-Hyun Kim, and  
Jin Jang  
Department of Information Display and Advanced Display Research  
Center, Kyung Hee University, Korea

**P8: High-Performance Poly-Si TFTs Fabricated by Floating Channel Crystallization Technology**

Chia-Wen Chang, Jam-Wem Lee<sup>1</sup>, Che-Lun Chang, and Tan-Fu Lei  
Department of Electronics Engineering and Institute of Electronics,  
National Chiao-Tung University, Hsin-Chu, Taiwan, R.O.C.  
<sup>1</sup> National Nano Device Laboratory, Hsin-Chu, Taiwan, R.O.C.

**P9: Plane-to-Line Switching (PLS) Mode-Based Thin Film Transistor-Liquid Crystal Display (TFT-LCD) Adopting a Novel Concept of Process Architecture**

Jae-Bok LEE, Chun-Ki YOU, Seong-Jun LEE, Hoon-Kee MIN and, Chi-Woo  
KIM  
Mobile Display Process Development Team, LCD Business, Samsung  
Electronics Co., Ltd. San #24, Nongseo-dong, Kiheung-Ku, Yongin-City,  
Gyeonggi-Do, KOREA

**P10: External Compensation of LTPS AMOLED Displays based on a Three TFTs Pixel Circuit**

F. Pieralisi<sup>1</sup>, H. Baur<sup>1</sup>, E. Persidis<sup>1</sup> and N. FRuehauf<sup>1</sup>, T. Marx<sup>2</sup>,

H. Schemmann<sup>2</sup>, S. Weitbruch<sup>2</sup>, P. Le Roy<sup>3</sup>

<sup>1</sup> Chair of Display Technology, Universität Stuttgart, 70569 Stuttgart,  
Germany

<sup>2</sup> THOMSON Deutsche Thomson Brandt GmbH

<sup>3</sup> THOMSON R&D France

**P11: Leakage current-Free Pixel Structure Using a Shield Capacitor for Active-Matrix Display**

Hyun-Sang Park, Jae-Hoon Lee and Min-Koo Han  
School of Electrical Engineering (#50), Seoul National University, Seoul,  
Korea

**P12: A New Amorphous Silicon Gate Driver with Stable Operation**

J.W. Choi, J.H. Koo, Y.S. Kim, M.H..Kang, E.B. Kim, S.H. Kim, S.-W. Lee, J. Jang  
Department of Information Display and Advanced Display Research  
Center, Kyung Hee University, Seoul, Korea

**P13: Two dimensional numerical simulation of low frequency noise in polysilicon thin film transistors**

A. Boukhenoufa, C. Cordier, L. Pichon<sup>1</sup>, B. Cretu  
Groupe de Recherches en Informatique, Image, Automatique et  
Instrumentation de Caen (GREYC), CNRS UMR, ENSICAEN-Université de  
Caen, France

<sup>1</sup> Groupe Microélectronique, IETR, UMR CNRS Rennes, France

**P14: Electrical instability in self-aligned p-channel polysilicon TFTs related to oxide residual damage**

M. Rapisarda<sup>1</sup>, L. Mariucci<sup>1</sup>, A. Valletta<sup>1</sup>, A. Pecora<sup>1</sup> and G. Fortunato<sup>1</sup>,  
C. Caligiore<sup>2</sup>, E. Fontana<sup>2</sup>, S. Leonard<sup>2</sup>, F. Tramontana<sup>2</sup>  
<sup>1</sup> CNR-IFN, Roma, Italy

<sup>2</sup> STMicroelectronics, Catania, Italy

**P15: Hot carrier effects in p-channel polysilicon thin film transistors**

P. Gaucci<sup>1</sup>, L. Mariucci<sup>1</sup>, A. Valletta<sup>1</sup>, M. Cuscunà<sup>1</sup>, L. Maiolo<sup>1</sup>, A. Pecora<sup>1</sup>,  
G. Fortunato<sup>1</sup>, F. Templier<sup>2</sup>  
<sup>1</sup> CNR-IFN, Roma, Italy

<sup>2</sup> CEA-LETI, Département IHS, 17 rue des Martyrs, Grenoble, France.

**P16: Effects of bias stress on low temperature polysilicon TFTs**

D. Palumbo<sup>1</sup>, S. Masala<sup>1</sup>, P. Tassini<sup>1</sup>, A. Rubino<sup>2</sup>, D. Della Sala<sup>3</sup>

<sup>1</sup> ENEA C. R. Portici, Portici (NA), Italy

<sup>2</sup> DIIE, University of Salerno, Fisciano (SA), Italy

<sup>3</sup> ENEA C. R. Casaccia, S. Maria di Galeria (Roma), Italy

**P17: A New Poly-Si Thin-Film Transistor Nonvolatile Ge Nanocrystals Memory with High Programming / Erasing Efficiency**

Po-Yi Kuo<sup>1</sup>, Tien-Sheng Chao<sup>2</sup>, Jyun-Siang Huang<sup>2</sup>, and Tan-Fu Lei<sup>1</sup>

<sup>1</sup> Department of Electronics Engineering and Institute of Electronics,  
National Chiao-Tung University, Hsin-chu, Taiwan, R.O.C.

<sup>2</sup> Department of Electrophysics, National Chiao-Tung University, Hsinchu,  
Taiwan, R.O.C.

**P18: Characterization of advanced directional SLS ELA polysilicon TFTs -Dependence of device parameters on orientation and geometry-**

D. C. Moschou<sup>1</sup>, D. N. Kouvatso<sup>1</sup>, F.V. Farmakis<sup>1</sup>, A. T. Voutsas<sup>2</sup>

### **transient behavior of advanced excimer laser crystallized polysilicon thin film transistors**

Michael A. Exarchos<sup>1</sup>, L.Michalakis<sup>1</sup>, G.J.Papaioannou<sup>1</sup>, D.N.Kouvatsos<sup>2</sup>, A.T.Voutsas<sup>3</sup>

<sup>1</sup> National and Kapodistrian University of Athens (NKUA), Physics Department, Solid State Physics Section, Athens, Greece

<sup>2</sup> National Center of Scientific Research (NCSR) "DEMOKRITOS", Institute of Microelectronics, Greece

<sup>3</sup> SHARP Labs of America, LCD Process Technology Laboratory, Washington, USA

### **P20: DC Modeling of Single-Grain Si TFTs using BSIMSOI**

Alessandro Baiano, Ryoichi Ishihara, Nobuo Karaki<sup>1</sup> and Satoshi Inoue<sup>1</sup>, Wim Metselaar and Kees Beenakker

Delft University of Technology, Feldmannweg 14, 2628 CT Delft, The Netherlands

<sup>1</sup> Seiko Epson Cooperation, Nagano 399-0293, Japan

### **P21: Comparison of Defect Densities in Excimer Laser and Thermal Plasma Jet Crystallized Si Films**

S. Higashi, T.Yorimoto, T. Okada, H. Kaku, H. Murakami and S. Miyazaki  
Graduate School of Advanced Sciences of Matter, Hiroshima University, Japan

### **P22: $\mu$ -PCD Measurement of Double-Layered poly-Si Thin Films Crystallized by Solid Green Laser Annealing**

Y. Sugawara<sup>1</sup>, Y. Uraoka<sup>1</sup>, H. Yano<sup>1</sup>, T. Hatayama<sup>1</sup> and T. Fuyuki<sup>1</sup>, A. Mimura<sup>2</sup>

<sup>1</sup> Nara Institute of Science and Technology, Nara, Japan  
<sup>2</sup> National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan

### **P23: OTFT Circuits on Plastic Manufactured by Self-Organized Process**

S. H. Han, S. H. Lee, Y. R. Son, K. J. Lee, G. S. Cho, W. S. Kim, D. J. Choo<sup>2</sup> and J.Jang

Department of Information Display and Advanced Display Research Center Kyung Hee University, Hoegi-dong 1, Seoul, Korea

### **P24: Soluble Anthracene Oligomers Containing Thiophene Derivatives for Organic Thin Film Transistors**

Jong-Hwa Park, Young Kwan Jung, Taek Ahn<sup>1</sup>, Mi Hye Yi<sup>1</sup>, Hong-Ku Shim  
Department of Chemistry and School of Molecular Science, Korea Advanced Institute of Science and Technology, Yuseong-Gu, Daejeon, Republic of Korea

<sup>1</sup> Polymeric Nanomaterials Laboratory, Korea Research Institute of Chemical Technology, Yuseong-gu, Daejeon, Republic of Korea

### **P25: Study for characteristics of spin on dihexylsexithiophene thin film transistor**

Jae-Hong Kwon<sup>1</sup>, Jung-Hoon Seo<sup>1</sup>, Dong Hoon Choi<sup>2</sup>, Yun-Hi Lee<sup>3</sup>, and Byeong-Kwon Ju<sup>1</sup>

<sup>1</sup> Display and Nanosystem lab., School of Electrical Engineering, College of Engineering, Korea University, Korea

<sup>2</sup> Functional Polymer Chemistry Lab., College of Science, Korea University, Anam-Dong, Seongbuk-Gu, Seoul, Korea

<sup>3</sup> National Research Laboratory, Nano Device & Physics Lab., Department of Physics, Korea University, Korea

### **P26: Post-Treatment Effects on the Electrical Characteris-**

### **tics of Ink-jet Printed Triisopropylsilyl Pentacene Organic Thin-Film Transistors**

Y.-H. Kim<sup>1,2</sup>, S.-M. Han<sup>2</sup>, J.-H. Lee<sup>2</sup>, J.-I. Han<sup>1</sup> and M.-K. Han<sup>2</sup>

<sup>1</sup> Information Display Research Center, Korea Electronics Technology Institute, Kyunggi, Korea

<sup>2</sup> School of Electric Engineering and Computer Science, Seoul National University, Seoul, Korea

### **P27: Insulator Passivation of Organic Thin-Film Transistor for Improving Device Performance**

J.H. Seo, J.H. Kwon, K.S. Seo<sup>1</sup> and B.K. Ju<sup>2</sup>

<sup>1</sup> Convergence & Components Laboratory (ICCL), Electronics and Telecommunications Research Institute (ETRI), Daejeon, 305-700, KOREA

<sup>2</sup> Display and Nanosystem Laboratory, School of Electrical Engineering, Korea University, Seoul 136-701, Korea

### **P28: Improvement of threshold voltage stability with bottom-gate polymorphous silicon Thin Film Transistors**

François TEMPLIER<sup>1</sup>, Maher OUDWAN<sup>1</sup>, Frederic SERMET<sup>1</sup>, Alexey ABRAMOV<sup>2,3</sup> and Pere ROCA i CABARROCAS<sup>2</sup>

<sup>1</sup> CEA-LETI, DIHS, Grenoble, France

<sup>2</sup> LPICM, Ecole Polytechnique, CNRS, Palaiseau, France

<sup>3</sup> A.F.Ioffe Phys.-Technical Institute, St.-Petersburg, Russia

### **P29: P-type Microcrystalline Silicon for Thin Film Transistors**

Y. Djerdane, V.D. Bui, A. Abramov, Y. Bonnasieux, P. Roca i Cabarrocas  
LPICM CNRS Ecole polytechnique Palaiseau, France

### **P30: Reduction of off current in ITO-channel thin film transistor with ferroelectric (Bi,Lu)4Ti3O12 gate insulator**

Eisuke Tokumitsu, Tomofumi Fujimura, Takashi Sato, Etsu Shin and Masaru Senoo

Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan

19:30 Banquet

**January 26**

## **Session 6a: O-TFTs**

(8:30 - 10:30)(Session Chairman: N. Fruehauf)

### **6a.1: 8:30 - 8:55 (Invited) Optimisation of Organic Semiconductors for Flexible Display Backplanes**

M. Coelle

Merck

### **6a.2: 8:55 - 9:20 (Invited) Organic Thin Film Transistors for Flexible Display Applications**

S. Burns

Plastic Logic Limited, Cambridge, United Kingdom

### **6a.3: 9:20 - 9:45 (Invited) Selective Growth of Large-Grain Organic Semiconductor by Self-Organized Process**

J.Jang and Seung Hoon Han

Dept. of Information Display, Kyung Hee University, Korea

### **6a.4: 9:45 - 10:00 Effect of active layer thickness on electrical characteristics of pentacene TFTs with PMMA buffer layer**

L. Mariucci<sup>1</sup>, D. Simeone<sup>1</sup>, S. Cipolloni<sup>1</sup>, L. Maiolo<sup>1</sup>, A. Pecora<sup>1</sup> and G. Fortunato<sup>1</sup>, S. Brotherton<sup>2</sup>

1 CNR-IFN, Roma, Italy

2 TFT Consultant, 12 Riverside, Forest Row, UK

**6a.5:** 10:00 - 10:15 **Electrode configuration for n-type organic transistors with top-contact type fabricated by solution process**

Yutaka Ohmori, Dr. Hirotake Kajii, and Syohei Fukuda

Osaka University, Center for Advanced Science and Innovation, Japan

**6a.6:** 10:15 - 10:30 **OFET for gas sensing based on pentacene films grown by SuMBE**

T.Toccoli, A. Pallaoro, M. Tonzzer, N. Coppedè and S. Iannotta

IFN-CNR \_Trento Division - Italy

## Session 6b: Amorphous and microcrystalline silicon TFTs

(8:30 - 9:55)(Session Chairman: M.K. Han)

**6b.1:** 8:30 - 8:55 (Invited) **Critical Issues in Plasma Deposition of Microcrystalline Silicon for Thin Film Transistors**

P. Roca y Cabarrocas<sup>1</sup>, Yassine Djeridane<sup>1</sup> and Alexey Abramov<sup>1,2</sup>

1 LPICM, Ecole Polytechnique, CNRS, Palaiseau, France

2 A.F.Ioffe Phys.-Technical Institute, St.-Petersburg, Russia

**6b.2:** 8:55 - 9:10 **New structure of a-Si:H TFT for controlling backlight brightness**

Se Hwan Kim<sup>1</sup>, Eung Bum Kim<sup>1</sup>, Hee Yeon Choi<sup>1</sup>, Dong Han Kang<sup>1</sup>, Won Hoon Park<sup>1</sup>, Jae Hwan Oh<sup>1</sup>, Moon Hyo Kang<sup>1</sup>, Ji Ho Hur<sup>1</sup>, Jung Woo Lee<sup>2</sup>, Jung Ryoul Choi<sup>2</sup>, Seung Hun Ahn<sup>2</sup>, Soon Won Hong<sup>2</sup> and Jin Jang<sup>1</sup>

1 Advanced Display Research Center Kyung Hee University, Seoul, Korea

2 Technology Leaders & Innovators, Kyunggi-Do, Korea

**6b.3:** 9:10 - 9:25 **All Hot Wire CVD TFTs with High Deposition Rate Silicon Nitride (3 nm/s)**

R.E.I. Schropp, S. Nishizaki<sup>1</sup>, Z.S. Houweling, V. Verlaan, C.H.M van der Werf, H. Matsumura<sup>1</sup>

Utrecht University, Faculty of Science, Department of Physics and Astronomy, SID -Physics of Devices, Utrecht, the Netherlands

1 Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan

**6b.4:** 9:25 - 9:40 **Influence of the deposition temperature on the performance of microcrystalline silicon thin film transistors**

M. Oudwan, A. Abramov<sup>1</sup>, P. Roca y Cabarrocas<sup>1</sup> and F. Templier

CEA-LETI, DIHS, Grenoble, France

1 LPICM, Ecole Polytechnique, CNRS, Palaiseau, France

**6b.5 :** 9:40 - 9:55 **Microcrystalline TFTs: VerilogA Modeling**

O. Moustapha, V.D. BUI, Y. Bonnasieux, J.Y. Pary

Laboratoire de Physique des Interfaces et Couches Minces LPICM-Ecole Polytechnique, France

10:30 - 10:45 Coffee Break

## Session 7: New TFT technologies

(10:45 - 12:45)(Session Chairman: J. Jang)

**7.1:** 10:45 - 11:10 (Invited)

**Is the future of TFTs transparent?**

Elvira Fortunato<sup>1</sup> Pedro Barquinha<sup>1</sup> Luis Pereira<sup>1</sup> Gonçalo Gonçalves<sup>1</sup> and Rodrigo Martins<sup>2</sup>

1 Department of Materials Science/CENIMAT, Faculty of Sciences and Technology, New University of Lisbon, Campus da Caparica, 2829-516 Caparica, Portugal

2 CEMOP-UNINOVA, Campus da Caparica, 2829-516 Caparica, Portugal

**7.2:** 11:10 - 11:25 **Amorphous In-Zn-Ga-O based TFTs and circuits**

R. Hayashi, M. Ofuji, N. Kaji, K. Abe, H. Yabuta, M. Sano, and H. Kumomi

K. Nomura<sup>\*</sup>, T. Kamiya<sup>\*</sup>, M. Hirano<sup>\*</sup>, and H. Hosono<sup>\*</sup>

Canon Research Center, Tokyo, Japan

<sup>\*</sup>Tokyo Institute of Technology, Yokohama, Japan

**7.3:** 11:25 - 11:40

**Ink-jet printed carbon nanotube thin film transistors**

P. Beecher<sup>1</sup>, P. Servati<sup>1</sup>, A. Rozhin<sup>1</sup>, A. Colli<sup>1</sup>, V. Scardaci<sup>1</sup>, S. Pisana<sup>1</sup>, G.W. Hsieh<sup>1</sup>, A. Fasoli<sup>1</sup>, D. Chu<sup>1</sup>, F. M. Li<sup>2</sup>, A. Nathan<sup>3</sup>, B. Ong<sup>4</sup>, A. Flewitt<sup>1</sup>, J. Robertson<sup>1</sup>, A. Ferrari<sup>1</sup> and W. I. Milne<sup>1</sup>

1 Department of Engineering, University of Cambridge, Cambridge, CB3 0FA, UK

2 Electrical and Computer Engineering, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada

3 London Centre for Nanotechnology, University College London, London, WC1H 0AH, UK

4 Xerox Research Centre of Canada, Mississauga, Ontario, L5K 2L1, Canada

**7.4:** 11:40 - 11:55

**Solution-deposited carbon nanotube network TFTs on glass and flexible substrates**

A. Schindler<sup>\*</sup>, A. Lindner<sup>\*</sup>, S. Goettling<sup>\*</sup>, N. Fruehauf<sup>\*</sup>, J. P. Novak<sup>\*\*</sup>, Z. Yaniv<sup>\*\*</sup>

<sup>\*</sup> Chair of Display Technology, Universitaet Stuttgart, Germany

<sup>\*\*</sup> Applied Nanotech Inc., USA

**7.5:** 11:55 - 12:10 **Probing the electronic characteristics of single bionanodot**

R. Tanaka, A. Miura, Y. Uraoka, T. Fuyuki, I. Yamashita<sup>\*</sup>

Graduate school of Materials Science, Nara Institute of Science and Technology, Nara, Japan

<sup>\*</sup>Advanced Technology Research Labs., Matsushita Electric Industrial, Japan

**7.6:** 12:10 - 12:25 **Low-Temperature Solid-Phase Crystallization of Amorphous SiGe Films on Glass by Imprint Technique**

K. TOKO, H. KANNO, A. KENJO, T. SADOH, T. ASANO and M. MIYAO

Department of Electronics, Kyushu University, Fukuoka, JAPAN

**7.7:** 12:25 - 12:50 (Invited) **Source-Gated Thin-Film Transistors**

J. M. Shannon and F. Balon

Advanced Technology Institute, University of Surrey, United Kingdom

12:50 - 14:00 Lunch

## Session 8: Displays and circuits

(14:00 - 15:10) (Session Chairman: F.Templier)

### 8.1: 14:00 - 14:25 (Invited) **Novel Mobile TFT-LCDs Based on SLS Technology**

C.W. Kim, J.B. Choi, K.C. Moon, J.H. Eom, R. Yokoyama, K.C. Park  
Mobile Display Business Team, LCD Business, Samsung Electronics Co., LTD

8.2: 14:25 - 14:40

### **LTPS-TFT process for AMOLED-displays**

E. Persidis, H. Baur, R. Hlawatsch, F. Pieralisi, P. Sschalberger, N. Fruehauf  
Chair of Display Technology, Universität Stuttgart, Germany

8.3: 14:40 - 14:55

### **A new LTPS-TFT pixel for AMOLED to suppress the hysteresis effect on OLED current by employing a reset voltage driving**

Jae-Hoon Lee, Sang-Myeon Han, Sang-Geun Park, Yong-Hoon KIM and Min-Koo HAN

School of Electrical Engineering #50, Seoul National University, Seoul, Korea

### 8.4: 14:55 - 15:10 **Suppression of TFT leakage current effect on active matrix displays by employing a new circular Switch**

Jae-Hoon Lee, Hyun-Sang Park, Sang-Myeon Han, and Min-Koo Han  
School of Electrical Engineering Seoul National University, Seoul, Korea

15:10 - 15:25 Coffee Break

## Session 9: Polysilicon TFTs (2)

(15:25 - 16:40)(Session Chairman: G. Fortunato)

9.1: 15:25 - 15:40

### **Grain Boundary characterisation in Sequentially Laterally Solidified Polycrystalline-Silicon Thin Film Transistors**

A Valletta, A Bonfiglietti, M Rapisarda, L Mariucci, A Pecora, G Fortunato, and S D Brotherton\*

IFN-CNR, Via Cineto Romano 42, Roma 00156, Italy

\*TFT Consultant, 12 Riverside, Forest Row, RH18 5HB, UK

9.2: 15:40 - 15:55

### **Low temperature poly-Si TFT Flash memory with Si nano crystal dot**

K. Ichikawa, H. Yano, T. Hatayama, Y. Uraoka, T. Fuyuki, A. Tomyo\*, E. Takahashi\*, T. Hayashi\*, K. Ogata\*

Nara Institute of Science and Technology Nara, Japan

\*I NISSIN ELECTRIC CO., LTD. Kyoto, Japan

### 9.3: 15:55 - 16:10 **Low-cost poly-Si TFT with non-laser crystallization of amorphous silicon**

J. H. Oh, D. H. Kang, W. H. Park, K.W. Ahn, S.H. Park, J. H. Hur, J. Jang, Y.-J. Chang\*, J.-B. Choi\*, H.-K. Min\*, C.-W. Kim\*

Advanced Display Research Center and Department of Information display, Kyung Hee University, Seoul, Korea

\* Mobile Display Business Team, LCD Business, Samsung Electronics, Gyeonggi-Do, Korea

### 9.4: 16:10 - 16:25 **High Electrical Performance LTPS P-Type and N-Type Polycrystalline Silicon Thin-Film Transistors**

C. Caligiore, E. Fontana, S. Leonardi, F. Tramontana  
STMICROELECTRONICS, Catania (Italy)

### 9.5: 16:25 - 16:40 **Improvement on Performance and Reliability of TaN/HfO<sub>2</sub> LTPS-TFTs with Fluorine Implantation**

Ming-Wen Ma, Tsung-Yu Yang\*, Kuo-Hsing Kao\*, Tien-Sheng Chao\*, and Tan-Fu Lei

Institute of Electronics, National Chiao Tung University, Taiwan, R.O.C

\* Inst. and Dept. of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan

## SID-MEC General Meeting

Eliav Haskal (Philips Research) chaired the SID-MEC general meeting, where the status of the chapter was reported, and the election of the officers of the SID-ME chapter for the coming period took place. Gerrit Oversluizen was abdicating as vice-chair. Armin Wedel (Fraunhofer IAP) was the nominated new vice-chair. The other officers volunteered to run for another term, and the proposed candidates were elected unanimously. The new Chapter committee is now composed as follows: Patrick Vandenberghe (Chair), Armin Wedel (Vice-Chair), Herbert De Smet (Secretary), Jutta Rasp (Treasurer). SID-MEC membership: with 555 members in January 2007, the SID-ME chapter has lost 10% compared to January 2006. This is primarily due to the expiration of the Eurodisplay'05 memberships. Overall, the membership is fairly constant over a period of 3 years. SID-ME has 8.2% of all 6747 SID members and is now the third largest chapter, after Japan (1130) and Bay Area (585) and before Korea (525). The 110 participants of this joint SID-MEC'07 spring meeting/ITC'07 meeting show that SID-MEC meetings continue to attract a high attendance.

Jutta Rasp could unfortunately not attend the meeting; hence the presentation of the financial status is postponed until the next general meeting.

This year's student award was cancelled; see below.

Also the upcoming meetings were announced. There will be no Fall'07 SID-MEC meeting; but there will be an officers' meeting during the Eurodisplay'07 Conference (17-20 September 2007, Moscow). The SID-MEC Spring'08 meeting will be held from 13-14 March 2008 in Jena at the Fraunhofer IOF.

## Conference dinner

The SID-MEC/ITC'07 conference dinner event took place on the 25th evening at the Restaurant Roof Garden "Les Etoiles". This restaurant offers a beautiful panorama over Rome with views of St Peter's.

The view from this roof-garden restaurant near the Vatican was magnificent, and the menu was excellent. The restaurant was decorated with wonderful wall tapestry, elegant furniture and exclusive interior.



*Inside impression of "Les Etoiles"*

The banquet on the SID-MEC/ITC'07 conference offered the possibility to discuss the topics of the conference in a very family way.

### **SID-ME Chapter Student Award**

Unfortunately, the award session was cancelled. The award committee decided not to grant this year's award because the application number was low and their quality considered insufficient. One of the causes may be the early date of the meeting, and possibly also the awareness of this award in the SID-MEC community can be improved. We trust that this will be a one off case. SID-MEC will continue promotion of this event and next year's award will be grant-



*View of S. Peter's from the Roof Garden "Les Etoiles"*

ed at the SID-MEC Spring Meeting in Jena. The submission deadline is February 1, 2008; see also the announcement below.

### **Closing remarks**

Focused in topic but distributed with respect to the geographical and cultural origin of the participants this meeting's atmosphere was creative and stimulating new experiences. The magic of ancient Rome added yet another success factor to the mix. Thus this joint event of the SID-ME chapter with ITC'07 turned out very successful with visitors already longing for the next chance to meet again.

*Gerrit Oversluizen and Armin Wedel*

## **Coming Events:**

### **Eurodisplay'07**

**Russian Academy of Sciences, Moscow,  
17-20 September, 2007**

**Visit the website for latest information: access via  
[www.sid.org/conf/eurodisplay2007/flyer.pdf](http://www.sid.org/conf/eurodisplay2007/flyer.pdf)**

### **SID MEC Spring'08 Meeting**

**13-14 March 2008,**

**Fraunhofer IOF, Jena, Germany**

**Special Topics: Microdisplays, Applications, and Optics**

**Visit the website for latest information: access via  
<http://www.iof.fraunhofer.de/sid>.**



## SID-ME Chapter committee

The SID-ME Chapter committee is now formed by:

*Ing. P.Vandenberghe* (chair), Barco, Pres. Kennedypark 35,  
B8500 Kortrijk, Belgium.

Tel.: +32 56 233216, Fax: +32 56 232279

E-mail: [patrick.vandenberghe@barco.com](mailto:patrick.vandenberghe@barco.com)

*Dr. A. Wedel* (vice-chair), Fraunhofer Institute for Applied Polymer  
Research, Geiselbergstrasse 69, Potsdam, Germany,

Tel.: +49 3315681910, Fax: +49 331 5683910,

E-mail: [armin.wedel@iap.fraunhofer.de](mailto:armin.wedel@iap.fraunhofer.de)

*Prof.Dr. H. De Smet* (secretary), Ghent University, Technologiepark  
914 A, B-9052 Zwijnaarde, Belgium,

Tel.: +32 9 264 5363, Fax: +32 9 264 5374,

E-mail: [herbert.desmet@elis.ugent.be](mailto:herbert.desmet@elis.ugent.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](mailto:jutta.rasp@fpdisplays.com)

## Additional members of the SID ME Chapter committee are:

*Dr.-Ing.N.Frühaufl* (directordirector SID-ME chapter), Universität  
Stuttgart, Allmandring 3B, D-70550 Stuttgart-Vaihingen, Germany,

Tel.: +49 711 685 66922,

Fax: +49 711 685 66924.

E-mail: [norbert.fruehauf@lfb.uni-stuttgart.de](mailto:norbert.fruehauf@lfb.uni-stuttgart.de)

*Lic.Tech.J.Kimmel*, 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](mailto:jyrki.kimmel@nokia.com)

*Dr.G. Oversluizen*, Philips Research, Prof. Holstlaan 4, 5656 AA, Eindhoven,  
The Netherlands, Tel.: +31 40 2747715, Fax: +31 40 2746321,

E-mail: [gerrit.oversluizen@philips.com](mailto:gerrit.oversluizen@philips.com)

*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](mailto: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](mailto:werner.becker@merck.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](mailto: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](mailto:dietmar.theis@siemens.com)

*Dipl.Ing. F. Rochow*, 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](mailto:rochow@lmt-berlin.de)

*Prof.Dr. A. van Calster*, Ghent University, Technologiepark 914 A, B-9052  
Zwijnaarde, Belgium,

Tel.: +32 9 2645364, Fax: +32 9 264 5374,

E-mail: [vancalster@elis.ugent.be](mailto:vancalster@elis.ugent.be)

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## 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](http://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 70 **with all bank fees covered by the member !**

Please note that due to the change in the US dollar/Euro exchange rate SID-MEC has re-evaluated the membership fee. 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 indicate your name on the remittance papers.**

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## 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 6321,

E-mail: [gerrit.oversluizen@philips.com](mailto:gerrit.oversluizen@philips.com)

# SID-ME Chapter Student Award

## Call for SID-ME Chapter Student Award

The SID-ME Chapter Student Award is given for an outstanding scientific or technical achievement in, or contribution to, research on information display. The applicant is a student at a university/institute in the SID-ME region. The award amounts to 1500 Euro, with the obligation to present the contribution at the SID-MEC meeting where the award is presented. The conference fee is waived. The applicant must be a member of SID. For information on student membership, see below. The application deadline for the Spring'08 meeting in Jena is February 1, 2008

## Application for SID-ME Chapter Student Award

**Name:** \_\_\_\_\_

**SID Membership No.:** \_\_\_\_\_

**Institute/University:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Title of contribution:** \_\_\_\_\_

**Abstract (100- 150 words):** \_\_\_\_\_

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**References ( SID-ME member):** \_\_\_\_\_

The application should be submitted to the award committee consisting of:

Prof. Dr.-Ing. N. Frühauf, Universität Stuttgart, Allmandring 3B, D-70550 Stuttgart-Vaihingen, Germany, Tel.: +49 711 685 6922, Fax: +49 711 685 6924.

E-mail: [norbert.fruehauf@ifb.uni-stuttgart.de](mailto:norbert.fruehauf@ifb.uni-stuttgart.de)

Dr. G. Oversluizen, Philips Research, Prof. Holstlaan 4, 5656 AA, Eindhoven, The Netherlands, Tel.: +31 40 274 7715,

Fax: +31 40 274 6321.

E-mail: [gerrit.oversluizen@philips.com](mailto:gerrit.oversluizen@philips.com)

Prof. Dr. H. De Smet, Ghent University, Technologiepark 914 A, B-9052 Zwijnaarde, Belgium, Tel.: +32 9 264 5364,

Fax: +32 9 264 5374,

E-mail: [herbert.desmet@elis.ugent.be](mailto:herbert.desmet@elis.ugent.be)

### **SID Student Membership:**

At <http://www.sid.org> you find information on SID student membership. Note the favourable offer of \$5.00 per year for student members.