



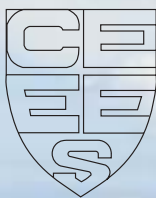
**Gesellschaft für
Umweltsimulation e.V.**

Program

2nd European Weathering Symposium EWS

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

June 15 till 17, 2005
Gothenburg, Sweden



CHALMERS





2nd European Weathering Symposium EWS

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

We are pleased to invite you to participate in the 2nd European Weathering Symposium EWS to be held in Gothenburg, Sweden, on June 15 to 17, 2005.

Launched in 1967 by four relevant institutes from Austria, Czechoslovakia, Hungary, and Yugoslavia, the Colloquia of Danubian Countries have been the only independent meeting - meanwhile Europe-wide - in the field of natural and artificial weathering of polymers for nearly 40 years. In the tradition of these colloquia the EWS is a meeting point for experts from industry and academy to learn from each other.

Main topics in 2005 are:

- **Weathering of Plastics**
- **Weathering of Coatings**
- **Fundamental Investigations**
- **Reference Materials and Procedures**
- **Stabilization of Polymers**
- **Lifetime Prediction**
- **New Methods**
- **Analysis of Polymer Degradation**

Before the opening of the conference, a 4 hour training course is being offered:

Solar and Thermal Radiation - Absorption and Emission by Polymer Surfaces.

Please register for this course using the attached registration form.

Schedule

June 15, 2005

13.00 h – 17.00 h	Training Course
19.00 h	Welcome Reception

June 16, 2005

08.00 h – 09.00 h	Registration
09.00 h – 17.30 h	Conference
19.00 h	Conference Dinner

June 17, 2005

09.00 h – 17.25 h	Conference
17.30 h	Closing of the Conference

Language

Conference language will be English.

Program

The program and abstracts will be available on:
<http://www.ew-symposium.org>
<http://www.gus-ev.de>

**Scientific
Committee**

Peter Trubiroha (Chairman), Berlin, D
Peter Eriksson, Chalmers, Gothenburg, S
Olga Guseva, EMPA, Dübendorf, CH
Ignacy Jakubowicz, SP, Borås, S
Leopold Kranner, ofi, Vienna, A
Jonathan Martin, NIST, Gaithersburg, USA
Jan Pospíšil, IMC, Prague, CZ
Lyda Rychlá, PI-SAS, Bratislava, SK
Jacques Sampers, DSM Research, Geleen, NL
Gerry Saunders, BRE, Garston, UK
Yoshimitsu Takane, JWTC, Choshi City, J
Jacques Verdu, ENSAM, Paris, F

Chairman

Thomas Reichert, Fraunhofer ICT,
Pfinztal, Germany

**Organisation/
Conference
Management**

The European Weathering Symposium is being organised on behalf of the Confederation of European Environmental Engineering Societies (CEEES) by the German Society for Environmental Engineering GUS (Gesellschaft für Umwelt-simulation e.V.).

Participation Fee

The participation fee is € 350,- until April 15th, 2005. This fee includes lunches and refreshments, welcome reception on June 15th, conference dinner on June 16th and proceedings. After April 15th the fee is € 450,-.

Cancellation

If written cancellation is received before May 15th, 2005 refund will be given minus 20 % administration charge. No refunds can be provided for registration cancelled after this date.

Registration

Please mail the attached registration form to:
Gesellschaft für Umweltsimulation GUS
Sonja Holatka
c/o Fraunhofer ICT
P. O. Box 1240
D-76318 Pfinztal, Germany
Phone: +49(0) 721 / 4640-391
Fax: +49(0) 721 / 4640-345
sonja.holatka@gus-ev.de
www.gus-ev.de

Registration fee has to be paid after getting the invoice or cash on arrival at venue.

Conference Venue

The symposium will be held at:
Chalmers University
Conference Center
Lilla Salen
Chalmers Platsen
Gothenburg, Sweden

Accommodation

GUS has reserved a block of rooms at special convention rates until May 15th, 2005.

Radisson SAS Scandinavia Hotel Gothenburg
All room rates are incl. breakfast and VAT / per night

	Single room	Double room
June 15 and 16:	SEK 1810,--	SEK 1810,--
June 17 and 18:	SEK 1190,--	SEK 1450,--

Ibis Hotel Gothenburg City (Hotelship)

All room rates are incl. breakfast and VAT / per night

	Single room	Double room
June 15 and 16:	SEK 775,--	SEK 835,--
June 17 and 18:	SEK 635,--	SEK 695,--

Please indicate your room reservation on the attached Registration Form and send it to Sonja Holatka before May 15th, 2005.

13.00 – 17.00 h

Training Course

Thermal Radiation and its Interaction with Polymeric Materials

P. Trubiroha, A. Geburtig

1 Introduction

Interaction between thermal short-wave (solar) and thermal long-wave radiation and surfaces/bodies of polymeric materials (Reflection, absorption with and without ageing processes and emission).

1.1 Electromagnetic Radiation

1.2 Optical Quantities and Units

Definitions and units

2 Thermal Radiation

2.1 General

2.2 Short-wave Radiation - Global Solar Radiation

UV, VIS, near IR

Direct and diffuse radiation

Relations between UV and total

Variation with time, site and cloudiness

2.3 Long-wave Heat Radiation

Far IR, non-metallic and metallic surfaces, coefficient of emission

Radiation balance

Measurement of thermal long-wave radiation (pyrgeometer)

3 Artificial Radiation Sources

Short overview

4 Interactions between Electromagnetic Radiation and Polymeric Materials

4.1 Optical Properties of Polymers

Colour and heating of polymer surfaces

Influence on relative humidity of the boundary surface climate

Spectral response of polymers

4.2 Black Standard Temperature / Black Panel Temperature

4.3 Translucent Test Specimens
"Green house" conditions

4.4 Spectroscopy

5 Radiant Heating – Radiant Cooling – Greenhouse Effects (positive and negative)

6 Measurement of Solar Radiation:

6.1 Measuring Quantities

6.2 Measuring Devices

Pyranometer

Pyrheliometer

UV-Radiometer (narrow band – broad band)

Spectroradiometer (monochromatic)

6.3 Reference Materials

7 Calculation of Solar Radiation Data

Spectral irradiance,

comparison to experimental data

Effective spectral irradiance for polymers

Calculation of the zenith angle and azimuth angle of the sun as a function of site, day and time

19.00 – 21.00 h

Welcome Reception

Radisson SAS Scandinavia Hotel,

Södra Hamngatan 59-65, Gothenburg

Conference Program
Thursday, June 16, 2005

09.00 h

Opening of the Conference

T. Reichert, GUS e.V. and Fraunhofer ICT,
Pfinztal, Germany

Greetings

P. Eriksson, CEEES President and Chalmers
University of Technology, Gothenburg, Sweden
J.-E. Sundgren, President, Chalmers University of
Technology, Gothenburg, Sweden
H. Andersson, SP, Borås, Sweden

Introduction

Artificial Weathering - Where are we?

P. Trubiroha, Berlin, Chairman of the Scientific
Committee

1st Session:

Weathering of Plastics

Chairperson: L. Rychlá, Polymer Institute, Slovak
Academy of Sciences, Bratislava, Slovak Republic

09.30 h

V 1

Weathering of Polymeric Products

E. Pohle, L. Kranner, ofi-Research Institute for
Chemistry and Technology, Vienna, Austria

09.55 h

V 2

**Test Method Development for Outdoor
Exposure and Accelerated Weathering of
Plastic Siding Specimens**

J. P. Quill, E. T. Everett, Q-Panel Lab Products,
Cleveland, Ohio, USA

P. Ledgerwood, Americhem, Cuyahoga Falls,
Ohio, USA

10.20 h

V 3

**Agricultural Films Duration under
Accelerated and Natural Weathering**

E. Espi, A. Salmerón, A. Fontecha, Y. Garcia,
A. I. Real, Repsol YPF, Móstoles (Madrid), Spain

10.45 h

Coffee Break

2nd Session:

Weathering of Coatings

Chairperson: O. Guseva, Swiss Federal Laboratory
for Materials Testing and Research, Dübendorf,
Switzerland

11.15 h

V 4

The Southern Florida Acid Rain Test

U. Schulz, A. Geburtig, Federal Institute for Materials
Research and Testing, BAM, Berlin, Germany
M. Crewdson, J. Stephenson, Q-Lab Weathering
Research Service, Homestead, Florida, USA

Conference Program
Thursday, June 16, 2005

11.40 h **V 5**

Using Chemiluminescence as Sensitive Detector of Early Stages Weathering Effects on Car Coatings to Shorten Weathering Tests

V. Wachtendorf, A. Geburtig, Federal Institute for Materials Research and Testing, BAM, Berlin, Germany

12.05 h **V 6**

Innovative Measurement Methodology in Quality Assessment of Coatings

K. Möller, A. Bäckman, B. Carlsson, M. Palm, SP Swedish National Testing and Research Institute, Borås, Sweden
S. Al-Malaika, H. Sheena, Aston University, Birmingham, United Kingdom
D. Kockott, Atlas-MTT BV, Lochem, The Netherlands
B. Dawid, W. Kortmann, BYK-Chemie, Wesel, Germany
K. Bechtold, J. Simonin, Clariant, Huningue, France
M. Hilt, DaimlerChrysler, Sindelfingen, Germany
J. Domnick, D. Michels, Fraunhofer IPA, Stuttgart, Germany
A. Nagel, M. Wunsch, PPG, Ingersheim, Germany
K. H. Wernstål, Volvo Car Corporation, Gothenburg, Sweden

12.30 h

Lunch

3rd Session

Fundamental Investigations

P. Trubiroha, Berlin, Germany

14.00 h **V 7**

Black Standard and White Standard Sensors for Natural Weathering

A. Schönlein, ATLAS Material Testing Technology GmbH, Linsengericht-Altenhaßlau, Germany

14.30 h **V 8**

The Law of Reciprocity Applied to High Radiant Flux Weathering Studies

J. Chin, T. Nguyen, E. Byrd, J. Martin, National Institute of Standards and Technology, Gaithersburg, Maryland, USA

15.00 h **V 9**

A Characterization of the Relationship between Light Intensity and Degradation Rate for Weathering Durability

H. K. Hardcastle, Atlas Material Testing Technology LLC, Miami, Florida, USA

15.30 h

Coffee Break

Conference Program
Thursday, June 16, 2005

4th Session

16.00 h **V 10**

Reference Materials and Procedures

Chairperson: L. Kranner, ofi-Research Institute for Chemistry and Technology, Vienna, Austria

Temperature Sensitivity of Reference Materials Used in Weathering Tests

J. Boxhammer, Scientific Consultant for Atlas MTT, Dieburg, Germany

16.30 h **V 11**

UV-sensitive Weathering Reference Materials

A. Geburtig, V. Wachtendorf, Federal Institute for Materials Research and Testing, BAM, Berlin, Germany

P. Trubiroha, Berlin, Germany

Y. Takane, Japan Weathering Test Center, Choshi City, Chiba, Japan

17.00 h **V 12**

A Statistical Determination of Uniformity in Xenon Exposure Chambers

S. A. Lipscomb, Atlas MTT LLC, Chicago, Illinois, USA

17.30 h

End of the Session

19.00 h

Dinner Menu

Radisson SAS Scandinavia Hotel,
Södra Hamngatan 59-65, Gothenburg

Conference Program
Friday, June 17, 2005

5th Session:

09.00 h **V 13**

Stabilization of Polymers

Chairperson: A. Lichtblau, Clariant GmbH,
Gersthofen, Germany

Interaction of Hindered Amine Light Stabilizers (HALS) and ULTRA Violet Light Absorbers (UVA)

Y. Ohkatsu, H. Takenaka, Department of Applied Chemistry, Faculty of Engineering, Kogakuin University, Tokyo, Japan

09.25 h **V 14**

Effect of Weathering Components on Efficiency and Durability of Photostabilizers in Polymers

J. Pospíšil, J. Pilař, S. Nešpůrek, Z. Kruliš, Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic
W. Habicher
Institute of Organic Chemistry, Technical University Dresden, Dresden, Germany

09.50 h **V 15**

Natural Antioxidants

Y. Ohkatsu, T. Satoh, F. Sakurai, Kogakuin University, Faculty of Engineering, Tokyo, Japan

10.15 h

Poster Session

P 1

Degradation of Poly[methyl(phenyl)silylene] cathodoluminescence

P. Horák, P. Schauer, Institute of Scientific Instruments AS CR, Brno, Czech Republic

P 2

Accelerated Thermal Ageing of Polypropylene Fibers under High Oxygen Pressure in Aqueous Media - Methodological Aspects

E. Richaud, F. Farcas, Laboratoire Central des Pont et Chaussées, Paris, France
B. Fayolle, L. Audouin, J. Verdu, Laboratoire de Transformation et de Vieillessement des Polymères, Paris, France

P 3

Degradation of Poly(ethylene-oxide)-based Thermal Energy Storage Materials

K. Pielichowski, K. Flejtuch, Dept. of Chemistry and Technology of Polymers, Cracow University of Technology, Cracow, Poland

Conference Program
Friday, June 17, 2005

- P 4** **Thermal Ageing of Polyoxymethylene (POM)**
M. Bastard, B. Fayolle, L. Audouin, J. Verdu
LTVP-ENSAM, Paris, France
D. Piccoz, A. Quemin
AREVA T&D, Mâcon, France
- P 5** **Effect of Stabilizers on Ageing
Polypropylene under High Oxygen Pressure**
E. Richaud, F. Farcas, Laboratoire Central des Pont
et Chaussées, Paris, France
B. Fayolle, Laboratoire de Transformation et de
Vieillissement des Polymères, Paris, France
- P 6** **Variation of Water Absorption as a
Parameter of Ageing of Painted Facade
Rendering**
R. Norvasiene, A. Burlingis, V. Stankevicius
Kaunas University of Technology, Institute of
Architecture and Construction, Kaunas, Lithuania
- P 7** **Evaluation of Ageing Properties of Polymer
Modified Bitumen**
V. Rek, N. Vranješ, Z. M. Barjaktarovic, University
of Zagreb, Faculty of Chemical Engineering and
Technology, Zagreb, Croatia
- P 8** **Reactivities of HALS Nitrosonium**
Y. Ohkatsu, K. Banno, Department of Applied
Chemistry, Faculty of Engineering, Kogakuin
University, Tokyo, Japan
- P 9** **Weathering Research and Testing at SP**
I. Jakubowicz, SP, Borås, Sweden
- P 10** **Test Equipment and Services**
S.-A. Bylander, Chromocol, Borås, Sweden

Conference Program
Friday, June 17, 2005

6th Session:

11.15 h **V 16**

Life Time Prediction

Chairperson: J. W. Martin, National Institute of Standards and Technology, Gaithersburg, Maryland, USA

Lifetime Prediction in Polymer Climatic Ageing - Comparison of two Distinct Approaches

L. Audouin, X. Colin, B. Fayolle, J. Verdu, ENSAM, Paris, France

11.40 h **V 17**

Weathering of Polymers: Problems Encountering Weathering Assessment as a Tool for Lifetime Prediction

J. Pospíšil, J. Pilař, A. Marek, S. Nešpůrek, Z. Horák
Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic
Prague, Czech Republic

12.05 h **V 18**

Use of Locally Weighted Regression Method for Estimation of Service Life from Tensile Testing of Weathered Polymers

O. Guseva, Swiss Federal Laboratory for Materials Testing and Research, Dübendorf, Switzerland
A. Lichtblau, Clariant GmbH, Gersthofen, Germany

12.30 h

Lunch

7th Session:

14.00 h **V 19**

New Methods

Chairperson: I. Jakubowicz, SP, Borås, Sweden

A Case Study Application of the Reliability-based Methodology

J. W. Martin, W. J. Rossiter, National Institute of Standards and Technology, Gaithersburg, Maryland, USA

14.25 h **V 20**

Light Ageing of Groundwood Paper Investigated by Chemiluminescence Method

L. Matisova-Rychlá, J. Rychlý, Polymer-Institute, Centre of Excellence for Degradation of Biopolymers, Slovak Academy of Sciences, Bratislava, Slovak Republic
V. Bukovsky, Slovak National Library, Martin, Slovak Republic

Conference Program
Friday, June 17, 2005

14.50 h **V 21**

Assessment of Service Life of some Passive Solar Thermal Materials

B. Carlsson, K. Möller, SP Swedish National Testing and Research Institute, Borås, Sweden
S. Brunold, SPF Hochschule Rapperswil, Rapperswil, Switzerland
A. Gombert, M. Heck, M. Köhl, Fraunhofer ISE, Freiburg, Germany
M. Hall, A. Roos, University of Uppsala, Uppsala, Sweden
M. Ghaleb, CSTB, Saint Martin d'Herès, France
G. Jorgensen, NREL, Golden Colorado, USA
B. Karlsson, Vattenfall Utvecklings AB, Ävkarleby, Sweden
M. Lopes Prates, INETI, Lisbon, Portugal
M. Zinzi, ENEA, Rome, Italy

15.15 h

Coffee Break

8th Session:

Analysis of Polymer Degradation

Chairperson: L. Audouin, ENSAM, Paris, France

15.45 h **V 22**

Fade Resistance of Lithographic Inks: A New Path Forward Real World Exposures in Florida and Arizona Compared to Accelerated Xenon Arc Exposures

J. P. Quill, Q-Panel Lab Products, Cleveland, Ohio, USA
J. Lind, Graphic Arts Technical Foundation, Sewickley, Pennsylvania, USA
J. Stack, National Institute for Occupational Safety & Health, USA

16.10 h **V 23**

Surface Analysis of ABS Injection Moldings Degraded by Outdoor Exposure Test

M. Mizoguchi, T. Kuriyama, Yamagata University, Faculty of Engineering, Yamagata, Japan
M. Saito, Y. Kishima, Daipla Wintes Ltd., Omiya, Saitama, Japan

16.35 h **V 24**

UV Degradability of Aryl-substituted Polysilylenes

I. Kuritka, F. Schauer, P. Sáha, Tomas Bata University, Faculty of Technology, Zlin, Czech Republic
S. Nešpůrek, Academy of Science, Institute of Macromolecular Chemistry, Prague, Czech Republic

17.00 h

Closing Remarks

Registration Form

Please type or print

Gesellschaft für Umweltsimulation e.V.
Sonja Holatka
Joseph-von-Fraunhofer -Str. 7
76327 Pfinztal
Germany
Fax: +49(0) 721 / 4640-345

It is agreed that pictures being taken during this event may be published.

Name/first name _____

Title _____

Affiliation _____

Street _____

Postal Code/City _____

Country _____

Phone _____

Fax _____

E-mail _____

Conference Fee

Registration before April 15th, 2005: € 350,-- / after April 15th, 2005: € 450,--

- Payment by money order (invoice requested)
- Cash on arrival
- Training Course: € 100,--
- Accompanying person for Welcome Reception and Dinner: € 60,--

The following room reservation is requested:

Please indicate your reservation. All room rates are incl. breakfast and VAT.

at Radisson SAS Scandinavia Hotel Gothenburg

- | | |
|--|--|
| <input type="checkbox"/> Single room/per night | <input type="checkbox"/> Double room/per night |
| June 15 and 16: SEK 1810,-- | June 15 and 16: SEK 1810,-- |
| June 17 and 18: SEK 1190,-- | June 17 and 18: SEK 1450,-- |

at Ibis Hotel Gothenburg City (Hotelship)

- | | |
|--|--|
| <input type="checkbox"/> Single room/per night | <input type="checkbox"/> Double room/per night |
| June 15 and 16: SEK 775,-- | June 15 and 16: SEK 835,-- |
| June 17 and 18: SEK 635,-- | June 17 and 18: SEK 695,-- |

Arrival Date:

Departure Date:

My reservation is guaranteed by Credit Card:

Expiration date:

Card number:

Date

Signature



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