

EOS Conference on Frontiers in Electronic Imaging

June 18 - 19, 2007

Room 22, International Congress Centre Munich (ICM), Germany

General Chair: Peter Seitz, CSEM SA and University of Neuchatel (CH)

June 18: Sub-conference on Application Specific Image Sensors

Conference Chairs:

Abbas El Gamal, Stanford University (US); Boyd Fowler, Fairchild Imaging (US)

10:30 **Welcome and introduction**
Peter Seitz, CSEM SA and University of Neuchatel (CH)
Abbas El Gamal, Stanford University (US)
Boyd Fowler, Fairchild Imaging (US)

Keynote talk

10:35 **Frontiers in Imaging**
Albert J.P. Theuwissen, DALSA BV and Delft University of Technology (NL)

Application specific image sensors I

11:15 **High-quality Imaging System with CMOS Image Sensor and the Application of Digital Still Imaging: CLAIRVOYANCE [Invited Talk]**
Hirofumi Sumi, Kazuhiro Hoshino and Noriyuki Yamashita, Sony Corporation (JP)

11:45 **Intra-Frame techniques for High Dynamic Range on CMOS image sensors**
Monica Vatteroni, Daniele Covi, Alvise Sartori, NeuriCam S.p.A. (IT); David Stoppa, ITC-irst (IT)

12:00 **A wide dynamic range CMOS image sensor with RWB color filter array**
Juseop Park, Gunhee Han, Yonsei University (SC)

12:15 **Miniature CMOS Image Sensors for Endoscopy**
Christine Harendt, Daniel Brosch, Joachim Burghartz, Thorsten Engelhardt, Heinz-Gerd Graf, Cor Scherjon, IMS-Chips (DE); Markus B. Schubert, Universität Stuttgart (DE)

12:35 - 14:30 **Lunch Break**

Application specific image sensors II

14:30 **Thin Film on CMOS Active Pixel Sensor for Space Applications**
J.D. Schulze Spüntrup, J. Burghartz, H.G. Graf, C. Harendt, F. Hutter, M. Nicke, Institut für Mikroelektronik (DE); M.B. Schubert, Universität Stuttgart (DE); U. Schmidt, J. Sterzel, Jena-Optronik GmbH (DE)

14:45 **CMOS Silicon-On-Insulator Technology: An Alternative for NIR Quantum Efficiency Enhanced CMOS Imaging Pixel Detectors**
D. Durini, K. E. Enowbi, University Duisburg-Essen/Fraunhofer IMS (DE); W. Brockherde, B. Hosticka, Fraunhofer IMS (DE)

15:00 **Flexible, polymer-based light sensor arrays on active-matrix backplanes fabricated by digital inkjet printing**
Tse Nga Ng, W. S. Wong, R. A. Lujan, R. B. Apte, M. L. Chabiny, and R. A. Street, Palo Alto Research Center (US)

15:15 **MTF characterisation analysis of three different types of BLF**
Xunjun Qi, Bin Lin, Xiangqun Cao, Zhejiang University (HK)

15:30 - 16:00 **Coffee break**

Application specific image sensors III

16:00 **Focal-Plane Image Processing with Neuromorphic Vision Systems [Invited Talk]**
Ralph Etienne-Cummings, Johns Hopkins University (US)

16:30 **Prototype low cost, high speed pyramid wavefront sensors using a custom CMOS sensor**
K. N. Modha, I.M. Stockford, M. Clark, R.A. Light, B.R. Hayes-Gill, and M.C. Pitter, University of Nottingham (GB)

16:45 **Strategies for high resolution functional defect recognition on laterally large extended micromechanical and micro optical objects**
T. Wiesendanger, J. Regin, J. Zimmermann, O. Sawodny, E. Westkämper, W. Osten, Universität Stuttgart (DE)

17:00 **High Performance CMOS Image Sensor for Scientific Applications**
Boyd Fowler, Chiao Liu, Hung Do, Steve Mims, and Dan Laxson Fairchild Imaging (US)

18:00 **End**

18:15 **Get-together for all congress attendees and exhibitors**
Location: ICM

June 19: Sub-conference Single-Photon Imaging

Conference Chair: Edoardo Charbon, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)

Single-Photon Imaging

09:00 **Welcome and introduction**
Peter Seitz, CSEM SA and University of Neuchatel (CH); Edoardo Charbon, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)

09:05 **Geiger-mode avalanche diodes and transistors in CMOS Technology [Invited talk]**
Radivoje S. Popovic, Zhen Xiao, Marc Lany, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)

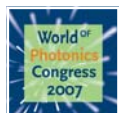
09:35 **Single-Photon imaging with Avalanche Photodiode arrays**
S.Tudisco, S.Privitera, F.Musumeci, L.Lanzano, A.Scordino, INFN-Laboratori Nazionali del Sud and DMFCI - Università di Catania (IT); G.Fallica, M.Mazzillo, D.Sanfilippo, G.Valvo, ST-Microelectronics (IT)

09:50 **Single-Photon Avalanche Diode Arrays for counting and Imaging**
F. Zappa, S. Tisa, S. Cova, Politecnico di Milano (IT); P. Maccagnani, CNR-IMM Seyione di Bologna (IT); D. Bonaccini, A. Silber, ESO European Southern Observatory (DE)

10:05 - 10:35 **Coffee break**

Applications Based on Single-Photon Detection

10:35 **A 1 Mfps CCD image sensor with sub-ten-photon sensitivity [Invited Talk]**
T. G. Etoh, C. Vo Le, N. Otsuka, P. Karimov, T. Akino, K. Nishi, and K. Takehara, Kinki University (JP)



Advance Program & Early-Bird Registration

EOS Conference on **Frontiers in Electronic Imaging**

June 18 - 19, 2007 / Room 22, International Congress Centre Munich (ICM), Germany

June 19: Sub-conference on Single-Photon Imaging

- 11:05 **A 2-D Time Resolved Photon Counting Imager in 0.35µm Technology**
Bruce R. Rae, David Renshaw, Robert Henderson, The University of Edinburgh (GB); Edoardo Charbon, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)
- 11:20 **A versatile photon counting board converter used to connect a Geiger-mode APD to a scanning near-field optical microscope**
J. Canet-Ferrer, J. Martínez-Pastor, R. García-Calzada, Universitat de Valencia (ES)
- 11:35 **CMOS Single Photon Sensors for Bioimaging**
M. Gersbach, C. Niclass, D. Boiko, C. Petersen, and E. Charbon, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)
- 12:05 - 14:30 **Lunch Break**
- 17:35 **Multi-wavelength digital holography for full colour 3D Imaging**
L. Miccio, S. Grilli, D. Alfieri, P. Ferraro, Istituto Nazionale di Ottica Applicata del CNR (IT); S. De Nicola, A. Finizio, Istituto di Cibernetica "E. Caianiello" del CNR (IT); B. Javidi, University of Connecticut (US)
- 17:50 **Image Registration and Calibration aspects for a new 2D / 3D camera**
O. Lottner, K. Hartmann, W. Weihs, O. Loffeld, University of Siegen (DE)
- 18:05 **End**
- 18:10 **Happy-hour for all attendees of the World of Photonics Congress 2007**
Location: ICM

June 19: Sub-conference on High-Performance 3D Imaging

Conference Chair:
Shoji Kawahito, Shizuoka University (JP)

Range Imaging Devices

- 14:30 **Welcome and introduction**
Peter Seitz, CSEM SA and University of Neuchatel (CH); Shoji Kawahito, Shizuoka University (JP)
- 14:35 **Time of Flight 3D Imagers in CMOS Technologies [Invited Talk]**
A. Simoni and D. Stoppa, Istituto per la Ricerca Scientifica e Tecnologica (ITC-irst) (IT)
- 15:05 **The history of optical time-of-flight techniques for 3D imaging**
P. Seitz, CSEM SA and University of Neuchatel (CH)
- 15:20 **Range Imaging based on CCD/CMOS Lock-In Pixels: From Past to Future**
B. Büttgen, T. Oggier, M. Lehmann, M. Schweizer, M. Richter, J. Pedersen, J. Lewis, MESA Imaging AG (CH)
- 15:35 **A Time-of-Flight range image sensor with an improved ambient light charge draining structure**
Tomonari Sawada, Shoji Kawahito, Masakatsu Nakayama, Kana Ito, Izhal Abdul Halin, Shizuoka University (JP); Mitsuru Homma, Takeo Ushinaga, Sharp Corporation (JP), Yasunari Maeda, Suzuki Motor Corporation (JP)
- 15:50 **Noise Considerations for a 64x8 Pixel CMOS Time Of Flight Range Sensor**
O. Elkhallil, W. Brockherde, B.J. Hosticka, O.M. Schrey and W. Ulfing, Fraunhofer Institute of Microelectronic Circuits and Systems (DE)

16:05 - 16:35 **Coffee break**

3D Imaging Systems

- 16:35 **High speed imagers for real-time range-map finders by triangulation and calibration method of camera and projector parameters [Invited Talk]**
Kunihiro Asada, Yusuke Achide, Makoto Ikeda, Univ. of Tokyo (JP)
- 17:05 **Virtual Keyboard System based on 3D Ranging Camera**
Huan Du, Edoardo Charbon, Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH)
- 17:20 **Smart pixel array for the simultaneous detection of phase and amplitude envelope, enabling real-time nanometer-precision OCT**
St. Beer, CSEM SA (CH); Y. Delley, Heliotis AG and ETH, Federal Institute of Technology (CH); P. Seitz, CSEM SA, Heliotis AG and University of Neuchatel (CH)

Registration

The registration for this EOS Conference includes admission to all conferences of the World of Photonics Congress 2007 and to the Laser 2007 exhibition. Please use the registration fax form (see next page) or register through the secure EOS online shop.

→ www.myeos.org/shop

+++ The deadline for early-bird registration is 8 June 2007. +++

June 17: Presentation of the MONA Nanophotonics Technology Roadmap

15.00 - 18.00
Presentation of the MONA Nanophotonics Technology Roadmap



The MONA project is building a European roadmap for photonics and nanotechnologies. This session will present the background of the process and the people involved. It will give an overview of the highlights of the roadmap, with time set aside for discussion of the next steps.

The final presentation of the MONA project will be held on June 17 within the scope of the **EOS Conference on Trends in Optoelectronics** (June 17 - 19; room: 21, International Congress Center Munich (ICM); Germany). The presentation is open to all attendees of this EOS Conference or of any other conference held under the umbrella of the World of Photonics Congress 2007.

→ www.myeos.org/oe2007

→ www.ist-mona.org

More information

Travel and accommodation

Munich is situated in the centre of Europe and can be reached in the shortest possible time thanks to the excellent infrastructure.

More information you will find at the website of the World of Photonics Congress in the menu "getting there and accommodation".

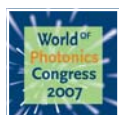
→ www.photonics-congress.com

Invitation letters

If you need an invitation letter, please send an email with your complete address to Pamela Klages in the EOS Office (klages@myeos.org).

Contact

European Optical Society (EOS)
Silke Kramprich
Event & Account Management
Hollerithallee 8
D-30419 Hannover
Tel.: +49-511-2788-117
Fax: +49-511-2788-119
munich@myeos.org
www.myeos.org/munich



This EOS Conference is a part of the
18th International Congress on Photonics in Europe
co-located with LASER 2007. World of Photonics
www.photonics-congress.com

Cooperating organizations

SPIE Europe



Competence Networks for
Optical Technologies



Registration for the EOS Conferences at the World of Photonics Congress 2007

17 – 22 June 2007, Munich (International Congress Center), Germany

Please return this form by fax to:

+49 (0) 511 2788 119

or register online at

www.myeos.org/shop.

Contact

European Optical Society, Silke Kramprich, Hollerithallee 8, D-30419 Hannover, Phone: +49-511-2788-117
munich@myeos.org | www.myeos.org

Please tick off your preferred EOS Conference:

- EOS Conference on Trends in Optoelectronics (17 – 19 June 2007)
- EOS Conference on Frontiers in Electronic Imaging (18 – 20 June 2007)

The registration includes admission to all conferences held under the umbrella of the World of Photonics Congress 2007 (www.photonics-congress.com) and admission to the Laser.World of Photonics exhibition. The full-time registration fee includes one copy of the printed EOS Conference Digest.

Registration category	Early-bird (before 8 June 2007)	On-site
<input type="checkbox"/> Full member * **	440 €	510 €
<input type="checkbox"/> Non- member ** (includes an individual EOS membership for the year 2007)	550 €	630 €
<input type="checkbox"/> Student member * ** (Copy of student ID required)	95 €	135 €
<input type="checkbox"/> Student non-member ** (Copy of student ID required; includes an EOS student membership for the year 2007)	130 €	165 €
<input type="checkbox"/> One-day registration	190 €	240 €

* Member of: EOS EPS SPIE OSA IEEE WLT DGLM German Competence Networks for Optical Technologies (OpTech-Net, Bayern Photonics, Hanse Photonik, OpTecBB, PhotonicNet, Photonics BW, OptoNet, Optence, PhotonAix)

** one copy of the conference digest is included

Cancellation policy:
Requests for cancellation must be made in writing to the EOS Office (address see above). Refunds are subject to a processing fee of 50 €. Cancellations received by 31 May 2007: full refund minus processing fee (50 €). Cancellations received after 31 May 2007: no refund.

Name and address

Title First name Name

Company

Address

City Zip/Postal code Country

Telephone Fax

Email address

Credit card payment

Charge the amount in Euro to my: Mastercard VISA card Eurocard

Card No.: _____

Expiry Date: _____

Verification No.: _____
(The final 3-digit number located on the back of your credit card.)

Name of credit card holder: _____

Date and Signature: _____

Payment by bank transfer

I wish to pay by bank transfer, please send me the invoice and banking details.

The full registration fee must arrive at the EOS bank account before the start of the conference. Please note that all bank fees must be paid by the attendee.