Program

9th European Weathering Symposium EWS

(XXXIst Colloquium of Danubian Countries on Natural and Artificial Ageing of Polymers)

September 18 - 20, 2019
Basel, Switzerland
It is with great pleasure that we invite you to participate in the 9th EWS (XXXIst Colloquium of Danubian Countries on Natural and Artificial Ageing of Polymers) to be held in Basel, on September 18 - 20, 2019.

Launched in 1967 by four relevant institutes from Austria, Czechoslovakia, Hungary and Yugoslavia, the Colloquia of Danubian Countries have been the only exclusive meetings in the field of natural and artificial weathering of polymers in their time. Relaunched as EWS they have attracted a broader scope of attendees.

In the tradition of these colloquia, the EWS is a meeting point for experts from industry and academia to learn from each other. The main topics in 2019 will be:

- Weathering of Polymeric Products – Plastics and Coatings
- Determination, Simulation and Effects of Relevant Climatic Quantities
- New Test Procedures and Devices
- Weathering Reference Materials
- Analysis of Polymer Degradation
- Service-Life Prediction

**Schedule September 18, 2019**
02.00 p.m. - 05.00 p.m. Technical tour to laboratory Huntsman Advanced Materials (Switzerland) GmbH, Basel
07.00 p.m. - 09.00 p.m. Welcome reception

**September 19, 2019**
09.00 a.m. - 05.00 p.m. Conference day 1
05.30 p.m. - 07.30 p.m. Sightseeing tour
08.00 p.m. - 11.00 p.m. Conference dinner

**September 20, 2019**
09.00 a.m. - 04.00 p.m. Conference day 2
Language

The conference language will be English.

Program

The program will be available on
www.weathering-symposium.org

International Scientific Committee

Volker Wachtendorf (Chairman), BAM, Berlin, D
Domenico Acierno, UniNa, DIMP, Naples, I
Sahar Al-Malaiia, AU, CEAC, Birmingham, UK
Eva Bejarano, ALMPLAS, Paterna, ES
Marjolein Diepens, DSM Ahead TP, Geleen, NL
Jean-Luc Gardette, CU, CNRS, Aubière, F
António Guerreiro de Brito, IBB-UMinho, Braga, P
Markus C. Grob, FH Nordwestschweiz, Windisch, CH
Ali Harlin, VTT, Espoo, FIN
Anne-Lise Høg Lejre, DTI, Taastrup, DK
Anna Jansson, RISE, Borås, S
Leopold Kranner, ÖGUS, Vienna, A
Constantine Papaspyrides, NTU Athens, LPT, GR
Krzysztof Pielichowski, CUT CTP, Cracow, PL
Béla Pukánszky, BME, Budapest, HU
Vesna Rek, UZ, Zagreb, HR
Lyda Rychla, Pi, Bratislava, SK
Yoshimitsu Takane, JWTC, Choshi City, J
Jiri Tochacek, CEITEC BUT, Brno, CZ
Peter Trubiroha, Berlin, D
Mireille Wenkin, CoRI, Limette, B
Christopher White, NIST, Gaithersburg, USA

Chairman

Thomas Reichert, Fraunhofer ICT, Pfinztal, Germany

Situation/ Conference Management

The European Weathering Symposium is being organised on behalf of CEEES by the German Society for Environmental Engineering GUS (Gesellschaft für Umweltimulation e.V.), supported by the Swiss Society of Environmental Engineering SVU (Schweizerischer Verein für Umweltimulation).

Participation Fee

The participation fee is € 550,-- for registrations up to June 14, 2019. This fee includes conference proceedings, lunches and refreshments, technical tour, welcome reception, sightseeing tour as well as the conference dinner. For registrations after June 14, 2019, the fee is € 650,--.

Cancellation

If written cancellation is received before August 19, 2019, a refund will be given minus € 100,-- administration charge. No refunds can be provided for registrations cancelled after this date.
Registration

Please register online at www.weathering-symposium.org or mail the attached registration form to:
Gesellschaft für Umweltsimulation GUS
Sabine Aref
c/o Fraunhofer ICT
P.O. Box 1240
D-76318 Pfinztal, Germany
Phone: +49 (0) 721 46 40-391
Fax: +49 (0) 721 46 40-345
secretariat@gus-ev.de
www.gus-ev.de

The registration fee must be paid on receipt of invoice from the secretariat or in cash in Euros on arrival at the venue. Credit cards are not accepted.

Conference Venue

The symposium will be held at:

Hotel Euler 4****
Centralbahnhofplatz 14
4002 Basel, Switzerland

Accommodation

Room contingents at special convention rates are reserved at:

Hotel Euler 4****
Budget Design Hotel City Inn 3***
(in the same building as Hotel Euler)

Reservations must be made before July 31, 2019

Please see the attached Hotel Information Form with the contact details and send your room reservation directly to the selected hotel before July 31, 2019.

Transportation

The hotel is located directly at the train station (SBB/SNCF). Direct access to tram and trains. Shuttle bus (No. 50) to the airport one minute walk away. Basel Airport 15 minutes away by car/bus/taxi (10 km). Underground parking (limited spaces) with parking service.

Visit

Technical tour to laboratory Huntsman Advanced Materials (Switzerland) GmbH, Basel

Sightseeing Tour

Guided Tour Basel
Pre-Program

CEEES Meeting Program
(Additional Registration is necessary)

Tuesday, September 17, 2019

2.00 p.m. - 5.00 p.m.

**CEEES Technical Advisory Board Meetings**
- Air Pollution and Climatic Effects
- Mechanical Environment
- Reliability and ESS

8.00 p.m.

CEEES Dinner

Wednesday, September 18, 2019

9.00 a.m. - 12.30 p.m.

**CEEES General Assembly**

1.00 p.m. - 2.00 p.m.

Lunch at Hotel Euler "Lobby"

2.00 p.m. - 5.00 p.m.

Join Technical Tour to laboratory Huntsman Advanced Materials (Switzerland) GmbH, Basel, CH
Meeting Point: Hotel Euler "Lobby"

Pre-Symposium Program

Wednesday, September 18, 2019

1.00 p.m. - 2.00 p.m.

Lunch at Hotel Euler "Lobby" for Technical Tour participants and registration

2.00 p.m. - 5.00 p.m.

Technical Tour to laboratory Huntsman Advanced Materials (Switzerland) GmbH, Basel, CH
Meeting Point: Hotel Euler "Lobby"

7.00 p.m. - 9.00 p.m.

**Welcome Reception**
Hotel Euler "Lobby"
Conference Program
Thursday, September 19, 2019

9.00 a.m.
Opening of the Conference
Thomas Reichert, CEEES, GUS and Fraunhofer ICT, Pfinztal, D

Greetings
Ueli Grossen, Swiss Society of Environmental Engineering SVU, Grenchen, CH

Session 1

9.20 a.m.  OP 01
History of Weathering
Andreas Riedl, Atlas Material Testing Technology GmbH, Linsengericht-Altenhasslau, D

9.45 a.m.  OP 02
40 years of Global-UV-Test weathering device: with fluorescent UV lamps and a precise microclimatical control into the future
Peter Trubiroha, Berlin, D
Anja Geburtig, Volker Wachtendorf, BAM, Berlin, D

10.10 a.m.
Coffee Break

10.40 a.m.  OP 03
The reproducibility of weathering tests: influencing factors and measures
Andreas Ruth, Matt Mc Greer, Florian Feil, Atlas Material Testing Technology GmbH, Linsengericht-Altenhasslau, D

Session 2

11.05 a.m.  OP 04
Spectral Sensitivity
Chair: Peter Trubiroha, Berlin, D

Study of the light stability of colour photographic reflection prints under LED lighting
Shigeo Suga, Hideo Kita, Suga Test Instruments Co., Ltd. Shinjuku, Tokyo, J

11.30 a.m.  OP 05
Spectral and degradation effective irradiances of solar radiation depending on geographic location, time of the year, and time of the day
Dieter Kockott, Hanau, D

11.55 a.m.
Lunch Break
Session 3 Poster Session
1.15 p.m.

PP 1 Review of Statistical and Analytical Degradation Models for PV Modules and Systems and Improvements
Ismail Kaaya, Sascha Lindig, Karl-Anders Weiß, David Moser, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D

PP 2 Training the Next Generation of PV Reliability Experts - Project SOLAR-TRAIN with 14 PhD projects
Karl-Anders Weiß, Ismail Kaaya, Amantin Pehilli, Enikő Bedő, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D

PP 3 Durability test methodology for bondings exposed to heat transfer fluids
Andreas Piekarczyk, Tanja Soukup, Karl-Anders Weiß, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D

PP 4 Functional coatings on glass in extreme arid climatic conditions - investigation of surface degradation effects
Elisabeth Klimm, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D

PP 5 Black Panel Temperature Sensors in Solar Testing
Riitta Perälä, Solar Simulator Finland Ltd., Littoinen, FIN

PP 6 Modification of F48T12 UV fluorescent lamps to improve performance and lifetime in accelerated weathering testers
Mandy Göring, NARVA Lichtquellen GmbH + Co. KG, Brand-Erbisdorf, D

PP 7 Round robin weathering test of various polymeric back-sheets for PV-modules with different ultra-violet irradiation and sample temperatures
Michael Köhl, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D

PP 8 Evaluation of UV-weathering tests of various polymeric backsheets for PV-modules with different spectral irradiation and sample temperatures
Michael Köhl, Fraunhofer Institute for Solar Energy (ISE), Freiburg, D
Conference Program
Thursday, September 19, 2019

PP 9
Ageing studies on plastic coatings for automotive applications – the search for early occurring material changes related to long-term durability
Lars Passauer, Jens Uhlemann, Jana Peters, Dresden Institute of Wood Technology - Institut für Holztechnologie Dresden gemeinnützige GmbH, Dresden, D

PP 10
Environmental Factors and their Impact on the Transition, Safety and Function of selected Processes, Systems and Products
Helmut Schmid, Fraunhofer Institute for Chemical Technology ICT, Pfinztal, D

Session 4

Service Life Prediction
Chair: Anja Geburtig, BAM, Berlin, D

2.15 p.m.  OP 06
Validating Predictive Models with Outdoor Data
Christopher C. White, Don L. Hunston, National Institute of Standards and Technology, Gaithersburg, MD, USA

2.40 p.m.  OP 07
Limitations of the Arrhenius methodology for predicting the lifetime of polymeric materials
Pierre-Olivier Bussière, Camille Blivet, Jean-Luc Gardette, Sandrine Therias, Université Clermont Auvergne, CNRS, SIGMA Clermont, Clermont-Ferrand, F
Jean-Francois Larché, Nexans Research Center (NRC), Lyon, F

3.05 p.m.
Coffee Break
Session 5  

Natural Weathering and Correlation  
Natural-Artificial Weathering  
Chair: Andreas Riedl, Atlas MTT GmbH, Linsengericht-Altenhasslau, D

3.35 p.m.  OP 08  
Polymer Weathering in Antarctica  
Jiri Tochacek, Petr Polacek, CEITEC, Brno University of Technology, Brno, CZ  
Kamil Laska, Pavel Kapler, Klara Cizkova, Faculty of Science, Masaryk University, Brno, CZ  
Radka Balkova, Faculty of Chemistry, Brno University of Technology, Brno, CZ  
Lukas Krmicek, Faculty of Civil Engineering, Brno University of Technology, Brno, CZ  
Jan Merna, University of Chemistry and Technology, Praha, CZ  
Michael Tupy, Fatra, a.s., Napajedla, CZ  
Zdenek Buran, Unipetrol RPA, Polymer Institute Brno, Brno, CZ

4.00 p.m.  OP 09  
ASTM D7869: Field report compared to other artificial weathering standards and outdoor weathering in Florida  
Walter Rauth, Covestro Deutschland AG, Leverkusen, D

4.25 p.m.  OP 10  
Clearcoat on polycarbonate for automotive headlights: Issues on photo-ageing  
Nicoleta Radutoiu, Groupe Renault, Titu, RO  
Nathalie Oudin-Barrois, Groupe Renault, Guyancourt, F

5.30 p.m. - 7.30 p.m.  
Sightseeing-Tour Basel

8.00 p.m. - 11.00 p.m.  
Conference Dinner
Conference Program
Friday, September 20, 2019

Session 6

Monitoring Sensors and Detection of Weathering Effects
Chair: Andy Francis, Q-Lab Corporation, Westlake, OH, USA

9.00 a.m.  OP 11
Use of ESR spectroscopy for detection of photodegradation of coatings and their components
Matthias Wanner, Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Stuttgart, D

9.25 a.m.  OP 12
Discussion on Weathering Reference Materials
Anja Geburtig, Volker Wachtendorf, BAM, Berlin, D
Peter Trubiroha, Berlin, D

9.50 a.m.  OP 13
Application of a newly proposed sensor for effective UV-irradiance for the monitoring of both natural and artificial weathering conditions
Volker Wachtendorf, Anja Geburtig, BAM, Berlin, D
Peter Trubiroha, Berlin, D

10.15 a.m.
Coffee Break

Session 7

Artificial Exposure
Chair: Christopher C. White, NIST, Gaithersburg, MD, USA

10.45 a.m.  OP 14
Strain hardening as an indicator for the intrinsic time to failure of semi-crystalline polymers in artificial ageing
Matthias Gössi, Sika Technology AG, Zürich, CH

11.10 a.m.  OP 15
Water delivery during accelerated weathering testing of coatings for improved correlation to outdoor results
Andy Francis, Bill Tobin, Sean Fowler, David Duecker, Andreas Giehl, Brad Reis, Q-Lab Corporation, Westlake, OH, USA

11.35 a.m.  OP 16
Laboratory Weathering with H_2O_2 Spraying
Artur Schönlein, RAWS, Rüsselsheim, D
Shigeo Suga, Suga Test Instruments Co., Ltd. Shinjuku, Tokyo, J

12.00 p.m.
Lunch Break
Conference Program
Friday, September 20, 2019

1.20 p.m.  OP 17
Development of condition monitoring methods for polymeric components including low dose rate radiation exposure
Anna Jansson, Johan Sandström, RISE Research Institute of Sweden AB, Borås, S

1.45 p.m.  OP 18
Accelerated Thermal Ageing of Thermoplastic Materials: Characterization and Modeling
Ingo Alig, Dirk Lellinger, Harald Oehler, Karsten Rode, Frank Malz, Lena Mavie Herkenrath, Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, D
Jee young Youn, Hyundai Motor Company, Research & Development Division, Gyeonggi-do, ROK

2.10 p.m.
Short Coffee Break

2.30 p.m.  OP 19
Ecological footprint of PV electricity: influence of waste management, degradation and lifetime
Karl-Anders Weiß, Sina Herceg, Sebastián Pinto, Fraunhofer Institute for Solar Energy Systems (ISE), Freiburg, D

2.55 p.m.  OP 20
Material Combinations in PV-Modules: Real Behaviour vs. Accelerated Ageing Tests
Yuliya Voronko, Gabriele Eder, Paul Grillberger, OFI, Austrian Research Institute for Chemistry and Technology, Wien, A
Gernot Oreski, PCCL, Polymer Institute for Chemistry and Technology, Wien, A
Wolfgang Mühleisen, CTR, Carinthian Tech Research AG, Villach/St. Magdalern, A

3.20 p.m.  OP 21
Development of Climate Specific Accelerated Ageing Tests for Photovoltaic Modules
Gabriele Eder, Yuliya Voronko, P. Grillberger, OFI, Austrian Research Institute for Chemistry and Technology, Wien, A
Karl A. Berger, Újvári Gusztáv, AIT, Austrian Institute of Technology, Wien, A
Karl Knöbl, FH-TW, University of Applied Sciences Wien, A

3.45 p.m.
Closing Remarks
Gesellschaft für Umweltsimulation e.V.
Sabine Aref
P. O. Box 12 40
76318 Pfinztal
Germany
Registration Form

Gesellschaft für Umweltsimulation e.V.
Sabine Aref
Joseph-von-Fraunhofer-Str. 7
76327 Pfinztal
Germany
Fax: +49 (0) 72 14 64 0- 3 4 5
E-mail: secretariat@gus-ev.de

Invoice Address

Surname / First Name

Title

Organisation

Street

Postal Code / City

Country

Phone

Fax

E-mail

Conference Fee

☐ Registration before June 14, 2019: € 550,--
☐ Registration after June 14, 2019: € 650,--
☐ Accompanying person (welcome reception, dinner, sightseeing tour) € 110,--

Payment

☐ By money order (after receipt of invoice)  ☐ Cash on arrival

I agree that pictures taken during this event may be published and the data collected in the registration form could be used for registration and communication with the organizer.

Date  Signature

Hotel Room Reservation

GUS has reserved a special room contingent at the following hotels:

Hotel Euler 4**** (Conference Venue)
Budget Design Hotel City Inn 3*** (in the same building as Hotel Euler)

Please make your reservation directly with the hotel by using the booking code EWS 2019. Please see the attached Hotel Information Form.