

Final Program



**THE 8TH INTERNATIONAL
CONFERENCE ON
COATINGS ON GLASS
AND PLASTICS**

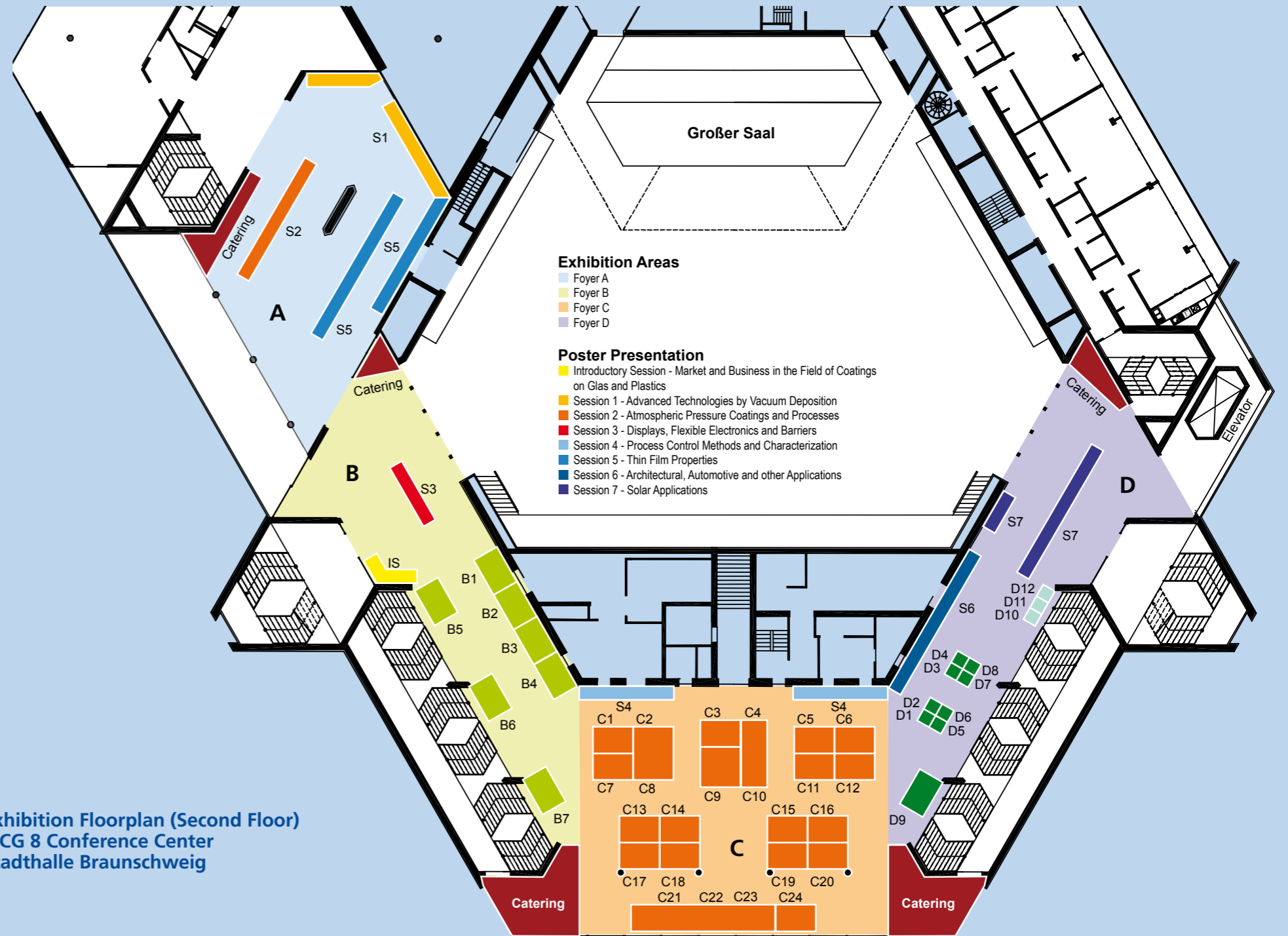
Advanced Coatings for Large-Area
or High-Volume Products

June 13-17, 2010

Conference Center
Stadhalle Braunschweig, Germany
www.iccg.eu

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





Exhibition Floorplan (Second Floor)
 ICCG 8 Conference Center
 Stadthalle Braunschweig

Welcome to the 8th ICCG

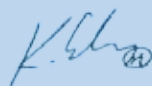
Following the last seven successful ICCG conferences, the 8th ICCG is being held on June 13-17, 2010 in Braunschweig, Germany. The focus of the conference is to bring together science and industry. Scientists, technologists, practitioners and managers will have the chance to discuss the latest trends in the field of coatings on glass and plastics. Besides universities and research institutes, the conference addresses coating manufacturers, material and equipment suppliers as well as all kinds of user industries. As a traditional city of science Braunschweig provides an inspiring platform for its guests. Not without reason, future topics have a long tradition in the City of the Lion.

The application of coatings on glass and plastics is an area which has become extremely important for large-area and/or high-volume products. Besides, since 2006 the ICCG focusses on the importance of coated plastics as alternative products to coated glass. Consequently, the name of the conference has been changed to the "International Conference on Coatings on Glass and Plastics".

The conference structure is very similar to that of previous conferences. On the Sunday afternoon before the conference itself, several educational lectures will be given by experts in the field to provide fundamental and technological background to specific conference topics. On the morning of the first day of the conference, an introductory session will provide market and business information and clarify future technical requirements. Topics in the following technical sessions will cover all of the steps and techniques required to make the final coated product, to control the coating process and to characterize the product. Specific applications, and new markets and trends will be another focus of the conference. The conference will also provide information about the different technologies at a general level for new product designers, as well as technical aspects, safety measures, and environmental and economic consequences. There will also be a panel discussion on "Large-Area Thin Films for Energy Efficiency".

Apart from the stimulating technological and scientific program, the conference site itself will be very interesting for the participants and will give many opportunities for discussions and networking within the international glass and plastic coatings community.

We look forward to seeing you in Braunschweig!



Dr. Koichi Suzuki



Prof. Günter Bräuer

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We thank all exhibitors and sponsors for their support
which in the first place made the ICCG conference possible in that scale.

8th ICCG - Supported by

- International Organizing Committee of ICCG
- Glasforum der Deutschen Glastechnischen Gesellschaft [Germany]
- Society of Vacuum Coaters - SVC [USA]
- The Japan Society of Applied Physics [Japan]
- The Electrochemical Society of Japan [Japan]
- The Ceramic Society of Japan [Japan]
- The Physical Society of Japan [Japan]
- Society of Glass Technology [UK]
- Glass Performance Days - GPD [Finland]

Related conferences

- **PSE 2010**, September 13 - 17, 2010, Garmisch-Partenkirchen [Germany]
- **glasstec**, September 28 - Oktober 1, 2010, Düsseldorf [Germany]
- **Glass Performance Days**, Tampere, 17 - 20 June 2011, Tampere [Finland]
- **54th SVC Annual Technical Conference**, April 16 – 21, 2011, Chicago [USA]

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Conference Office - Registration Desk 8th ICCG

The conference office of the 8th ICCG will be located in the entrance hall of the conference center Braunschweig. We will be delighted to provide you with any assistance required. During the registration opening hours you can reach us via +49 531 7077355-355.

Registration - Opening Hours

Sunday	June 13, 2010	12:00 p.m. – 06:30 p.m.
Monday	June 14, 2010	8:00 a.m. – 06:00 p.m.
Tuesday	June 15, 2010	8:00 a.m. – 06:00 p.m.
Wednesday	June 16, 2010	8:00 a.m. – 06:00 p.m.
Thursday	June 17, 2010	8:00 a.m. – 12:00 p.m.

Conference Fees

Short courses	240 €
Full conference	800 €
Day pass	400 €
Accompanying person	200 €
Students (full conference)	425 €
Students (presenting a paper)	200 €

1. All prices are quoted and payable in Euros [€].
2. Only students up to the age of 27 qualify for the student's fee [please e-mail or fax a copy of a valid student card and your ID to the conference office]. The local ICCG organization wants to encourage students to join the conference and to make an active contribution. Students presenting a paper will pay a conference fee of 200€.
3. The full conference pass does not include admission to the short courses.
4. The fee for the short courses on Sunday, June 13, includes a set of manuscripts and a coffee break.
5. Fees for the accompanying persons program have to be paid separately.

Sunday, June 13**Short Courses** *Chairmen: Dr. B. Szyszka, Dipl.-Ing. W. Diehl***Materials**

12:30 - 1:30 p.m. **Carrier Transport and Device Design for Oxide Semiconductors**
Prof. T. Kamiya, Tokyo Institute of Technology [Japan]

Process

1:30 - 2:15 p.m. **Roll-to-Roll Atmospheric Pressure Processes**
Dr. Juliane Gabel, Holst Centre / TNO [The Netherlands]

2:15 - 3:00 p.m. **Roll-to-Roll Vacuum Processes**
Dr. D. J. McClure, Acuity Consulting and Training [USA]

3:00 - 3:30 p.m. **Coffee Break**

Applications

3:30 - 4:30 p.m. **Solar Cells**
Dr. J. Müller, Manz Automation AG [Germany]

4:30 - 5:15 p.m. **Switchable Coatings**
Prof. Dr. C. G. Granqvist, Uppsala University [Sweden]

5:15 - 6:00 p.m. **Photocatalysis**
*Dr. R. Dillert, Institut für Technische Chemie,
Gottfried Wilhelm Leibniz Universität Hannover [Germany]*

6:00 - 6:30 p.m. **Coffee Break**

6:30 - 8:30 p.m. **Welcome Reception, Conference Center
Stadthalle Braunschweig**

Monday, June 14

8:30 - 9:00 a.m. Opening - Welcome Address

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

Chairmen: Dr. T. Oyama, J. Vitkala

9:00 - 9:45 a.m. Thin Films in Photovoltaics Technologies and Perspectives IS.1

*W. Hoffmann, Applied Materials GmbH & Co. KG [Germany]
European Photovoltaic Industry Association (EPIA), Renewable Energy House, Brussel [Belgium]*

9:45 - 10:15 a.m Deposition Methods to Manufacture CIS based PV Modules 7.01

B. Dimmler, Würth Elektronik Research GmbH / Würth Solar, Schwäbisch Hall [Germany]

10:15 - 11:00 a.m. Coffee Break

11:00 - 11:30 a.m. Dematerializing the Building Envelope - Facade Structures by Werner Sobek IS. 2

S. Feirabend, Werner Sobek Stuttgart GmbH & Co. KG, Stuttgart [Germany]

11:30 - 12:15 a.m. Mass Production of Optical Coatings Industry in China IS. 3

X. Liu, P. Gu and J. Tang, State Key Laboratory of Modern Optical Instrumentation, Zhejiang University, Hangzhou [China]

12:15 - 1:00 p.m. The Emerging Business of Organic LEDs in the Lighting Market IS.4

D. Bertram, Philips Technologie GmbH, Aachen [Germany]

01:00 - 2:30 p.m. Lunch

Session 1 **Advanced Technologies: Plasma and Ion Sources by Vacuum Deposition**

Chairmen: Prof. Dr. G. Bräuer, Dr. J. Strümpfel

2:30 - 3:00 p.m. Keynote Lecture	Challenges for Thin Film Technologies in Mass Production for Photovoltaics <i>J. Elsner, First Solar Manufacturing GmbH [Germany]</i>	1.01
3:00 - 3:20 p.m.	High Rate Deposition of High Quality Transparent Conductive Oxide Films by Reactive Magnetron Sputtering Using Alloy Targets <i>N. Oka, Y. Shigesato, Graduate School of Science and Engineering, Aoyama Gakuin University, Kanagawa [Japan]</i>	1.02
3:20 - 3:40 p.m.	Improving Aluminum Doped Zinc Oxide Films by Minimizing Negative Ion Damage <i>A. Anders¹, J. Brown², S. Lim¹, R. Mendelsberg¹, L. Gontijo¹, K. Man Yu¹, M. Field³</i> ¹ Lawrence Berkeley National Laboratory, Berkeley, [USA] ² Acree Technologies Inc., Concord, California [USA] ³ School of Applied Sciences, RMIT, Melbourne [Australia]	1.03
3:40 - 4:00 p.m.	Plasma-Aided PVD Process for Antireflection Layer <i>P. Weiss, J. Häderle, Blösch AG, Optical Coating, Grenchen [Switzerland]</i>	1.04

4:00 - 4:30 p.m. Coffee Break

4:30 - 4:50 p.m.	Rotatable Target Serial Co-Sputtering – A New Core Technology for Industrial Large Area Glass Coating? <i>B. Szyszka¹, M. Austgen², G. Bräuer¹, U. Bringmann¹, L. Herlitze³, W. Herwig³, S. Jung¹, A. Kaiser¹, D. Köhl², A. Pflug¹, A. Polle³, V. Sittinger¹, S. Ulrich¹, M. Vergöhl¹, H. Weis², W. Werner¹, M. Wuttig²</i> ¹ Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany] ² Physikalisches Institut (IA) der RWTH, Aachen [Germany] ³ Interpane Entwicklungs- und Beratungsgesellschaft, Lauenförde [Germany]	1.05
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Monday, June 14

4:50 - 5:10 p.m. **Sintered Ceramic Rotary ITO and AZO Targets for Large Area Glass Coating - An Opportunity to Increase Productivity and Lower Cost** **1.06**

P. Lippens¹, M. Stolze²,

¹ Umicore Thin Film Products [Belgium]

² Umicore Thin Film Products, Balzers [Liechtenstein]

5:10 - 5:30 p.m. **Large-Area Fabrication of Stochastic Nano-Structures on Polymer Webs by Ion- and Plasma Treatment** **1.07**

W. Schönberger¹, G. Gerlach¹, M. Fahland², P. Munzert³, U. Schulz³

¹ Technische Universität Dresden, Electrical and Computer Engineering Department, Solid-State Electronics Lab, Dresden [Germany]

² Fraunhofer Institute for Electron Beam and Plasma Technology FEP, Dresden [Germany]

³ Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Jena [Germany]

05:30 - 6:30 p.m. **Poster Presentation**

Tuesday, June 15

Session 2 **Atmospheric Pressure Coatings [CVD, Wet Chemical Processing]**
Chairmen: Dr. J. Pütz, Prof. D. Sheel

8:30 - 9:00 a.m. **Atmospheric Pressure Plasma Vapour Coatings** **2.01**

Keynote Lecture

M. C. M. van de Sanden², S. Starostin^{1,2,3},

P. Antony Premkumar^{1,2}, M. Creator¹, H. de Vries³

¹ Eindhoven University of Technology, Appl. Phys, Eindhoven [The Netherlands]

² Materials Innovation Institute (M2i), Delft [The Netherlands]

³ FUJIFILM Manufacturing Europe BV, Tilburg [The Netherlands]

9:00 - 9:20 a.m.	Deposition of Zinc Oxide Using an Atmospheric Low Temperature Plasma Process	2.02
	<i>M. Theelen, H. Winands, S. Kouijzer, J. van Deelen, A. de Graaf, P. Poodt, TNO Science and Industry, dept. Multilayer Devices and Coatings, Eindhoven [The Netherlands]</i>	
9:20 - 9:40 a.m.	New Coating Technology for Producing In-line TCO-Glass	2.03
	<i>J. Pimenoff, E. Seppäläinen, Beneq, Vantaa [Finland]</i>	
9:40 - 10:00 a.m.	Biocidal Silica / Silver Films by Atmospheric Pressure Chemical Vapour Deposition	2.04
	<i>D. W. Sheel¹, H. Foster², P. Evans¹, D. Massey¹, P. Youngson¹, J. Hodgkinson¹,</i>	
	¹ Functional Materials Research, University of Salford University, Manchester [United Kingdom]	
	² Biomedical Sciences Research, University of Salford, Salford [United Kingdom]	
10:00 - 10:30 a.m.	Coffee Break	
10:30 - 10:50 a.m.	Design of Wet-AR Coating Using Functional Nanoparticles	2.05
Invited Lecture	<i>Y. Ishihara, H. Ito, S. Murai, JGC Catalysts and Chemicals Ltd., Fine Chemicals Research Center, Kitakyushu-shi [Japan]</i>	
10:50 - 11:10 a.m.	Carbon Nanotube Multiscale Composites for Transparent Conductive Films	2.06
	<i>I. Kolaric, Fraunhofer Institute for Production and Automation IPA, Process Engineering of Functional Materials, Stuttgart [Germany]</i>	
11:10 - 11:30 a.m.	IR - Optical and Structural Characterization of Sol-Gel Deposited TCO Coatings	2.07
	<i>M. Rydzek, M. Reidinger, M. Arduini-Schuster, J. Manara Bavarian Center for Applied Energy Research (ZAE Bayern), Division: Functional Materials for Energy Technology, Würzburg [Germany]</i>	

Tuesday, June 15

11:30 - 11:50 a.m. Electroplating of Electrical Circuitry on Optoelectronic Windows for Thin Film Solar Cells on Foil 2.08

A. Hovestad¹, H. Rendering¹, M. Peter², E. R. Meinders²

¹ TNO Science & Industry, Department of Multilayer Devices and Coatings, Eindhoven [The Netherlands]

² Holst Centre, TNO Science & Industry, Eindhoven, [The Netherlands]

11:50 - 1:00 p.m. Lunch
Session 3 Displays, Flexible Electronics and Barriers

Chairmen: R. Shimshock, C.I.M.A. Spee

1:00 - 1:30 p.m. Flexible OLEDs for Lighting 3.01
Keynote Lecture

Dr. A.M.B. T. van Mol, Holst Center/TNO [The Netherlands]

1:30 - 1:50 p.m. Technology and Equipment for Roll-to-Roll-Processing of Small Molecule OLEDs for Lighting Applications 3.02

C. Deus¹, J. Richter¹, H. Gross¹, S. Mogck², C. May², T. Wański²

¹ VON ARDENNE Anlagentechnik GmbH, Dresden [Germany]

² Fraunhofer Institute for Photonic Microsystems IPMS – Center of Organic Materials and Devices Dresden, Dresden [Germany]

1:50 - 2:10 p.m. New Perspectives in Pharmaceutical Packaging: Barrier Coatings and Beyond 3.03
Invited Lecture

T. Kaelber, M. Bicker, SCHOTT AG, Mainz [Germany]

2:10 - 2:30 p.m. All-in-Vacuum Deposited Transparent Multilayer Barriers on Polymer Substrates 3.03

J. Fahlteich, S. Barth, M. Fahland, N. Schiller, Fraunhofer

Institute for Electron Beam and Plasma Technology FEP, Dresden [Germany]

2:30 - 2:50 p.m. High Performance Low Cost ALD Moisture Barrier Films 3.05
R. Törnqvist¹, N. Isomäki¹, S. Sneek¹, P. Soininen¹, J. Meyer², T. Riedl², H. Schmidt², W. Kowalsky²,
¹ Beneq, Vantaa [Finland]
² TU Braunschweig, Institute of High-Frequency Technology IHF, Braunschweig [Germany]

2:50 - 3:10 p.m. Plasma Enhanced Chemical Vapor Deposition (PECVD) of SiO₂ and TiO₂ for Large Area Applications 3.06
J. Madocks, W. Seaman, M. A. George, Q. Shangguan, General Plasma, Tucson [USA]

3:10 - 3:30 p.m. Opportunities and Challenges in Flexible Electronics 3.07
Dr. D. J. McClure, Acuity Consulting and Training, Siren [USA]

3:30-4:00 p.m. Coffee Break

Session 4 Process Control Methods and Characterization
Chairmen: Dr. K. Makita, Dr. G. Schottner

4:00 - 4:30 p.m. Optical Mapping and Imaging for Quality Control of Thin Films and Surfaces 4.01
Keynote Lecture
U. Beck, J. Baier, A. Hertwig, M. Sahre, R. Stephanowitz, M. Weise, BAM, Berlin [Germany]

4:30 - 4:50 p.m. Film Structure Modification by Inductively Coupled Plasma Assistance in Conventional and Pulsed Magnetron Sputtering 4.02
Invited Lecture
E. Kusano, Kanazawa Institute of Technology, Hakusan [Japan]

4:50 - 5:10 p.m. Optical Quality Assurance and Process Control of Thin Film Solar Modules 4.03
H. Oerley, Dr. Schenk GmbH Industriemesstechnik, Planegg/Munich [Germany]

Tuesday, June 15

5:10 - 5:30 p.m **Development of Ga-doped ZnO Transparent Electrode for Liquid Crystal Display Panels** **4.04**

N. Yamamoto¹, H. Makino¹, S. Osono¹, A. Ujihara², H. Hokari³, T. Maruyama⁴, T. Yamada¹, T. Yamamoto¹

¹ Research Institute, Kochi University of Technology, Kochi [Japan]

² Research and Development Center, Geomatec Co., Ltd., Tokyo [Japan]

³ Electronic Device Division, CASIO Computer Co., Ltd., Tokyo [Japan]

⁴ Electronic Chemicals Department, Mitsubishi Gas Chemical Co, Inc., Tokyo [Japan]

5:30 - 5:50 p.m **Applied PIC-MC Simulation for Process Analysis and Development** **4.05**

M. Siemers, A. Pflug, C. Schwanke, B. Szyszka,
Fraunhofer Institute for Surface Engineering and Thin Films IST,
Braunschweig [Germany]

5:50 - 6:10 p.m **Improvements in Productivity and Control for Transparent Conductive Oxides** **4.06**

M. Audronis¹, V. Bellido-Gonzalez¹, M. Holik¹, B. Daniel¹, D. Monaghan¹, S. Williams²

¹ Gencoa Ltd, Liverpool [UK]

² Gencoa, San Francisco [USA]

6:30-8:30 p.m. **Reception by the Mayor and Poster Session, Braunschweig**

Wednesday, June 16

Session 5**Thin Film Properties***Chairmen: Prof. A. Roos, Prof. H.-K. Pulker*

- | | | |
|---|--|-------------|
| 8:30 - 9:00 a.m.
Keynote Lecture | Ion Beam Sputtering - State of the Art and Industrial Application
<i>D. Ristau^{1,2}</i>
¹ Laser Zentrum Hannover e.V., Department of Thin Film Technology, Hannover [Germany]
² QUEST: Centre of Quantum Engineering and Space-Time Research, Hannover [Germany] | 5.01 |
| 9:00 - 9:20 a.m.
Invited Lecture | Optical Thin Films
<i>N. Kaiser, T. Feigl, Ch. Präfke, U. Schulz, O. Stenzel</i>
Fraunhofer Institute for Applied Optics and Precision Engineering, Jena [Germany] | 5.02 |
| 9:20 - 9:40 a.m. | Comparison of Self-Cleaning Properties of Three Titania Coatings on Float Glass
<i>M. Piispanen, L. Hupa, Åbo Akademi University, Process Chemistry Centre, Turku [Finland]</i> | 5.03 |
| 9:40 - 10:00 a.m. | Measurement of the Photocatalytic Activity of TiO₂ Films Deposited by Different Methods
<i>M. Vergöhl, H. Althues, P. Frach, D. Glöb, T. Graumann, C. Hübner, F. Neumann, T. Neubert, G. Schottner, D. K. Song</i>
Fraunhofer Photocatalysis Alliance, c/o Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany] | 5.04 |
| 10:00 - 10:30 a.m. | Coffee Break | |
| 10:30 - 10:50 a.m. | Effects of Hydrogen Doping on Ga-Doped ZnO Thin Films Prepared by DC Magnetron Sputtering
<i>D. H. Kim, H. B. Kim, G. H. Lee, Functional Coatings Research Group, Korea Institute of Materials Science, Changwon [Korea]</i> | 5.05 |

Wednesday, June 16

- 10:50 - 11:10 a.m.** **Nanocomposite Metal/Plasma Polymer Films Prepared by Means of Gas Aggregation Cluster Source** **5.06**
H. Biederman¹, O. Polonskyi¹, P. Solar¹, O. Kylian¹, M. Drabik¹, A. Artemenko¹, J. Kousal¹, J. Hanus¹, J. Pesicka¹, I. Matolinova¹, E. Kolibalova², D. Slavinska¹,
¹ Charles University in Prague, Faculty of Mathematics and Physics, Prague [Czech Republic]
² Tescan, Brno [Czech Republic]
- 11:10 - 11:30 a.m.** **Comparison of Material Structures and Scratch Strength of Thin Films of Glass Mirrors and Automobile Windscreens** **5.07**
L. A. Gömze¹, L. N. Gömze², I. Kocserha¹
¹ University of Miskolc, Department of Ceramics and Silicate Engineering, Miskolc [Hungary]
² IGREX Ltd., Igrici [Hungary]
- 11:30 - 11:50 a.m.** **Scratch Resistant Optical Coatings On Polymers by Magnetron-PECVD** **5.08**
K. Taeschner, H. Bartzsch, P. Frach, E. Schultheiss,
 Fraunhofer Institute for Electron Beam and Plasma Technology FEP, Dresden [Germany]

11:50 - 1:20 p.m. **Lunch**

Session 6 **Architectural, Automotive and other Applications**
Chairmen: Dr. K. Hartig, Dr. W. DeBosscher

- 1:20 - 1:50 p.m.** **Minerva – A Project for the Development of an Ultra Resistant Plasma Coating on PC for Automotive Use** **6.01**
Keynote Lecture
A. Matthai¹, S. Bangert², O. Grünhage³, B. Hangleiter⁴, U. Schulz⁵, B. Szyszka⁶
¹ AUDI AG, Ingolstadt [Germany]
² Applied Materials GmbH, Alzenau [Germany]
³ Plastic Design GmbH, Bad Salzflun [Germany]
⁴ VW AG, Wolfsburg [Germany]
⁵ Fraunhofer IOF, Jena [Germany]
⁶ Fraunhofer IST, Braunschweig [Germany]

1:50 - 2:10 p.m. Invited Lecture	Rotating Cylindrical Magnetrons: Downscaling for a Better Understanding <i>D. Depla, Ghent University, Department for Solid State Sciences, Ghent [Belgium]</i>	6.02
2:10 - 2:30 p.m.	Advanced Low-E Coating Family Provides Enhanced Performance and Additional Color Variations while Extending Product Selection with a Typical Target Inventory <i>P. Brillhart, S. Nadel, J. Rietzel, Applied Materials/Energy and Environmental Solutions, Glass Division, Fairfield [USA]</i>	6.03
2:30 - 2:50 p.m.	Characterization of the Scratch Resistance of Tempered Architectural Glass and Glass Coatings by In-Situ Microtribology <i>J. Schneider¹, W. P. Weinhold², S. Schula¹</i> ¹ Technische Universität Darmstadt, Department Civil Engineering and Geodesy – Institute of Materials and Mechanics in Civil Engineering, Darmstadt [Germany] ² Innowep GmbH Measuring and Testing, Würzburg [Germany]	6.04
2:50 - 3:10 p.m.	Infrared Reflecting Glazing for Automotive Application – New Developments to Improve Fuel Efficiency and Thermal Comfort <i>R. Thielsch¹, A. Wahl¹, R. Kleinhempel¹, M. Coda², L. Boman²</i> ¹ Southwall Europe GmbH, Grossroehrsdorf [Germany] ² Southwall Technologies Inc., Palo Alto [USA]	6.05
3:10 - 3:30 p.m.	Optical Quality Assurance and Process Control of Coated Glass <i>H. Oerley, Dr. Schenk GmbH Industriemesstechnik, Planegg/Munich [Germany]</i>	6.06

3:30 - 4:10 a.m. Coffee Break

Wednesday, June 16

Panel Discussion **Large Area Thin Films for Energy Efficiency** *Chairmen: Dr. R. Blessing, Dr. G. Ockenfuß*

4:10-5:30 p.m. **Photovoltaic**
V. Löwenstein, Inventux Technologies AG [Germany]

4:10-5:30 p.m. **Solar Thermal**
D. Pavic, BlueTec [Germany]

4:10-5:30 p.m. **Lighting**
Dr. H. Küster, Alanod [Germany]

4:10-5:30 p.m. **Architectural Glazing**
G. Suckel-Bittnar, Interpane Glasgesellschaft [Germany]

7:00 - 11:00 p.m. **Conference Dinner, Waldhaus Oelper**

Thursday, June 17

Session 7 **Solar Applications** *Chairmen: Dr. M. Hirata, Dr. M. Liehr*

9:00 - 9:30 a.m. **n.n.**

9:30 - 9:50 a.m. **Optical Management of Thin Film Silicon Solar Cells and Modules** **7.02**
Invited Lecture
K. Yoshikawa, K. Yamamoto, Kaneka Corp. / Photovoltaic and Thin Film Device Research Laboratories, Osaka [Japan]

9:50 - 10:10 a.m. **In-line Continuous Hot-Wire Chemical Vapor Deposition for Thin Film Silicon Solar Cells** **7.03**
R. E. I. Schropp, C. O. van Bommel, C. H. M. van der Werf, M. Brinza, G. A. van Swaaij, J. K. Rath, H. B. T. Li, J. W. A. Schüttauf, Utrecht University, Faculty of Science, Debye Institute for Nanomaterials Science, Nanophotonics - Physics of Devices, Utrecht [The Netherlands]

10:10 - 10:30 a.m. Angular Resolved Light Scattering of Structured TCOs for the Application in a-Si:H / μ c-Si:H Solar Cells 7.04

W. Dewald¹, V. Sittinger¹, B. Szyszka¹, A. Gordijn², J. Hüpkes², F. Hamelmann³, H. Stiebig³, F. Säuberlich⁴

¹ Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

² Institut für Energieforschung 5 - Photovoltaik, Forschungszentrum Jülich, Jülich [Germany]

³ Malibu GmbH & Co. KG, Bielefeld [Germany]

⁴ Sunfilm AG, Bitterfeld-Wolfen [Germany]

10:30 - 11:00 a.m. Coffee Break

11:00 - 11:20 a.m. As-Grown Textured Zinc Oxide Films by Ion Beam Treatment and Magnetron Sputtering 7.05

W. Zhang¹, E. Bunte¹, F. Ruske², D. Köhl³, A. Besmehn⁴, U. Breuer⁴, J. Worbs¹, H. Siekmann¹, J. Kirchhoff¹, A. Gordijn¹, J. Hüpkes¹

¹ Institut für Energieforschung 5 - Photovoltaik, Forschungszentrum Jülich, Jülich [Germany]

² Institute Silicon Photovoltaics, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin [Germany]

³ I. Physikalisches Institut IA, Rheinisch-Westfälische Technische Hochschule Aachen, Aachen [Germany]

⁴ Zentralabteilung für Chemische Analysen, Forschungszentrum Jülich, Jülich [Germany]

11:20 - 11:40 a.m. Selectively-Coated High-Efficiency Glazing for Solar-Thermal Flatplate Collectors 7.06

N. Ehrmann, R. Reineke-Koch, Institute for Solar Energy Research GmbH Hameln (ISFH), Emmerthal [Germany]

11:40 - 12:00 a.m. Roll to Roll Fabrication of Thin Film Silicon Solar Cells on 1- and 2-D Periodically Textured Substrates 7.07

W. J. Soppe¹, H. Borg², B. B. Van Aken¹, C. Devilee¹, M. Dörenkämper¹, M. Goris¹, M. C. R. Heijna¹, J. Löffler¹, P. Peeters²

¹ ECN Solar Energy, Petten [The Netherlands]

² OM&T BV, Eindhoven [The Netherlands]

Thursday, June 17

12:00 - 12:30 p.m. Design and Fabrication of Antireflective Spectral Convertors Using Gradient Refractive Index Phosphor Films 7.08
S. Tanaka, S. Fujihara; Keio University, Department of Applied Chemistry, Yokohama [Japan]

You are looking for particular author or a particular topic? Please look it up in the Book of Proceedings.

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Linear Ion Sources - New Designs and Processes for Improvements in Product Industrial Scale 1.08
V. Bellido-Gonzalez¹, M. Audronis¹, R. Brown¹, D. Monaghan¹, S. Williams²

¹ Gencoa Ltd., Liverpool [United Kingdom]

² Gencoa, San Francisco [USA]

Usage of Magnetron Pulse DC Power Supplies for Various Vacuum Technological Processes 1.09
V. Kozlov, E. Machevskis, SIDRABE, Riga [Latvia]

Session 2**Atmospheric Pressure Coatings
[CVD, Wet Chemical Processing]***2.01 - 2.08 see pages 12 - 13***Photocatalytic Active Titanium Dioxide Coatings
Prepared by Atmospheric Pressure Processes 2.09**

*T. Abendroth, F. L. Toma, H. Althues, B. Leupolt, L. M. Berger,
S. Kaskel, Fraunhofer Institute for Material and Beam
Technology IWS, Dresden [Germany]*

**Zinc Acetylacetonate as MOCVD Precursor for ZnO:
the Effect of Hydration on the Evaporation Behavior 2.11**

*M. J. Theelen, S. Kouijzer, K. Timmer, G. J. J. Winands, P. Poodt
TNO Science and Industry, Materials Technology,
Eindhoven [The Netherlands]*

**Deposition of Tin Oxide and Fluorine-Doped Tin
Oxide by Atmospheric Pressure CVD 2.12**

*T. Abendroth, H. Althues, S. Kaskel
Fraunhofer Institute for Material and Beam Technology IWS,
Dresden [Germany]*

Deposition of Indium Tin Oxide by APCVD 2.13

*J. M. Gaskell, D. W. Sheel, H. Yates,
Functional Materials, Cockcroft Building, University of Salford,
Manchester [United Kingdom]*

**Surface Structure Modification of Tin Oxide for
Thin Film Photovoltaic Applications via Dielectric
Barrier Discharge Etching Spray 2.14**

*J. L. Hodgkinson, D. W. Sheel, M. Thomson
The University of Salford, Functional Materials Department,
Salford [United Kingdom]*

**A Spray Pyrolysis Deposition Technique for Thin-Film
Formation and its Application to Preparation of Trans-
parent Conductive Oxides 2.15**

*S. Kaneko, S. Kawasaki, P.V.V. Jayaweera, G. R. A. Kumara
SPD Laboratory, Hamatsu, [Japan]*

Micropatterning Using Atmospheric Pressure Plasma Processes 2.16

M. Thomas, J. Borris, M. Eichler, C.-P. Klages
Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

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T. Struppert, A. Heft, B. Grünler
INNOVENT e.V., Department of Surface Engineering, Jena [Germany]

Development of Atmospheric Linear Plasma Source for High Speed Surface Coating 2.20

R. Sasaki, S. Yamasaki, H. Hirai, M. Ichikawa, H. Miyahara, A. Okino, Department of Energy Sciences, Tokyo Institute of Technology, Yokohama [Japan]

Session 3

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Dr. O. Nobuto², K. Kato¹, Norihiro Ito², T. Yagi³, N. Taketoshi³, T. Baba³, Y. Sato¹, Y. Shigesato¹,
¹ Graduate School of Science and Engineering, Aoyama Gakuin University, Kanagawa [Japan]
² Panasonic Electric Works Co., Ltd., Kanagawa [Japan]
³ National Metrology Institute of Japan, AIST, Aoyama Gakuin University, Kanagawa [Japan]

Session 4 **Process Control Methods and Characterization**

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Latest Developments in High Speed Spectroscopy **4.07**

S. Piecha, H.S. Eckhardt, M. Holzapfel,
tec5 AG, Sales Department, Oberursel [Germany]

Particle-in-Cell Monte Carlo Analysis of Anomalous Target Erosion in Magnetron Sputtering **4.09**

M. Siemers, A. Pflug, B. Szyszka,
Fraunhofer Institute for Surface Engineering and Thin Films IST,
Braunschweig [Germany]

Magnetron Sputtering Modes During Pulsed Deposition Process **4.10**

K. Krówka, A. Wiatrowski, W.M. Posadowski,
Wrocław University of Technology, Faculty of Microsystems,
Electronics and Photonics, Wrocław [Poland]

High Rate Deposition of Mixed Oxides by Controlled Reactive Magnetron-Sputtering from Metallic Targets **4.11**

S. Bruns¹, M. Vergöhl¹, O. Werner¹, T. Wallendorf²,
¹ Fraunhofer Institute for Surface Engineering and
Thin Films IST, Braunschweig [Germany]
² IfU Diagnostic Systems GmbH, Lichtenau [Germany]

Particle Generation During Reactive Sputtering of SiO₂ with Planar and Cylindrical Magnetrons **4.12**

M. Vergöhl, D. Rademacher
Fraunhofer Institute for Surface Engineering and
Thin Films IST, Braunschweig [Germany]

**Electrochromic Properties of WO_3 , V_2O_5 and TiO_2
Prepared by Hydrothermal Growth at 95 °C** **4.13**

*D. Vernardou^{1,2,3}, H. Drosos⁴, E. Spanakis^{2,3,6}, E. Koudoumas^{1,5},
C. Savvakis^{1,2}, N. Katsarakis^{1,2,6}*

¹ Center of Materials Technology and Laser, School of Applied Technology, Technological Educational Institute of Crete, Heraklion, Crete [Greece]

² Science Department, School of Applied Technology, Technological Educational Institute of Crete, Heraklion, Crete, [Greece]

³ Department of Materials Science and Technology, University of Crete, Heraklion, Crete [Greece]

⁴ Mechanical Engineering Department, School of Applied Technology, Technological Educational Institute of Crete, Heraklion, Crete [Greece]

⁵ Electrical Engineering Department, School of Applied Technology, Technological Educational Institute of Crete, Heraklion, Crete [Greece]

⁶ Institute of Electronic Structure and Laser, Foundation for Research & Technology-Hellas, Heraklion, Crete [Greece]

Session 5

Thin Film Properties

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Using Novel Solid-State Luminescent Dyes** **5.09**

T. Graumann, F. Neumann

Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

**Light-Induced Photocatalytic Degradation of Stearic
Acid by C-Axis Oriented ZnO Nanowires Grown at
Mild Temperatures** **5.10**

G. Kenanakis^{1,2,3}, C. Savvakis², N. Katsarakis^{1,2},

¹ FORTH – IESL, Heraklion, Crete [Greece]

² TEI of Crete, Heraklion, Crete [Greece]

³ University of Crete, Department of Chemistry, Heraklion, Crete [Greece]

Preparation of Photocatalytic TiO₂-Coatings by Hollow Cathode Gas-Flow Sputtering **5.11**

D. Koeßler, K. Ortner, M. Höfer, B. Szyszka, T. Jung
Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

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B. Heimke, U. Hartung, T. Kopte, M. Junghähnel, R. Nyderle
Fraunhofer Institute for Electron Beam and Plasma Technology FEP, Dresden [Germany]

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M. Junghähnel, B. Heimke, U. Hartung, T. Kopte, O. Zywitzki
Fraunhofer Institute for Electron Beam and Plasma Technology FEP, Dresden [Germany]

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H. Makino, T. Yamada, N. Yamamoto, T. Yamamoto
Research Institute, Kochi University of Technology, Kami [Japan]

New Approach Towards an Optimized Light Trapping Morphology of Al-Doped ZnO Films **5.16**

V. Sittinger¹, W. Dewald¹, B. Szyszka¹, F. Säuberlich², B. Stannowski²

¹ Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

² Sunfilm AG, OT Thalheim, Bitterfeld-Wolfen [Germany]

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O. Kylián, M. Drábik, O. Polonskyi, J. Čechvala, A. Artemenko, I. Gordeev, A. Choukourov, D. Slavinská, I. Matolinová, H. Biederman
Charles University in Prague, Faculty of Mathematics and Physics, Prague [Czech Republic]

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N. Tadokoro¹, K. Jaisupap², A. Sukbumpeng², S. Pannakarn², S. Khraikratoke², N. Iwata²

¹ Lens Technology Center, VC Company, HOYA Corporation, Tokyo [Japan]

² PL Technical department, HOYA Lens Thailand, Ayutthaya [Thailand]

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C. Polenzky, K. Ortner, B. Szyszka

Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

Optical Properties of Glass Surface Layer Modified by Surface Ion Exchange Process 5.21

O. N. Sidelnikova¹, G. A. Pozdnyakov², A. N. Salanov³

¹ Institute of Solid State Chemistry and Mechanochemistry, Novosibirsk [Russia]

² Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk [Russia]

³ Borekov Institute of Catalysis, Novosibirsk [Russia]

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O. N. Sidelnikova¹, G. A. Pozdnyakov², A. N. Salanov³, A. N. Serkova³,

¹ Institute of Solid State Chemistry and Mechanochemistry, Novosibirsk [Russia]

² Christianovich Institute of Theoretical and Applied Mechanics, Novosibirsk [Russia]

³ Borekov Institute of Catalysis, Novosibirsk [Russia]

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M. Vergöhl, S. Bruns

Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

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Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig [Germany]

Synthesis of MoSe₂ and MoS₂ on Mo/Polyimide Films for Flexible Cu(In,Ga)(Se,S)₂ Based Solar Cells 5.25*A. Bollero¹, L. Kaupmees², T. Raadik², M. Grossberg², S. Fernández¹*¹ Department of Energy, CIEMAT, Madrid [Spain]² Department of Materials Science, Tallinn University of Technology (TUT) [Estonia]**Novel Two-Step NH₄Cl Wet-Chemical Etching Method to Improve ZnO:Al Surface Texture for Applications to Flexible Thin-Film Silicon Solar Cells** 5.26*S. Fernández¹, O. de Abri², F. B. Naranjo³, J. J. Gandía¹*¹ CIEMAT, Departamento de Energías Renovables, Madrid [Spain]² ISOM and Departamento de Física Aplicada, Escuela Técnica Superior de Ingenieros de Telecomunicación, Universidad Politécnica de Madrid, Madrid [Spain]³ Grupo de Ingeniería Fotónica, Universidad de Alcalá, Departamento de Electrónica, Alcalá de Henares, Madrid [Spain]**The Deposition of Optical Multilayer Films on Plastic Substrate by Reactive Pulse Magnetron Sputtering** 5.27*T. Fukagawa¹, Y. Kato¹, H. Bartsch², K. Suzuki³*¹ Tokai Optical Co., Ltd., R&D Department, Aichi [Japan]² Fraunhofer Institute for Electronbeam and Plasma Technology, Dresden [Germany]³ Consultant / Surftech Transnational Co., Ltd., Tokyo [Japan]**Microstructure Analysis of Ag Thin Films Deposited by Low-Voltage Sputtering** 5.28*K. Kato, H. Omoto, A. Takamatsu*

Central Glass Co. Ltd., Glass Research Center, Matsusaka-City [Japan]

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G. Kenanakis^{1,2,3}, N. Lyroni⁴, D. Vernardou^{2,4}, N. Katsarakis^{1,2}

¹ FORTH – IESL, Heraklion, Crete [Greece]

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³ University of Crete, Heraklion, Crete [Greece]

⁴ University of Crete, Heraklion, Crete [Greece]

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O. N. Sidelnikova¹, A. N. Salanov Aleksey², A. N. Serkova²

¹ Institute of Solid State Chemistry and Mechanochemistry, Novosibirsk [Russia]

² Borekov Institute of Catalysis, Novosibirsk [Russia]

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N. Tadokoro¹, S. Pannakarn², S. Khraikratoke², H. Kamura¹, N. Iwata²

¹ Lens Technology Center, VC Company, HOYA Corporation, Tokyo [Japan]

² PL Technical Department, HOYA Lens Thailand, Ayutthaya [Thailand]

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H. Takahashi¹, T. Fukagawa¹, T. Hashimoto²

¹ Tokai Optical Co., Ltd., R&D Department, Aichi [Japan]

² Meijo Nano Carbon Co., Ltd., Aichi [Japan]

Session 6**Architectural, Automotive & other Applications**

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Plasma Deposition of Au-SiO₂ Multilayers for Surface Plasmon Resonance Based Red Colored Coatings 6.07*H. T. Beyene^{1,2}, F. D. Tichelaar³, M. C. M. van de Sanden², M. Creatore²*¹ Materials Innovation Institute (M2i), Delft [The Netherlands]² Department of Applied Physics, Eindhoven University of Technology, Eindhoven [The Netherlands]³ Kavli Institute of Nanoscience, Delft University of Technology, Delft [The Netherlands]**Assessment of Coevaporated CuS Thin Films on Glass Substrates for Solar Control Coating Applications 6.08***A. Bollero¹, K. Zuzek Rozman², M. Grossberg³, S. Fernández¹*¹ Department of Energy, CIEMAT, Madrid [Spain]² Department for Nanostructured Materials, J. S. Institute, Ljubljana [Slovenia]³ Department of Materials Science, Tallinn University of Technology (TUT), Tallinn [Estonia]**Organic Layers for UV Protection of Polycarbonate 6.11***C. Präfke, U. Schulz, N. Kaiser*

Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Optical Coatings, Jena [Germany]

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Session 7

Solar Applications

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E. Bunte¹, H. Zhu^{1,2}, J. Owen¹, J. Hüpkes¹

¹ IEF5-Photovoltaics, Research Centre Jülich, Jülich [Germany]

² Engineering Research Centre for Nanophotonics and Advanced Instrument, Ministry of Education, East China Normal University, Shanghai [China]

Reactive Sputtering Process and Suitable Etching Process of Zinc Oxide for Silicon Thin Film Solar Cells 7.10

J. Hüpkes, H. Zhu, J. I. Owen, G. Jost, E. Bunte

IEF5-Photovoltaics, Research Centre Jülich GmbH, Jülich [Germany]

Improving the Electrical Properties of DC -Sputtered ZnO:Al by Thermal Post Deposition Treatment 7.11

M. Wimmer, F. Ruske, S. Scherf, B. Rech

Helmholtz Zentrum Berlin für Materialien und Energie, Institut für Silizium-Photovoltaik, Berlin [Germany]

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D. Carter, H. Walde, K. Nauman

Advanced Energy Industries Inc, Fort Collins [USA]

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P. Lach, W. Głazek, P. Ozimek

Huettinger Electronic sp. z o.o., Zielonka [Poland]

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K. Nauman

Advanced Energy Industries, Inc., Fort Collins [USA]

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S. Fujihara, S. Ueno, M. Hosokawa, S. Inoue,
Keio University, Department of Applied Chemistry, Yokohama
[Japan]

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T. Kilper, J. Kirchoff, J. Kroll, J. Noll, W. Reetz, G. Schöpe,
C. Zahren, A. Gordijn, IEF5-Photovoltaics,
Research Centre Jülich GmbH, Jülich [Germany]

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S. Seeger, K. Ellmer, Helmholtz-Zentrum Berlin,
Dept. Solar Fuels, Berlin [Germany]

New Thin Film Solar Cell Concepts Based on Silicon Nanowires on Glass as Well as in Polymer Matrix 7.21

V. A. Sivakov¹, B. Hoffmann¹, G. Brönstrup¹, F. Voigt,
M. Pietsch², S. Christiansen^{1,2}
¹ Institut für Photonische Technologien, Jena [Germany]
² Max Planck Institut für die Physik des Lichts, Erlangen
[Germany]

Vindico PV+: Clever Combination Increases Solar Cell Efficiency 7.22

P. Bastianen
Vindico Surface Technologies B.V., Hardinxveld-Giessendam
[The Netherlands]

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N. Arfsten, R. Habets, H. Langermans, A. Overbeek,
B. Plum, R. de Rijk, J. Scheerder, P. Buskens
DSM Functional Coatings, Geleen [Netherlands]

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K. v. Maydell, J. Lacombe, S. Geißendörfer
 NEXT ENERGY/EWE-Forschungszentrum für Energietechnologie e.V., Oldenburg [Germany]

RuS₂ - Thin Films for the Catalytic Oxidation of Water, Prepared by Reactive Magnetron Sputtering **7.25**

S. Brunken, C. Zachäus, P. Bogdanoff, K. Ellmer, S. Fiechter
 Helmholtz-Zentrum Berlin für Materialien und Energie, Institute for Solar Fuels and Energy Storage Materials, Berlin [Germany]

Exhibition

Exhibition - Opening Hours

Sunday	June 13, 2010	6:00 p.m. – 8:30 p.m.
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Thursday	June 17, 2010	9:45 a.m. – 12:30 p.m.

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www.hegla.de

Hüttinger Elektronik GmbH & Co. KG

Bötzingen Straße 80
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IPT GmbH

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www.iptgmbh.de

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45699 Herten, Germany
www.isravision.com

JUST VACUUM GmbH

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66849 Landstuhl, Germany
www.justvacuum.com

KEMSTREAM

Rue de la vieille poste, PIT de la Pompignane,
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www.kemstream.com

Network of Competence Industrial Plasma Surface Technology

INPLAS e. V.

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38108 Braunschweig, Germany
www.inplas.de

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www.magpuls.de

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www.mksinst.com

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www.NAGY-Instruments.de

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www.ewe-next-energy.de

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Ferdinand-Porsche-Ring 17
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High Tech Campus 5
5656 AE Eindhoven, The Netherlands
www.research.philips.com

Plasma+Oberfläche

Magazin Verlag Hightech Publications
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www.magazin-verlag.de

Process Materials, Inc

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Smit Ovens B.V.

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5692 DH SON, The Netherlands
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www.soleras.com

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VAT Deutschland GmbH

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W.Theiss Hard- and Software

Dr.-Bernhard-Klein-Str. 110
52078 Aachen, Germany
www.wtheiss.com

Accompanying Persons Program

For accompanying persons there will be a number of excursions organized throughout the week of the conference to explore the history, culture, architecture, technology and landscape of Germany. Below you can find some initial information about the program, the final schedule will be announced later on the conference website www.iccg.eu. If the accompanying persons program does not achieve the indicated number of registrations, alternative trips will be offered.

Monday, June 14, 2010

TOUR 1: Guided walk on the trail of Henry the Lion with Mumme sampling in a historical vaulted cellar [minimum 10 persons, 30 €]

In the morning you will visit the exhibition "Epocha" in the knight's hall of the castle Dankwarderode. It houses an incredible collection of paintings by the European Masters including Dürer, Rubens and Vermeer. In the afternoon the tour proceeds through the islands of tradition from the Burgplatz to the Old City. In a vaulted cellar, lunch can be taken (optional, to be paid extra) and a traditional "Mumme" Beer will be served. This drink additive was thought to protect against a variety of illnesses during the Middle Ages.

Tuesday, June 15, 2010

TOUR 2: Trip to the imperial city of Goslar [minimum 20 persons, 62 €]

On this trip you will discover impressive relics from over one thousand years of history. Goslar was founded in 922 by Heinrich (Henry) I. and gained its wealth mainly by mining silver ore. The source was the "Mountain of Fate", the Rammelsberg, which was entered (together with the old city) into the UNESCO list of world cultural heritage sites. After the bus transfer (about 50 min), you will experience Goslar with its old houses and churches during a guided walk. After the visit of the Imperial Palace, the tour through the silver mines and the mine museum will give you an impression of the history of mining.

Wednesday, June 16, 2010

TOUR 3: Trip to the "Autostadt" by Volkswagen [minimum 20 persons, 75 €]

People, cars and what moves them - after the bus transfer to the "Autostadt" in Wolfsburg (30 min) a guided adventure tour through the multi-faceted attractions and the extraordinary architecture will show you the different aspects of the automobile scene: from the past to the future car. All participants will have time to experience the highlights of the exhibition on their own. There is also the possibility to have lunch in one of the restaurants (optional, to be paid extra).

Company Tours

Thursday, June 17, 2010

TOUR A: Visit of the Fraunhofer Institute for Surface Engineering and Thin Films IST (free of charge)

You will have the possibility to make a tour through the laboratories of the Fraunhofer IST. The major subjects of the tour are: large area coating, characterization of materials and layers, diamond technology, diamond like carbon coatings and atmospheric pressure plasma processes.

TOUR B: Excursion to GXC Coatings GmbH (free of charge)

After the conference you will have the opportunity to visit GXC Coatings GmbH in Goslar. It was established in June 2000 and is a leading company for nano-coating of transparent materials. Their business is the development, application, production and marketing of nano-coating materials according to an improved sol-gel-method to increase the functionality of glass and polymers.

Getting to the Conference

No matter where you are - getting here is easy!

Whether you arrive by car, train or plane - in this section you will find some helpful information to assist you in finding your way to the conference.

By Car

If you decide to come to the Stadthalle Braunschweig by car - getting there is very easy and pleasant. You will find the Stadthalle Braunschweig sign posted throughout the city.



These are the important Autobahnen to Braunschweig:

- From the North:
Highway A7 direction Kassel/Hannover until highway interchange A2 direction Berlin
- From the East:
Highway A2 direction Magdeburg/Hannover/Dortmund until highway interchange Wolfsburg/Königsutter to A39 direction Braunschweig/Kassel
- From the South:
Highway A7 direction Hannover/Hamburg until highway interchange Salzgitter highway A39 Wolfsburg/Berlin
- From the West:
Highway A2 direction Hannover/Magdeburg/Berlin until the interchange Braunschweig Nord to A391 direction Braunschweig/Kassel/Salgitter further to highway interchange Ölper to A392 direction city
- If you are using a navigation system to travel to the conference center, please enter the following destination: An der Stadthalle, 38102 Braunschweig

By Train

The Deutsche Bahn will bring you almost to the doors of the conference. The main station is only a short walk from the Stadthalle Braunschweig. You will get train schedule information from the Deutsche Bahn travel service by calling +49 800-1507090 (free) or on the Deutsche Bahn AG website www.bahn.de.

By Plane

The closest Airport to Braunschweig is the Hannover International Airport, a mere hour's drive from Braunschweig (60 km). Besides, trains are running frequently between Hannover Airport and Hannover Main Station. The suburban railway line S5, running every 30 minutes between 4:30 a.m. and midnight, takes you from Terminal C to Hannover Main Station. From there you can take a train to Braunschweig Main Station. Another option is to have yourself picked up by a shuttle service that will take you to and from the airport in time. You can book this service with one of the following providers:

Flughafentransfer-Hannover, Tel: +49 511-977-2240 www.fthaj.de

Night Liner Plus, Tel: +49 511-977-4880, www.buszumflug.de

Welcome Transfer, Tel: +49 511-977-4370, www.transfer-airport-hannover.de

Alternatively you can fly directly to Braunschweig's regional and R&D airport which is open to private, medium-sized jets.

Exhibitors

ABCR GmbH	D 3	INPLAS e. V.	B 5
Applied Materials, Inc.	C 16	MAGPULS GmbH	C 21 - 23
Avaluxe International GmbH	C 11	MKS Instruments	C 5
Bekaert Advanced Coating NV	C 6	NAGY Instruments	D4
Beneq	C 9	NEXT ENERGY EWE-	
Bronkhorst Mättig GmbH	B 6	Forschungszentrum für	
Dr. Schenk GmbH	C 3	Energietechnologie e. V.	D 2
ESL Elektronik Handels GmbH	C 19	Perkin Elmer	D 9
FHR Anlagenbau GmbH	C 13	Philips Research Europe	D 7
Filmetrics, Inc.	C18	Plasma + Oberfläche	D 11
Fraunhofer-Allianz		Process Materials, Inc.	C21-C23
Photo-		Rolf Schäfer Beschichtungs-	
katalyse	C 4/C10	komponenten	C 21 - 23
Fraunhofer IST	C 4/C10	SENTECH Instruments GmbH	B 2
Genco Ltd.	C 21 - 23	Smit Ovens BV	C 20
GfE Metalle und Materialien		Soleras	D 6
GmbH	C 1	Society of Vacuum Coaters	D 10
Glass Performance Days	D 8	Solvix SA	B 7
Glass Worldwide	D 12	Sputtering Components, Inc.	C 21/22/23
HELGA GmbH & Co. KG	C 12	Tec5 AG	C 7
HÜTTINGER Elektronik		TNO	C 2/C8
GmbH + Co. KG	C 14	Umicore Thin Film Products	C 15
Innovatives Niedersachsen		VAT Vakuumventile AG	B 3
GmbH	D 13	Vindico Surface Technologies	D 1
IPT GmbH	C 21 - 23	VON ARDENNE	B 4
ISRA SURFACE VISION GmbH	C 24	W.C. Heraeus GmbH	C 17
JUST VACUUM GmbH	B 1	W. Theiss Hard- and Software	D 5
KEMSTREAM	C 19		