ADL Analoge & Digitale Leistungselektronik GmbH
Advanced Energy Industries GmbH
Agilant Tachnologios GmbH & Co. KG
Applied Materials WER Costing CmbH
Propheret Ligh Tech P.V.
Bunier Alzenau GmbH
Carl Zeiss Spectroscopy GmbH
Cotec GmbH
DataPhysics Instruments GmbH
DrIng. K. Busch GmbH
Edwards Vacuum
European Society of Thin Films EFDS
Euris GmbH
FHR Anlagenbau GmbH
Fraunhofer Institute for Organic Electronics,
Electron Beam and Plasma Technology FEP
Fraunhofer Institute for Silicate Research ISC
Fraunhofer Institute for Surface Engineering
and Thin Films IST
Fraunhofor Photocatalysis Allianco
GfE Motallo und Matorialion GmbH / GfE Fromat GmbH
Class Performance Days CPD
Herzous Deutschland CmbH & Co. KC
Heraeus Deutschlahu Ghibh & Co. NG
Hitachi High-Technologies Europe GmbH
INPLAS e. V. – Network of Competence
Industrial Plasma Surface Technology
International Council for
Coatings on Glass ICCG e.V.
Isra Vision GmbH
J. Schneider Elektrotechnik GmbH
Kurt J. Lesker Company GmbH
LayTec in-line GmbH
MELEC GmbH
Messe Düsseldorf GmbH
m-u-t GmbH
NAGY Instruments-NAGY Messsysteme GmbH
Nova Fabrica Ltd.
Oerlikon Leybold Vacuum GmbH
OMT Solutions BV
Pfeiffer Vacuum GmbH
Plasmatreat GmbH
Plasus GmbH
robeko–Rolf Schäfer Beschichtungskomponenten
Saint-Gobain Coating Solutions
Sensirion AG
SENTECH GmbH
Sindhauser Materials GmbH
Singulus Technologies AG
Society of Vacuum Coaters SVC
Solavor GmbH
Solaras Advanced Coatings
CLIPACUS Cmbu
INDIVIER HULLINGER GMDH + CO. KG
W&L Coating Systems GmbH
VV. Theiss Hard- and Software



ICCG 11

Program MONDAY, JUNE 13 TUESDAY, JUNE 14

The 11th International Conference on Coatings on Glass and Plastics

Conference Center Stadthalle Braunschweig, Germany www.iccg.eu

Organized by International Organizing Committee of ICCG Fraunhofer Institute for Surface Engineering and Thin Films IST



Monday, June 13

08:30 a.m. - 09:00 a.m. **Opening-Welcome address**

Introductory Session–Market and Business in the Field of Coatings on Glass and Plastics

Chairmen: K. Suzuki, J. Vitkala

09:00 a.m. - 09:30 a.m. Challenges for automotive glazing J. Leohold, Volkswagen AG, Germany

09:30 a.m. - 10:00 a.m. Architect's dream list C. Timm, Skidmore, Owings & Merrill LLP, New York, USA

Coffee break

10:00 a.m. – 10:30 a.m.

10:30 a.m. – 11:00 a.m. Ultra-thin glass and its applications A. Saeki, Nippon Electric Glass Co., Ltd., Shiga, Japan

11:00 a.m. – 11:30 a.m. Advanced R2R manufacturing of printed, organic, flexible electronics S. G. Stan, VDL Enabling Technology Group, Eindhoven, The Netherlands

11:30 a.m. - 12:00 p.m. Organic solar films from vacuum roll-to-roll manufacturing for building-integrated photovoltaics M. Pfeiffer, Heliatek GmbH, Dresden, Germany

12:00 p.m. – 12:30 p.m.

Market and business prospects on batteries I. Cerri, Toyota Motor Europe – Advanced Technology, Zaventem, Belgium

Lunch break Sponsored by Bühler Alzenau 12:30 p.m. – 02:00 p.m.

02:00 p.m. - 02:30 p.m.

High-performance wet coatings on glass and plastics: history and new developments H. Schmidt, HSM TechConsult GmbH, Saarbrücken, Germany

02:30 p.m.-03:00 p.m.

Plasma medical science innovation towards a future therapy M. Hori, Nagoya University, Nagoya, Japan

03:00 p.m.-03:20 p.m.

Worldwide glass market and trends-executive summary from GPD 2015

J. Vitkala, GPD/Glaston Finland Oy, Finnland

Coffee break

03:20 p.m. – 03:50 p.m.

Session 1–Advanced Vacuum Processes

Chairmen: G. Bräuer, J. Strümpfel

03:50 p.m.-04:20 p.m. Keynote lecture Future of sputtering H. Barankova, Uppsala University, Uppsala, Sweden

04:20 p.m. -04:40 p.m.

Benefit of modern arc management in MF dual magnetron sputtering power supplies M. Heintze, TRUMPF Hüttinger GmbH + Co. KG, Freiburg, Germany

04:40 p.m.-05:00 p.m.

Large area co-sputtering: considerations for power and control D. Christie, Advanced Energy Industries, Inc, Fort Collins, CO, USA

05:00 p.m. - 05:20 p.m.

TiO2/AZO bilayer thin films by magnetron sputtering as transparent electrodes for electrochromic devices E. Gutierrez Berasategui, IK4-Tekniker, Research Centre, Guipuzkoa, Spain

05:20 p.m. - 05:40 p.m.

Low damage, low sputter voltage ITO layers via deposition from rotatable magnetrons D. Monaghan, Gencoa Ltd, Liverpool, United Kingdom

05:40 p.m.-06:00 p.m.

Excellent adhesion on plastics using HiPIMS

R. Bandorf, Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig, Germany

Industrial evening

06:00 p.m. – 08:30 p.m.

Tuesday, June 14

Session 2–Wet-chemical and Hybrid Processes

Chairmen: J. Pütz. G. Schottner

08:30 a.m. - 09:00 a.m. Keynote lecture Large area organic optoelectronic devices containing vacuum and solution processed layers U. Lemmer, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

09:00 a.m. - 09:20 a.m. Invited lecture

Various silica hybrid materials H. Goda, Arakawa Chemical Industries, Ltd., Tsukuba, Ibaraki, Japan

09:20 a.m. - 09:40 a.m.

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Wet-chemical deposited ITO thin films and their optoelectronic and microstructural properties R. Budakoglu, Türkiye Şişe ve Cam Fabrikaları A,Ş. İstanbul, Turkey

09:40 a.m.-10:00 a.m.

MgF2 antireflective coatings by sol-gel processing: preparation and performance

P. Löbmann, Fraunhofer Institute for Silicate Research ISC, Würzburg, Germany

10:00 a.m. – 10:20 a.m.

Coffee break

Combination of novel aerosol coating method and AR coating material to deliver superior quality of anti-reflective coating on solar cover glass

S. Tammela, Beneg, TFE, Espoo, Finland

10:20 a.m. – 11:00 a.m.

Session 3–ALD, CVD, and Atmospheric Plasma Processes

Chairmen: D. Sheel, K. Spee

11:00 a.m. – 11:30 a.m. Keynote lecture

Large area atmospheric ALD / MLD on flexible substrates S. Klotz, BASF Schweiz AG, Basel, Switzerland

11:30 a.m. – 11:50 a.m.

Spatial atomic layer deposition for large-area and flexible electronics P. Poodt, Holst Centre/TNO, Eindhoven, The Netherlands

11:50 a.m. – 12:10 p.m.

Atomic layer deposition of Al, Nb and Ti doped ZnO transparent conductive oxides S. Gurram, Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig, Germany

12:10 p.m. – 12:30 p.m.

Developments in plasma enhanced spatial ALD for high throughput applications Y. Creyghton, Solliance/TNO, Eindhoven, The Netherlands

12:30 p.m. – 12:50 p.m. Invited lecture

Roll-to-roll atmospheric pressure plasma CVD of SiO2 moisture barrier films

H. W. de Vries, FOM Institute Differ, Eindhoven, The Netherlands

Lunch break sponsored by Bühler Alzenau 12:50 p.m. – 02:20 p.m.

Session 4–Processes for Flexible Substrates

Chairmen: R. Shimshock, T. Kälber

02:20 p.m. – 02:50 p.m. Keynote lecture

Roll-to-roll processing for flexible devices and components utilized in wearable and mobile electronics and the coming IoT era N. Morrison, Applied Materials Web Coating GmbH, Alzenau,

Germany

02:50 p.m. - 03:10 p.m. Invited lecture

The road from S2S to R2R-status, risks and visions for processing ultra-thin glass

M. Junghähnel, Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Dresden, Germany

03:10 p.m. – 03:30 p.m.

Roll-to-roll coating of flexible glass-equipment and applications C. Deus, VON ARDENNE GmbH, Dresden, Germany

Coffee break

03:30 p.m.-04:10 p.m.

04:10 p.m. -04:30 p.m.

Flexible high gas barrier encapsulations for OLED and OPV modules K. Nagamoto, LINTEC Corporation, Saitama, Japan

04:30 p.m. - 04:50 p.m.

Roll-to-roll deposition of silicon nitride permeation barrier coatings using rotatable magnetrons

M. Fahland, Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Dresden, Germany

04:50 p.m. – 05:10 p.m.

Low-e coatings on ETFE films for membrane architecture C. Hildebrandt, Fraunhofer Institute for Solar Energy Systems ISE, Freiburg, Germany

05:10 p.m.-05:30 p.m.

Optical in-line metrology systems for defect detection and process control in web coating

H. Oerley, Dr. Schenk GmbH Industriemesstechnik, Planegg, Germany

Poster session

05:30 p.m.-07:00 p.m.

08:00 p.m. - 09:00 p.m. **Cathedral tour** Braunschweig Cathedral