



**Gesellschaft für
Umweltsimulation e.V.**

10th European Weathering Symposium EWS

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

PROGRAM

**September 11-13, 2024
Graz, Austria**



Contact

Gesellschaft für
Umweltsimulation e.V.
c/o Fraunhofer ICT

Sabine Aref
Joseph-von-Fraunhofer-Str.7
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www.gus-ev.de

Conference Invitation

It is with great pleasure that we invite you to participate and to present a paper at the 10th EWS (XXXIInd Colloquium of Danubian Countries on Natural and Artificial Ageing of Polymers) to be held in Graz, on September 11 - 13, 2024.

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. 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 2024 are:

- Comparison artificial & natural weathering
- Weathering performance
- Modelling/Simulation
- New weathering data parametering
- New exposure methods
- Weathering performance of PVs



Schedule

September 11, 2024

03.00 p.m. - 05.00 p.m.

Technical tour

07.00 p.m. - 09.00 p.m.

Welcome reception

September 12, 2024

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 13, 2024

09.00 a.m. - 01.00 p.m.

Conference day 2

Program and Language

The program will be available on www.weathering-symposium.org in May 2024. The conference language will be English.

International Scientific Committee

Sahar Al-Malaika, AU, CEAC, Birmingham, UK

César Gadea, AIMPLAS, Paterna, ES

Jean-Luc Gardette, CU, CNRS, Aubière, F

Markus C. Grob, FH Nordwestschweiz, Windisch, CH

António Guerreiro de Brito, ISA ULISBOA, Lisbon, P

Ali Harlin, VTT, Espoo, FIN

Anne-Lise Høg Lejre, DTI, Taastrup, DK

Anna Jansson, Rise Research Inst., Borås, S

Akihiro Konno, JWTC, Tokyo, J

Leopold Kranner, ÖGUS, Vienna, A

Constantine Papaspyrides, NTU Athens, LPT, GR

Krzysztof Pielichowski, CUT CTP, Cracow, PL

Pietro Russo, UniNa, Naples, I

Dora Tatraaljai, BME, Budapest, HU

Jiri Tochacek, CEITEC BUT, Brno, CZ

Peter Trubiroha, Berlin, D

Volker Wachtendorf, BAM, Berlin, D

Christopher White, Exponent, Inc., Maryland, USA

Chairman

Thomas Reichert, Fraunhofer ICT, Pfinztal, Germany

Organization/Conference Management

The European Weathering Symposium is being organized on behalf of CEEES by the German Society for Environmental Engineering GUS (Gesellschaft für Umweltsimulation e.V.), supported by the Austrian Society for Environmental Engineering ÖGUS and Österreichisches Forschungsinstitut für Chemie und Technik OFI, Vienna.

Participation Fee

The participation fee is € 550,-- for registrations up to June 28, 2024. This fee includes the lunches and refreshments, technical tour, welcome reception, sightseeing tour as well as the conference dinner. For registrations after June 28, 2024 the fee is € 650,--.

Cancellation

If written cancellation is received before August 12, 2024, 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

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:

Grand Hôtel Wiesler

Grieskai 4-8, A-8020 Graz, Austria

Accommodation

GUS has reserved a room contingent at Hotel "Das Weitzer", Grieskai 12 – 16, A-8020 Graz, Austria, www.hotelweitzer.com at a special convention rate from September 10 – 13, 2024.

Reservations must be made before July 25, 2024.

Please request your room reservation on the Registration Form (see final page) and send it to Sabine Aref, secretariat@gus-ev.de before July 25, 2024. GUS will manage the reservation.

Transportation

Arriving by train: Graz Hauptbahnhof (Central Station), then by taxi or tram line 1, 4, 6 or 7 to Südtiroler Platz/Kunsthhaus. From there, turn right and go along the Mur, past Grand Hôtel Wiesler and approx. 70 m further to the hotel "Das Weitzer".

Arriving by plane: From Graz airport directly to the S-Bahn (tram) stop "Flughafen Graz Feldkirchen" and take the S-Bahn to Graz Hauptbahnhof (Central Station). From there either take a taxi or tram line 1, 4, 6 or 7 to the stop "Südtiroler Platz/Kunsthhaus". From there, turn right and go along the Mur, past Grand Hôtel Wiesler and approx. 70 m further to the hotel "Das Weitzer".

Arriving by car: Motorway A2 or A9, Graz-Zentrum exit. Follow the road signs for "Zentrum".

Visit

Sightseeing tour Graz.

Technical Tour

TU Graz, Institute for Structural Durability and Railway Technology.

Pre-Program

CEES Meeting Program

(Additional Registration is necessary)

Tuesday, September 10, 2024

8.00 p.m. **CEES Dinner**

Wednesday, September 11, 2024

9.30 a.m. – 11.30 a.m. **CEES Joint TAB**

12.00 p.m. **Lunch**

1.00 p.m. – 2.45 p.m. **CEES General Assembly**

3.00 p.m. – 5.00 p.m. **Joint Technical Tour
(together with EWS)
to TU Graz,
Institute for Structural Durability
and Railway Technology,
Graz, A**
Meeting Point:
Lobby Hotel "Das Weitzer"

Pre-Symposium Program EWS

Wednesday, September 11, 2024

3.00 p.m. – 5.00 p.m. **Technical Tour
(together with CEES)
to TU Graz,
Institute for Structural Durability
and Railway Technology,
Graz, A**
Meeting Point:
Lobby, Hotel "Das Weitzer"

7.00 p.m. – 9.00 p.m. **Welcome Reception**
Lobby, Hotel "Das Weitzer"

Conference Program

Thursday, September 12, 2024

- 9.00 a.m. **Opening of the Conference**
Thomas Reichert,
CEEES, GUS and Fraunhofer ICT, Pfinztal, D
- Greetings**
Paul Grillberger,
Austrian Society for Environmental Engineering
ÖGUS and Österreichisches Forschungsinstitut
für Chemie und Technik OFI, Vienna.

Session 1 **Comparison artificial & natural weathering**
Chair: Florian Feil, Atlas Material Testing
Technology GmbH, Linsengericht, D

- 9.30 a.m. **OP 1 Site-specific Weathering of Coatings and Thermoplastics: Accelerated and Natural Weathering in Florida and Central Europe**
Ingo Alig, Harald Oehler, Marie Neumann,
Alexander Neumann, Dirk Lellinger, Doris Buck,
Fraunhofer LBF, Darmstadt, D
Matthias Wanner, Lukas Aktas,
Fraunhofer IPA, Stuttgart, D
- 10.00 a.m. **OP 2 Weathering – Evaluation of Methods to Capture and Quantify visible Degradation Effects of Automotive Exterior Materials and Surfaces**
Frank Häusler, Dr. Ing. h.c.F. Porsche AG,
Weissach, D
- 10.30 a.m. **Coffee break**

Thursday, September 12, 2024

Session 2

Weathering performance

Chair: Christopher White, Exponent, Inc.,
Bowie, Maryland, USA

- 11.00 a.m. **OP 3 Accelerated weathering under the aspect of the reciprocity law**
Jens Stange, Walter Rauth, Katharina Linck,
Michael Delbeck, Covestro Deutschland AG,
Leverkusen, D
- 11.30 a.m. **OP 4 Ensuring the Resilience: Evaluating Building Envelope Materials for Long-Term Durability**
Elnaz Esmizadeh, Marizeh Riahinezhad,
National Research Council Canada (NRC),
Ottawa, Canada
- 12.00 p.m. **OP 5 Weathering behind glass: irradiation – spectral requirements**
Artur Schönlein,
Rüsselsheim Advanced Weathering Solutions,
Rüsselsheim, D
- 12.30 p.m. **Lunch break**

Session 3

Modelling/Simulation

Chair: Andy Francis, Q-Lab Corporation,
Westlake, USA

- 2.00 p.m. **OP 6 Considerations on the uncertainty of service life prediction models based on accelerated weathering**
Florian Feil,
Atlas Material Testing Technology GmbH,
Linsengericht, D
- 2.30 p.m. **OP 7 Towards predictive weathering of roofing membranes**
Martin Londschien,
Sika Technology AG, Sarnen, CH
Marcel Steiner, FHNW, Institute of Mathematics
and Natural Sciences, Windisch, AG, CH
Markus Grob, FHNW, Institute of Polymer
Engineering, Windisch, AG, CH

Thursday, September 12, 2024

3.00 p.m. **OP 8 Ageing Behaviour of Polymeric Materials used in Outdoor Casings for Electronics**

Eric Helfer, P. Christöfl, J. Petro, M. Lang,
Gernot Oreski,
PCCL Polymer Competence Center Leoben,
Leoben, A

3.30 p.m. **Short Coffee break**

Session 4

New weathering data parametering

Chair: Dieter Kockott,
UV-Technik Hanau, D

3.45 p.m. **OP 9 PIT and PITs, New Physical Units for an Effective Irradiance E_{eff} and Radiant Exposure H_{eff} in the Activation of Photodegradation of Polymer Materials**

Peter Trubiroha, Berlin, D
Anja Geburtig, Volker Wachtendorf,
Bundesanstalt für Materialforschung
und -prüfung (BAM), Berlin, D
Tove Svendby, NILU, N
Magnus Hagner, Stockholm, S
Dieter Kockott, UV-Technik Hanau, D

4.15 p.m. **OP 10 Significance of new data pairs for irradiance and (surface) temperature**

Anja Geburtig, Volker Wachtendorf,
Bundesanstalt für Materialforschung
und -prüfung (BAM), Berlin, D
Peter Trubiroha, Berlin, D

4.45 p.m. **OP 11 Some details on FastRT – Fast simulations of downward UV doses, indices and irradiances at the Earth's surface**

Peter Trubiroha, Berlin, D

5.30 - 7.30 p.m. **Sightseeing tour Graz**

8.00 -11.00 p.m. **Conference Dinner**

Friday, September 13, 2024

Session 5

New exposure methods

Chair: Artur Schönlein,
RAWS, Rüsselsheim, D

- 9.00 a.m. **OP 12 New method for accelerated testing of the ageing behaviour of Polymeric Materials as a function of radiation and temperature**
Dieter Kockott, UV-Technik Hanau, D
- 9.30 a.m. **OP 13 Color change of coatings from extended ultraviolet fluorescent lamp exposure**
Andy Francis, Sean Fowler, Bill Tobin,
Dave Duecker, Q-Lab Corporation, Westlake, USA
Andreas Giehl, Q-Lab Deutschland, Saarbrücken, D
- 10.00 a.m. **OP 14 Comparison of Oxidative Degradation Behaviour of HDPE using Exposure to UV and Chlorine Dioxide**
Chiara Barretta, Márton Bredács,
Mario Messiha, Gernot Oreski,
PCCL Polymer Competence Center Leoben,
Leoben, A
Gernot Oreski, Montanuniversität Leoben,
Leoben, A
- 10.30 a.m. **Coffee break**

Friday, September 13, 2024

Session 6

Weathering performance of PVs

Chair: Paul Grillberger,
ÖGUS, OFI, Vienna, A

- 11.00 a.m. **OP 15 Climate specific degradation rate modelling for the assessment of greenhouse gas emissions from photovoltaic electricity**
Sina Herceg, Marie Fischer, Karl-Anders Weiß,
Fraunhofer Institute for Solar Energy Systems ISE,
Freiburg, D
Liselotte Schebek, Material Flow Management
and Resource Economy, Institute IWAR,
Technical University of Darmstadt, Darmstadt, D
Ismail Kaaya, EnergyVille and Imec,
Imo-Imomec, Genk, B
Imo-Imomec, Hasselt University, Hasselt, B
Julián Ascencio-Vásquez, Envision Digital,
Redwood City, USA and ASVA Consulting,
Santa Cruz, E
- 11.30 a.m. **OP 16 Accelerated Ageing Tests for Alpine PV**
Anika Gassner, Philipp Larisch, Gabriele C. Eder,
OFI Austrian Research Institute for Chemistry
and Technology, Vienna, A
Anika Gassner, TU Wien,
Institute of Production, Engineering and Photonic
Technologies, Vienna, A
- 12.00 p.m. **OP 17 Understanding and Mitigating Cracking in Photovoltaic Backsheets: A Root Cause Analysis and Testing Protocol Evaluation**
Gernot Oreski,
PCCL Polymer Competence Center Leoben,
Leoben, A
Gabriele C. Eder,
OFI Austrian Research Institute for Chemistry
and Technology, Vienna, A
- 12.30 p.m. **Closing remarks**
- 1.00 p.m. **Small Lunch**

Registration Form

Gesellschaft für Umweltsimulation e.V.

Sabine Aref

Joseph-von-Fraunhofer-Str. 7

76327 Pfinztal (Germany)

secretariat@gus-ev.de

Invoice Address

Surname/First Name

Title/Organization

Street

Postal Code/City

Country

Phone/Fax

E-mail

Please type or print

Conference Fee

| | |
|--|----------|
| Registration before June 28, 2024 | € 550,-- |
| Registration after June 28, 2024 | € 650,-- |
| Accompanying person (welcome reception, dinner, sightseeing tour) | € 110,-- |

Payment

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

Hotel Room Reservation (before July 25)

Hotel "Das Weitzer", Grieskai 12 – 16, A-8020 Graz, Austria

Please request your reservation:

Room rates/night (Category Classic); excl. city tax

| | |
|-------------------------|----------|
| Double room/single use | € 139,00 |
| Double room | € 139,00 |
| + Breakfast, person/day | € 22,00 |

Arrival date

Departure date

My reservation is guaranteed by credit card (eExpiration date and card number)

I agree that pictures taken during this event may be published.

Date

Signature