

PROGRAMME

10 – 13 September 2023
Garmisch-Partenkirchen/Germany

EURADH & WCARP 2023

14th European Adhesion Conference &
7th World Congress on Adhesion and Related Phenomena

www.dechema.de/en/euradh_wcarp_2023.de



GENERAL INFORMATION

VENUE

Kongresshaus Garmisch-Partenkirchen
Richard-Strauss-Platz 1
82467 Garmisch-Partenkirchen/Germany
www.gapaconvention.de

ORGANISER

DECHEMA e.V.
Theodor-Heuss-Allee 25
60486 Frankfurt am Main
www.dechema.de

CONTACT

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SOCIAL PROGRAMME

Sunday, 10 September 2023 16:00 – 19:00

Registration / Check-in 16:00

Welcome Reception (snacks & drinks will be served) 17:30 – 19:00

Monday, 11 September 2023 17:20 – 19:00

Poster and Exhibitors' Party (beer & pretzel)

Opportunity for poster discussions and networking with the exhibitors and colleagues.
The poster authors are asked to be at their posters during that time.

Tuesday, 12 September 2023 18:30 – 22:30

Conference Dinner / Conference Party at the venue

Traditional Bavarian food and beverages will be served.

COMMITTEES

EURADH / WCARP 2023 INTERNATIONAL SCIENTIFIC BOARD

EURADH Representatives

Arán Ais, Francisca	INESCOP, Alicante/E
Bordado, João M. da Silva, Lucas F.M.	University of Lisbon/P University of Porto/P
Dalla Zuanna, Cyrille	CETIM Saint Etienne/F
del Real Romero, Juan Carlos	Universidad Pontificia Comillas, Madrid/E
Hartwig, Andreas	Fraunhofer IFAM, Bremen/D
Jumel, Julien	ENSTA Bretagne, Brest/F
Kellar, Ewen	TWI, Cambridge/UK
Oosting, Richard	Rich-Bond S.A.C., Schijndel/NL
Paul, Florian	DECHEMA e.V., Frankfurt am Main/D
Stammen, Elisabeth	ifs, TU Braunschweig, Aachen/D
Taylor, Ambrose C.	Imperial College, London/UK
Vrenken, Jurgen	Tata Steel, Ijmuiden/NL

WCARP Representatives

Crosby, Al	University of Massachusetts, Amherst/USA
de Barros, Silvio	Federal Center of Technological Education in Rio de Janeiro/BR
Frechette, Joelle	University of California, Berkeley/USA
Kim, Hyun-Joong	Seoul National University/KR
Kishi, Hajime	University of Hyogo/J
Lee, Myeong-Cheon	Dongguk University, Seoul/KR
Lisbôa Vignoli, Lucas	Federal University of Rio de Janeiro/BR
Miyagi, Zenichi	Meiji University Tokyo/J
Ougizawa, Toshiaki	Tokyo Institute of Technology TITECH/J
Yi, Xiaosu	University of Nottingham, Ningbo/CN
Zhang, Junying	Beijing University of Chemical Technology/CN

Additional Representatives

Dodiuk, Hanna	Shenkar College, Ramat Gan/IL
Goglio, Luca	DIMEAS - Politecnico di Torino/I
Kenig, Samuel	Shenkar College, Ramat Gan/IL
Martín Martínez, José Miguel	University of Alicante/E

Local Organising Committee

Droste, Alexander	DuPont, Neu-Isenburg/D
Hartwig, Andreas	Fraunhofer IFAM, Bremen/D (Chair)
Köhl, Andrea	DECHEMA e.V., Frankfurt am Main/D
Luque-Hornero, Jacqueline	DECHEMA e.V., Frankfurt am Main/D
Paul, Florian	DECHEMA e.V., Frankfurt am Main/D
Sander, Sascha	LWF, Universität Paderborn/D
Schmale, Hans Christian	TU Dresden/D
Stammen, Elisabeth	ifs, TU Braunschweig, Aachen/D (Co-Chair)
Wittwer, Wolfgang	Kömmerling Chemische Fabrik GmbH, Pirmasens/D

PROGRAMME AT A GLANCE

Sunday, 10 September 2023

16:00	Registration at the Conference Office
17:30	Welcome Reception with Drinks and Snacks
19:00	End of 1st Day

Monday, 11 September 2023

8:00	Registration	
	Festsaal Werdenfels	
8:45	WELCOME & OPENING REMARKS	
9:00	PLENARY LECTURE: Groß/D	
9:45	Break for Changing the Lecture Hall	
	Festsaal Werdenfels	Konzert-Saal Richard-Strauss
	Plasma Pretreatment of Polymer Surfaces	Mechanics and Fatigue
10:00	Imajima/J	Adams/UK
10:20	Butenegro/E	Wallner/A
10:40	Berg/D	Marques/P
11:00	Stepanov/D	Evangelista Fernandes/D
11:20	Coffee Break	
	Effects and Efficiency of Surface Treatments	Failure Analysis
11:50	Barz/D	Shimamoto/J
12:10	Ruhm/D	Kamiyama/J
12:30	Vieth/D	Birro/F
12:50	Tornow/D	Corbel/F
13:10	Lunch	
	Renewable Feedstock for Adhesives	Mechanics
14:10	Henneken/D	Singh/F
14:30	Raydan/F	Sander/D
14:50	Winkel/D	Çavdar/D
15:10	Taylor/UK	Ninou Codina/A
15:30	Coffee Break	
	Adhesion Phenomena	Structure of Metal Surfaces for Bonding
16:00	Balzer/D	Kirchner/F
16:20	Nishino/J	Büchter/D
16:40	Horiuchi/J	Kahlmeyer/D
17:00	Kojio/J	Marchfelder/A
17:20	Poster Party / Poster Discussion with Beer & Pretzel	
19:00	End of 2nd day	

PROGRAMME AT A GLANCE

Tuesday, 12 September 2023

	Festsaal Werdenfels	Konzert-Saal Richard-Strauss
	Adhesives Chemistry	Novel Tools for Adhesive Testing
9:00	Al Hussein/D	Nasseri/A
9:20	Martín Martínez/E	Völker-Pop/D
9:40	Kishi/J	Schiel/D
10:00	Fan/CN	Terasaki/J
10:20	Suzuki/J	Kimura/J
10:40	Coffee Break	
	Adhesives Chemistry / Pressure Sensitive Adhesives	Industrial Challenges
11:10	Okano/J	Stammen/D
11:30	Back/KR	Iwata/J
11:50	Cheng/CN	Knape/D
12:10	Abu Bakar/UK	Zhang/CN
12:30	Kim/KR	Takahashi/J
12:50	Lunch	
	Pressure Sensitive Adhesives	Repair, Recycling, Debonding on Demand
14:00	Duarte Simões/P	Szymanski/F
14:20	Barthel/F	Sato/J
14:40	Yamaguchi/J	Akiyama/J
15:00	Ougizawa/J	Chudalla/D
15:20	Miyagi/J	Faure/F
15:40	Coffee Break	
	Bioadhesion / Renewable	Non Destructive Methods
16:10	Ito/J	Obayashi/J
16:30	Taguchi/J	Philipp/D
16:50	Takemura/J	del Real Romero/E
17:10	Moyano/E	Han/J
17:30	End of Lecture Sessions	
18:30	Conference Dinner / Conference Party	
22:30	End of 3rd Day	

PROGRAMME AT A GLANCE

Wednesday, 13 September 2023

	Festsaal Werdenfels	Konzert-Saal Richard-Strauss
	Bioadhesion	Simulation
9:00	Komatsu/J	Jumel/F
9:20	Hartwig/D	Planas Andrés/F
9:40	Nagasaka/J	Goglio/I
10:00	Bohinc/SI	To/F
10:20	Coffee Break	
	Adhesives in Electromobile Applications	Joint Design
10:50	Fricke/D	Yokozeki/J
11:10	Gilich/D	Meulman/E
11:30	Indicatti/D	Vallée/D
11:50	Coffee Break	
	Festsaal Werdenfels	
	Closing Session / FEICA Award / Poster Prize Awards	
12:20	FEICA Prize Award Lecture: Kaufmann/D	
13:05	Poster Prize Awards	
	Closing & Announcement next EURADH & WCARP	
13:30	End of conference	

(Status: 15 August 2023, subject to change)

LECTURE PROGRAMME

Monday, 11 September 2023

Room: Festsaal Werdenfels

OPENING & PLENARY SESSION

- 08:45 **Welcome & Opening Remarks**
A. Hartwig, Fraunhofer IFAM Bremen/D; E. Stammen, ifs, TU Braunschweig, Aachen/D
- 09:00 **PLENARY LECTURE**
9 R instead of R9
A. Groß¹, ¹ Fraunhofer IFAM, Bremen/D
- 09:45 **Break for Changing the Lecture Hall**

Room: Festsaal Werdenfels

PLASMA PRETREATMENT OF POLYMER SURFACES

Chair: E. Stammen¹; ¹ ifs, TU Braunschweig, Aachen/D

- 10:00 **Influence of N₂ gas contamination on surface property of polytetrafluoroethylene in He heat-assisted plasma treatment**
K. Imajima¹; M. Nishino¹; T. Kodama¹; K. Endo¹; K. Yamamura¹; Y. Ohkubo²; ¹ Osaka University, Suita, Osaka/J
- 10:20 **Plasma treatments application to improve adhesion in Polybutyl-Succinate/flax biocomposite**
M. Bahrami¹; J. Butenegro¹; J. Abenojar²; M. Martinez¹; ¹ Universidad Carlos III Madrid, Madrid/E; ² Carlos III University of Madrid / Universidad Pontificia Comillas, Madrid/E
- 10:40 **Molecular Plasma – Sustainable Surface Functionalization for Adhesive Bonding**
S. Berg¹; ¹ Molecular Plasma Group, Foetz/L
- 11:00 **Plasma treatment for robust adhesive bonding processes: how long are activated polymer surfaces staying active?**
S. Stepanov¹; A. Stalling¹; J. Ihde¹; R. Wilken¹; B. Mayer¹; ¹ Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung IFAM, Bremen/D
- 11:20 **Coffee Break**

EFFECTS AND EFFICIENCY OF SURFACE TREATMENTS

Chair: J. del Real Romero¹; ¹ Universidad Pontificia Comillas, Madrid/E

- 11:50 **Direct bonding of thermoplasts via plasma-polymer thin films**
J. Barz¹; V. Schönhaar¹; M. Müller¹; ¹ Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, Stuttgart/D
- 12:10 **Improvement of wet-adhesion and corrosion resistance of adhesives on LDH-coated aluminum alloys**
L. Ruhm¹; P. Vieth¹; R. Peipmann²; W. Fürbeth²; G. Grundmeier¹; ¹ Paderborn University, Paderborn/D; ² DECHEMA-Forschungsinstitut, Frankfurt am Main/D
- 12:30 **Enhancement of the corrosion resistance of adhesive coated laser surface melted aluminium alloys by ultra-thin sealing layers**
P. Vieth¹; C. Ebbert¹; M. Voigt¹; G. Grundmeier¹; ¹ Paderborn University, Paderborn/D
- 12:50 **Quality assurance for adherend surfaces by using In-process ENDT methods**
C. Tornow¹; J. Adam¹; M. Martins Melo¹; T. Strohbach¹; M. Schlag¹; K. Brune¹; ¹ Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Bremen/D
- 13:10 **Lunch**

LECTURE PROGRAMME

Monday, 11 September 2023

Room: Festsaal Werdenfels

OPENING & PLENARY SESSION

- 08:45 **Welcome & Opening Remarks**
A. Hartwig, Fraunhofer IFAM Bremen/D; E. Stammen, ifs, TU Braunschweig, Aachen/D
- 09:00 **PLENARY LECTURE**
9 R instead of R9
A. Groß¹, ¹ Fraunhofer IFAM, Bremen/D
- 09:45 **Break for Changing the Lecture Hall**

Room: Konzert-Saal Richard-Strauss

MECHANICS AND FATIGUE

Chair: L. da Silva¹; ¹ University of Porto/P

- 10:00 **Single lap joints under bending loads**
R. Adams¹; ¹ University of Bristol, Oxford/UK
- 10:20 **Environmental fatigue crack growth behavior of double glass laminates adhesively bonded with a peroxide-cured EVA elastomer**
G. Wallner¹; P. Haselsteiner¹; G. Riedl¹; G. Säckl¹; R. Pugstaller¹; ¹ University of Linz, Institute of Polymeric Materials and Testing, Christian Doppler Laboratory for Superimposed Mechanical-Environmental Ageing of Polymeric Hybrid Laminates, Linz/A
- 10:40 **Designing and validating high performance bonded joints for long term structural applications**
E. Marques¹; R. Carbas¹; A. Akhavan-Safar¹; L. da Silva²; ¹ INEGI, Porto/P; ² Faculty of Engineering of the University of Porto, Porto/P
- 11:00 **AI-driven design of adhesive joints for resource optimization**
P. Evangelista Fernandes¹; V. Carrillo Beber¹; C. Nagel¹; K. Koschek¹; B. Mayer¹; ¹ Fraunhofer Institut für Fertigungstechnik und Angewandte Materialforschung, IFAM, Bremen/D
- 11:20 **Coffee Break**

FAILURE ANALYSIS

Chair: S. de Barros¹; ¹ Federal Center of Technological Education Rio de Janeiro/BR

- 11:50 **Fracture surface analysis of adhesive joints using deep learning**
K. Shimamoto¹; H. Akiyama¹; ¹ National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba/J
- 12:10 **Fracture Behavior Analysis of Various SGA Adhesive Joints Using Acoustic Emission**
K. Kamiyama¹; M. Mikuni¹; T. Matsumoto¹; S. Matsuda²; H. Kishi²; ¹ Mitsubishi Electric Corporation, Amagasaki, Hyogo/J; ² University of Hyogo, Himeji, Hyogo/J
- 12:30 **Assessment of adhesive failure properties for the three-point bending test using an analytical approach**
T. Birro¹; E. Paroissien²; M. Aufray³; F. Lachaud²; ¹ Capgemini Engineering, Toulouse/F; ² Institut Clément Ader (ICA), Toulouse/F; ³ CIRIMAT, Toulouse/F
- 12:50 **Analysis of cord-rubber bonds failure under complex loading**
P. Corbel¹; J. Jumel¹; V. Le Saux¹; Y. Marco¹; ¹ ENSTA Bretagne, Brest/F
- 13:10 **Lunch**

LECTURE PROGRAMME

Monday, 11 September 2023

Room: Festsaal Werdenfels

RENEWABLE FEEDSTOCK FOR ADHESIVES

Chair: S. Hinterwaldner¹; ¹ Hinterwaldner Consulting und Verlag, Kirchseeon/D

- 14:10 **Formulation of HMPSA based on renewable raw materials**
H. Henneken¹; D. Klein¹; E. Velispahic¹; N. Binti Abdul Razak¹; ¹ Jowat SE, Detmold/D
- 14:30 **Cold-set wood adhesives based on proteins without crosslinking agents**
N. Raydan¹; K. Richter²; B. Charrier¹; A. Hartwig²; E. Robles¹; ¹ University of Pau and the Adour Region, E2S UPPA, CNRS, Mont de Marsan/F; ² Fraunhofer IFAM, Bremen/D
- 14:50 **Algae-based phlorotannins as a raw material source for epoxy resin formulation**
A. Winkel¹; M. Kahlmeyer¹; S. Böhm¹; B. Fazliu¹; M. Horn¹; T. Fuhrmann-Lieker¹; ¹ Universität Kassel, Kassel/D
- 15:10 **Microstructure, Properties and Toughening of Cellulose-Modified Bio-Based Epoxy Polymer**
J. Terry¹; Y. Siow¹; P. Wang¹; A. Taylor¹; ¹ Imperial College London, London/UK
- 15:30 **Coffee Break**

ADHESION PHENOMENA

Chair: L. Völker-Pop¹; ¹ Anton Paar Germany, Ostfildern/D

- 16:00 **Adhesion Strength of Multivalent Bonds in Multifunctional Polymer Layers**
B. Balzer¹; ¹ University of Freiburg, Freiburg/D
- 16:20 **Nano-Raman Scattering on Epoxy / Epoxy Interphase**
T. Nishino¹; N. Aoki¹; T. Matsumoto¹; H. Aoki²; M. Totani³; A. Shundo³; K. Tanaka³; ¹ Kobe University, Kobe/J; ² Japan Atomic Energy Agency, Ibaragi/J; ³ Kyushu University, Fukuoka/J
- 16:40 **Roles of chemical interactions on adhesive bonding of epoxy/amine adhesive and aluminum**
S. Horiuchi¹; K. Akaike¹; Y. Shimoi¹; ¹ National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba/J
- 17:00 **Adhesion Properties of Epoxy Resin with Copolymer of Acetate-Protected Vinyl Catechol with Glycidyl Methacrylate**
C. Chu¹; Y. Zhang¹; K. Kojio¹; T. Kubo²; S. Tanizaki²; K. Satoh²; A. Takahara¹; ¹ Kyushu University, Fukuoka/J; ² Tokyo Institute of Technology, Tokyo/J
- 17:20 **Poster Party / Poster Discussion with Beer & Pretzel (17:20 – 19:00)**

Monday, 11 September 2023

Room: Konzert-Saal Richard-Strauss

MECHANICS

Chair: R. Adams¹; ¹ University of Bristol, Oxford/UK

- 14:10 **Damage quantification of thin films on soft substrate**
A. Singh¹; M. Ciccotti¹; C. Creton¹; R. Santoprete²; G. Luengo²; ¹ ESPCI, PSL, Paris/F; ² L'Oreal Research and Innovation, Aulnay sous Bois/F
- 14:30 **Influence of temperature, humidity, and simultaneous mechanical load on the long-term behavior of bonded steel joints with low-modulus adhesives**
S. Sander¹; G. Meschut¹; ¹ Universität Paderborn, Paderborn/D
- 14:50 **Experimental Characterization and Simulation of Thermally Conductive Adhesives for Automotive Battery applications**
S. Çavdar¹; A. Abedian¹; M. Schiel¹; ¹ Henkel AG & Co. KGaA, Düsseldorf/D
- 15:10 **Effect of temperature and pH on fatigue crack growth and ageing of electrical steel laminates in water-based heat carrier fluids**
M. Ninou Codina¹; R. Pugstaller¹; G. Wallner¹; B. Strauß²; ¹ Johannes Kepler University, Linz/A; ² Voestalpine, Linz/A
- 15:30 **Coffee Break**

STRUCTURE OF METAL SURFACES FOR BONDING

Chair: J. Jumel¹; ¹ ENSTA Bretagne, Brest/F

- 16:00 **Effect of coupled parameters on the robustness of laser surface preparation process**
S. Kirchner¹; J. Lecomte¹; L. Ferres¹; C. Debras²; M. Peron³; N. Cuvillier⁴; ¹ IRT Saint Exupéry, Talence/F; ² Thales Alenia Space, Cannes/F; ³ ArianeGroup, Le Haillan/F; ⁴ Safran Composites, Itteville/F
- 16:20 **Cleaning with laser light - Sustainable and long-term stable surface preparation of metals on functional areas for adhesive bonding**
E. Büchter¹; M. Draack¹; T. Weichert¹; ¹ Clean-Lasersysteme GmbH, Herzogenrath/D
- 16:40 **Influence of contamination on the bondability of laser-nanostructured titanium**
M. Kahlmeyer¹; A. Winkel¹; M. Burnett¹; S. Böhm¹; M. Veltrup²; T. Lukasczyk²; ¹ Universität Kassel, Kassel/D; ² Fraunhofer IFAM, Bremen/D
- 17:00 **Effect of silane adhesion promoters on the crosslinking kinetics of water-borne epoxy varnish systems and the mechanical strength of electrical steel laminates**
C. Marchfelder¹; R. Pugstaller¹; G. Wallner¹; ¹ Johannes Kepler University, Linz/A
- 17:20 **Poster Party / Poster Discussion with Beer & Pretzel (17:20 – 19:00)**

LECTURE PROGRAMME

Tuesday, 12 September 2023

Room: Festsaal Werdenfels

ADHESIVES CHEMISTRY

Chair: T. Ougizawa¹; ¹ Tokyo Institute of Technology, Tokyo/J

- 09:00 **Polyurethanes synthesized without isocyanates and their utilization as hardener for epoxy resins**
F. Al Hussein¹; H. Grobekenberg²; A. Hartwig¹; ¹ Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung IFAM / Universität Bremen, Bremen/D; ² Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung IFAM, Bremen/D
- 09:20 **Improved properties of waterborne polyurethane by adding small amount of nanosilica dispersion under mechanical stirring**
M. Echarri-Giacchi¹; J. Martín Martínez¹; ¹ University of Alicante, Alicante/E
- 09:40 **Nanostructured and toughened epoxy / acrylic BCP blends via in-situ control of interfacial curvature**
H. Kishi¹; K. Yamada¹; ¹ University of Hyogo, Himeji, Hyogo/J
- 10:00 **Functional polyhedral oligomeric silsesquioxane resins and their toughening modifications for epoxy resins**
H. Fan¹; J. Zheng¹; X. Zhang¹; J. Cao¹; ¹ Zhejiang University, Hangzhou/CN
- 10:20 **Polymerization-induced heterogenization, phase separation, and reaction acceleration at the vicinity of vitrification upon curing of thermoplastic resins**
Y. Suzuki¹; A. Matsumoto¹; ¹ Osaka Metropolitan University, Osaka/J

10:40 Coffee Break

ADHESIVES CHEMISTRY / PRESSURE SENSITIVE ADHESIVES

Chair: Z. Miyagi¹; ¹ Meiji University, Higashimita, Tama-ku, Kawasaki, Kanagawa/J

- 11:10 **Diffusion Dependence of Interphase Thickness and Adhesion Strength of Poly(methyl methacrylate)/Polycarbonate Laminates with Different Laminating Condition**
R. Okano¹; T. Matsumoto¹; T. Nishino¹; ¹ Kobe University, Nada-ku, Kobe City, Hyogo/J
- 11:30 **Photocatalyst-mediated Visible Light Curable Acrylic Pressure Sensitive Adhesive for Mobile Display**
J. Back¹; H. Kim¹; ¹ Seoul National University, Seoul/ROK
- 11:50 **High Performance and Multifunctional Strategies of Fluorinated Epoxy Resin and Its Nanocomposites**
T. Ma¹; J. Ma¹; J. Zhang¹; J. Cheng²; ¹ Beijing University of Chemical Technology, Beijing/CN; ² Beijing University of Chemical Technology, Beijing /CN
- 12:10 **Degradation of Ultraviolet Cross-Linked Acrylic Pressure-Sensitive Adhesives Containing Thioester Linkages**
R. Abu Bakar¹; K. Hepburn¹; P. Roth¹; J. Keddie¹; ¹ University of Surrey, Guildford/UK
- 12:30 **Flexible Optically Clear Pressure Sensitive Adhesive using Polymerization Induced Microphase Separation**
J. Kim¹; J. Back²; M. Lee²; G. Han²; S. Lee²; H. Kim²; ¹ Seoul National University, seoul/ROK; ² Seoul National University, Seoul/ROK

12:50 Lunch

Tuesday, 12 September 2023

Room: Konzert-Saal Richard-Strauss

NOVEL TOOLS FOR ADHESIVE TESTING

Chair: J. Qu¹; ¹ Sika Technology AG, Zürich/CH

- 09:00 **Determination of the gel point of formaldehyde-based wood adhesive by using a multiwave rheology test**
L. Nasser¹; C. Rosenfeld¹; P. Solt-Rindler¹; M. Mihalic¹; J. Konnerth²; H. Van Herwijnen¹; ¹ Wood K plus - Competence Centre for Wood Composites & Wood Chemistry, Linz/A; ² University of Natural Resources and Life Sciences, Institute of Wood Technology and Renewable Materials, Tulln/A
- 09:20 **Following cure kinetics and characterization of adhesives by combining rheology with Raman and dielectric spectroscopy**
L. Völker-Pop¹; ¹ Anton Paar Germany, Ostfildern/D
- 09:40 **Multiwave oscillation rheology for characterization and modeling of reacting adhesives during cure**
M. Schiel¹; A. Goyal²; T. Welters¹; ¹ Henkel AG & Co. KGaA, Düsseldorf/D; ² Henkel Corporation, Irvine/USA
- 10:00 **Mechanoluminescent visualization of interfacial strength and crack propagation during lap shear test - effect of bond thickness, overlap length and surface treatment**
N. Terasaki¹; Y. Fujio¹; Y. Sakata¹; K. Shimamoto²; H. Akiyama²; S. Horiuchi²; ¹ National Institute of Advanced Industrial Science and Technology (AIST), Tsu, Saga/J; ² National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba/J
- 10:20 **Inverse Design of Composite Xylophone Beams Considering Viscoelastic Properties of Adhesive Layer Using Finite Element-Based Machine Learning**
T. Kimura¹; J. Ming¹; Y. Sekiguchi¹; C. Sato¹; ¹ Tokyo Institute of Technology, Yokohama/J
- 10:40 **Coffee Break**

INDUSTRIAL CHALLENGES

Chair: J. Martín Martínez¹; ¹ University of Alicante, San Vicente del Raspeig, Alicante/E

- 11:10 **Improvement of the Fatigue Strength of Steel Bridges by Adhesively Bonded Steel Patches**
E. Stammen¹; B. Abel²; F. Ilg³; H. Grefe¹; ¹ Technische Universität Braunschweig/D; ² RWTH Aachen University, Aachen/D; ³ Munich University of Applied Sciences, München/D
- 11:30 **Durability of anticorrosive coated steel-CFRP structural adhesive joint under high temperature and high humidity**
T. Iwata¹; ¹ National Maritime Research Institute, Tokyo/J
- 11:50 **Inductive rapid curing for underwater application of secondary elements for the offshore sector**
A. Knap¹; S. Myslicki¹; L. Lemmrich²; L. Fröck²; J. Boretzki³; M. Albiez³; ¹ Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung IFAM, Bremen/D; ² Fraunhofer IGP, Rostock/D; ³ Karlsruhe Institut für Technologie, KIT, Karlsruhe/D
- 12:10 **Design of Bottlebrush Polysiloxane Network and Functionalized Strategy for the application in Phase Change Energy Materials**
J. Ma¹; J. Zhang¹; J. Cheng¹; ¹ Beijing University of Chemical Technology, Beijing/CN
- 12:30 **Finite Element Analysis and Measurement of Deformation of UV Curable Adhesives for Precise Positioning of Optical Components**
A. Takahashi¹; Y. Sekiguchi²; C. Sato²; ¹ Fujikura Ltd., Chiba/J; ² Tokyo Institute of Technology, Yokohama/J
- 12:50 **Lunch**

LECTURE PROGRAMME

Tuesday, 12 September 2023

Room: Festsaal Werdenfels

PRESSURE SENSITIVE ADHESIVES

Chair: H. Kim¹; ¹ Seoul National University, Seoul/ROK

- 14:00 **Determining and Modeling the Creep Behavior of an Acrylic Pressure-Sensitive Adhesive: An Exploratory Study**
B. Duarte Simões¹; É. Fernandes¹; E. Marques²; R. Carbas¹; S. Maul³; P. Stihler³; P. Weißgraeber⁴; L. da Silva²; ¹ INEGI, Porto/P; ² Faculty of Engineering of the University of Porto/P; ³ Robert Bosch GmbH, Renningen/D; ⁴ Faculty of Mechanical Engineering and Marine Technology of the University of Rostock/D
- 14:20 **Peeling pressure sensitive adhesives from chemically textured interfaces – tuning dissipation through cavitation**
E. Barthel¹; M. Ciccotti¹; K. Patel¹; J. Chopin²; X. Morelle³; ¹ CNRS/ESPCI PSL/Sorbonne Université, Paris/F; ² Universidade Federal Da Bahia, Salvador De Baia/BR; ³ CNRS/INSA Lyon/Université de Lyon, Villeurbanne/F
- 14:40 **Multi-scale modeling for debonding of pressure-sensitive adhesives**
T. Yamaguchi¹; ¹ The University of Tokyo/J
- 15:00 **Effect of tackifier addition to cis-1,4-polybutadiene on spontaneous wetting behavior and surface deformability**
S. Mishima¹; T. Ougizawa¹; ¹ Tokyo Institute of Technology, Tokyo/J
- 15:20 **Validity of micro-dynamic shear test with nanometre-resolution for evaluation of pressure sensitive adhesive properties**
Y. Takami¹; T. Katooka¹; Z. Miyagi¹; ¹ Meiji University, Hiagshimita, Tama-ku, Kawasaki, Kanagawa/J
- 15:40 **Coffee Break**

BIOADHESION / RENEWABLE

Chair: A. Taylor¹; ¹ Imperial College London, London/UK

- 16:10 **Design of tissue adhesive microparticles for robust closure of post-endoscopic submucosal dissection perforation**
S. Ito¹; K. Nagasaka¹; A. Nishiguchi²; F. Sasaki³; H. Maeda³; M. Kabayama³; A. Ido³; T. Taguchi¹; ¹ University of Tsukuba, Tsukuba, Ibaraki/J; ² National Institute for Materials and Science, Tsukuba, Ibaraki/J; ³ Kagoshima University, Kagoshima/J
- 16:30 **Design of tissue adhesive materials based on hydrophobically-modified Alaska pollock-derived gelatin for biomedical applications**
T. Taguchi¹; ¹ National Institute for Materials Science, Ibaraki/J
- 16:50 **The Effect of Humidity on Performance and Chemical Structures of Water-Based Polymer Isocyanate Adhesives During Post-cure**
A. Takemura¹; T. Wada¹; N. Hori¹; T. Yamaguchi¹; ¹ The University of Tokyo, Tokyo/J
- 17:10 **Eco-design of adhesive joints for footwear using hotmelt adhesives and atmospheric plasma**
M. Moyano¹; M. Carbonell Blasco¹; C. Ruzafa Silvestre¹; F. Arán Aís¹; E. Orgilés Calpena¹; ¹ INESCOP, Elda/E
- 17:30 **End of Lecture Sessions**
- 18:30 **Conference Dinner / Conference Party (18:30 – 22:30)**

Tuesday, 12 September 2023

Room: Konzert-Saal Richard-Strauss

REPAIR, RECYCLING, DEBONDING ON DEMAND

Chair: H. Kishi¹; ¹ University of Hyogo, Himeji, Hyogo/J

- 14:00 **Debonding primer for dismantling on demand of structural bonds**
R. Szymanski¹; M. Olive¹; ¹ RESCOLL, Pessac/F
- 14:20 **Dismantlable Adhesives Using Non-degradable Cured Polymers**
E. Sato¹; Y. Tsutsui¹; K. Katagi²; S. Okada²; ¹ Osaka Metropolitan University, Osaka/J; ² Osaka City University, Osaka/J
- 14:40 **Debonding of adhesive joints due to water absorption**
H. Akiyama¹; K. Shimamoto¹; ¹ National Institute of Advanced Industrial Science and Technology, Tsukuba/J
- 15:00 **Efficient Debonding of Adhesive Joints at Low Temperatures**
N. Chudalla¹; G. Meschut¹; A. Bartley²; M. Wibbeke²; ¹ Universität Paderborn/D; ² Hochschule Hamm-Lippstadt, Lippstadt/D
- 15:20 **Debonding on demand strategies for industrial usecases**
C. Faure¹; J. Lecomte¹; L. Ferres¹; B. Doll²; A. Fraysse³; S. Couarraze⁴; ¹ IRT Saint Exupéry, Talence/F; ² Thales Alenia Space, Cannes/F; ³ ACTIA, Toulouse/F; ⁴ Continental, Toulouse/F
- 15:40 **Coffee Break**

NON DESTRUCTIVE METHODS

Chair: H. Henneken¹; ¹ Jowat SE, Detmold/D

- 16:10 **Analysis of multiscale structure of polyurethane adhesive in the single-lap joint based on the microbeam X-ray scattering**
K. Obayashi¹; K. Kamitani¹; C. Chu¹; R. Kawatoko¹; C. Cheng¹; A. Takahara¹; K. Kojio¹; ¹ Kyushu University, Fukuoka/J
- 16:30 **Detection of adhesion defects of bonded joints using non-destructive acoustic methods**
J. Philipp¹; E. Stammen¹; D. Klaus¹; K. Mike²; K. Marc²; ¹ TU Braunschweig/D; ² Universität Stuttgart/D
- 16:50 **Fault Detection by Acoustic Signals in Adhesive Joints Using Artificial Neural Networks**
C. Tais¹; J. Fontana²; R. O'Brien²; L. Molisani²; Y. Ballesteros³; J. del Real Romero³; ¹ Universidad Tecnológica Nacional, Villa María/RA; ² Universidad Nacional de Río Cuarto/RA; ³ Universidad Pontificia Comillas, Madrid/E
- 17:10 **Monitoring of moisture distribution in adhesive layer using near-infrared spectroscopy**
J. Han¹; Y. Sekiguchi¹; K. Shimamoto²; H. Akiyama²; C. Sato¹; ¹ Tokyo Institute of Technology, Yokohama/J; ² National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba/J
- 17:30 **End of Lecture Sessions**
- 18:30 **Conference Dinner / Conference Party (18:30 – 22:30)**

LECTURE PROGRAMME

Wednesday, 13 September 2023

Room: Festsaal Werdenfels

BIOADHESION

Chair: F. Arán Aís¹; ¹ INESCOP - FOOTWEAR TECHNOLOGY CENTRE, Elda/E

- 09:00 **Design and characterization of anti-swellable tissue adhesive hydrogels for biomedical applications**
H. Komatsu¹; S. Watanabe²; S. Ito¹; K. Nagasaka¹; A. Nishiguchi¹; T. Taguchi¹; ¹ University of Tsukuba / National Institute for Materials Science, Tsukuba, Ibaraki/J; ² National Institute for Materials Science, Tsukuba, Ibaraki/J
- 09:20 **Synthesis and characterization of a hydrogel-adhesive for medical applications**
K. Karakyriazis^{1,2,3}; V. Lührs^{1,2,3}; S. Stößlein³; I. Grunwald^{3,4}; A. Hartwig^{1,2}; ¹ Fraunhofer IFAM Bremen/D, ² University of Bremen/D, ³ Purenum GmbH, Bremen/D, ⁴ City University of Applied Sciences, Bremen/D
- 09:40 **Enhanced vascular tissue adhesion of a catechol groups-modified Alaska pollock-derived gelatin-based surgical adhesive**
K. Nagasaka¹; S. Watanabe²; S. Ito¹; A. Nishiguchi²; H. Otsuka³; T. Taguchi²; ¹ University of Tsukuba, Ibaraki/J; ² National Institute for Materials Science, Ibaraki/J; ³ Tokyo University of Science, Tokyo/J
- 10:00 **Microbial adhesion to relevant medical surfaces**
K. Bohinc¹; ¹ University of Ljubljana/SLO
- 10:20 **Coffee Break**

ADHESIVES IN ELECTROMOBILE APPLICATIONS

Chair: J. Zhang¹; ¹ Beijing University of Chemical Technology, Beijing/CN

- 10:50 **Adhesive bonding technology for the production of energy storage systems for electric vehicles**
H. Fricke¹; M. Rütters¹; ¹ Fraunhofer IFAM Bremen/D
- 11:10 **Influences on the Flow Behavior of Highly Viscous Thermal Interface Materials in the Joining Process**
J. Gilich¹; G. Meschut¹; F. Wiebicke²; I. Koch²; M. Kuhn²; M. Gude²; ¹ Paderborn University, Paderborn/D; ² Technical University of Dresden/D
- 11:30 **Rheology-based classification of adhesives for stencil printing of fuel cell sealings**
F. Indicatti¹; M. Rädler¹; E. Stammen²; K. Dilger²; ¹ Robert Bosch GmbH, Renningen/D; ² Technische Universität Braunschweig/D
- 11:50 **Coffee Break**

Room: Festsaal Werdenfels

CLOSING SESSION / FEICA PRIZE AWARD LECTURE / POSTER PRIZE AWARDS

Chairs: : A. Hartwig¹; E. Stammen²; ¹ Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung (IFAM), Bremen/D; ² ifs, TU Braunschweig, Aachen/D

- 12:20 **FEICA Prize Award Lecture**
How adhesives flow during joining
M. Kaufmann¹; F. Flaig²; M. Müller²; H. Fricke¹; T. Vallée¹; ¹ Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Bremen/D; ² Insitute of Dynamics and Vibrations, Technical University of Braunschweig/D
- 13:05 **Poster Prize Awards**
- 13:10 **Closing / Announcement next EURADH & WCARP**
- 13:30 **End of conference**

Wednesday, 13 September 2023

Room: Konzert-Saal Richard-Strauss

SIMULATION

Chair: A. Droste¹; ¹DuPont, Neu-Isenburg/D

- 09:00 **Slow rate crack propagation kinetic “master curves” evaluation using eulerian cohesive zone modeling approach**
J. Jumel¹; J. Marquez Costa²; ¹ ENSTA Bretagne, Brest/F; ² ENSTA Bretagne, Brest/F
- 09:20 **Experimental and numerical validation of a new finite thickness/width rate-dependent cohesive zone model**
M. Planas Andrés¹; É. Paroissien¹; F. Lachaud¹; P. Gérard²; ¹ ISAE SUPAERO, Toulouse/F; ² ARKEMA, Lacq/F
- 09:40 **Effect of bonding area geometry on the behaviour of composite Single Lap Joints (SLJ) under tensile loading and estimation of adhesive properties using FEM and SLJ experiments**
L. Goglio¹; M. Abbasi¹; R. Ciardiello¹; ¹ Politecnico di Torino/I
- 10:00 **Correlation between experiments and numerical simulation in modelling visco-hyperelasticity of aeronautical sealant in pure bonded and hybrid bolted/bonded joints**
M. To¹; É. Paroissien¹; F. Lachaud¹; V. Nassiet²; B. Hassoune²; M. Aufray³; H. Weleman²; ¹ ISAE SUPAERO, Toulouse/F; ² ENIT, Tarbes/F; ³ ENSIACET, Toulouse/F
- 10:20 **Coffee Break**

JOINT DESIGN

Chair: L. Goglio¹; ¹ Politecnico di Torino, Torino/I

- 10:50 **Strength Prediction of Hybrid Bonded Bolted Joints for Structural Steel Applications**
K. Yokozeiki¹; T. Vallée²; H. Fricke²; ¹ Nippon Steel Corporation, Chiba/J; ² Fraunhofer IFAM Bremen/D
- 11:10 **Design of an energy release rate-controlled mode I creep crack growth rate test method for adhesively bonded joints**
E. Meulman¹; J. Renart¹; L. Carreras¹; J. Zurbitu²; ¹ Universitat de Girona, Girona/E; ² Ikerlan Technology Research Centre, Basque Research and Technology Alliance (BRTA), Arrasate-Mondragón/E
- 11:30 **Are probabilistic methods a way to get rid of fudge factors?**
T. Vallée¹; ¹ Fraunhofer IFAM Bremen/D
- 11:50 **Coffee Break**

Room: Festsaal Werdenfels

CLOSING SESSION / FEICA PRIZE AWARD LECTURE / POSTER PRIZE AWARDS

Chairs: : A. Hartwig¹; E. Stammen²; ¹ Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung (IFAM), Bremen/D; ² ifs, TU Braunschweig, Aachen/D

- 12:20 **FEICA Prize Award Lecture**
How adhesives flow during joining
M. Kaufmann¹; F. Flaig²; M. Müller¹; H. Fricke¹; T. Vallée¹; ¹ Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Bremen/D; ² Insitute of Dynamics and Vibrations, Technical University of Braunschweig/D
- 13:05 **Poster Prize Awards**
- 13:10 **Closing / Announcement next EURADH & WCARP**
- 13:30 **End of conference**

(Programme subject to change)

POSTER PROGRAMME

- P 01 **Curing Mechanism at the Polyurethane Adhesive Interface: Differences in Reactive Properties in the Bulk and at the Interface**
S. Yamazaki¹; T. Miyamae¹; ¹ Chiba University, Chiba/J
-
- P 04 **Adhesion by Photo Crosslinking of Coumarin-attached Polymer-Grafted Nanoparticles**
Y. Matsushita¹; ¹ Kogakuin University, Tokyo/J
-
- P 05 **Surface Modification and Adhesion by Sulfobetaine-containing Polymer-grafted Nanoparticles**
M. Kobayashi¹; ¹ Kogakuin University, Tokyo/J
-
- P 07 **Wetting Behaviour of different Biobased Impregnation Resins for High-Pressure Laminates**
E. Billich¹; E. Hogger¹; H. Van Herwijnen¹; A. Potthast²; A. Amsuess³; ¹ Wood K plus / University of Natural Resources and Life Sciences, Tulln an der Donau/A; ² University of Natural Resources and Life Sciences, Tulln an der Donau/A; ³ Fundermax GmbH, Wiener Neudorf/A
-
- P 08 **Adhesion enhancement using water jet texturing technique Influence of surface topography**
P. Freuelin¹; R. Zitoune²; J. Jume^{1,3}; A. Jaillon¹; F. Cenac¹; ¹ Bayab Industries, Toulouse/F; ² Institut Clément Ader (ICA), Toulouse/F; ³ ENSTA Bretagne, Brest/F
-
- P 09 **Molecular adhesion studies of a pilus-derived peptide on ZnO single crystal surfaces**
T. Prüßner¹; G. Grundmeier¹; A. Keller¹; ¹ Paderborn University, Paderborn/D
-
- P 10 **Adhesively bonded fuel cells based on bio-based raw materials**
E. Stammen¹; S. Brokamp²; F. Bunzel³; ¹ Technische Universität Braunschweig, Braunschweig/D; ² ZBT GmbH, Duisburg/D; ³ Fraunhofer WKI, Braunschweig/D
-
- P 12 **Damp heat ageing behavior of double glass laminates adhesively bonded with peroxide-curing ethylene copolymers**
G. Wallner¹; M. Tiefenthaler¹; G. Säckl¹; R. Pugstaller¹; ¹ Christian Doppler Laboratory for Superimposed Mechanical-Environmental Ageing of Polymeric Hybrid Laminates, Institute of Polymeric Materials and Testing, University of Linz, Linz/A
-
- P 13 **Prediction of cure-induced residual stresses using ExRheo**
J. Wirries¹; T. Vallée¹; M. Rütters¹; ¹ Fraunhofer IFAM Bremen, Bremen/D
-
- P 14 **Comparison of time-temperature dependent mechanical behavior of UV-curing acrylate adhesives for structural glass applications**
D. Offereins¹; A. Pauli¹; G. Siebert¹; ¹ Universität der Bundeswehr München, Neubiberg/D
-
- P 15 **Mechanical Modeling of tesa's pressure sensitive adhesives**
N. Kröger¹; A. Ricker¹; G. Osterwinter¹; M. Kruk¹; J. Cugliari¹; J. Shenawai¹; S. Schmidt-Lehr¹; R. Storbeck¹; M. Husemann¹; ¹ tesa SE, Norderstedt/D
-
- P 16 **Improvement of the environmental fatigue resistance of hybrid electrical steel laminates by pre-treatment of substrate**
M. Ninou Codina¹; R. Pugstaller²; G. Wallner²; B. Strauß³; ¹ Johannes Kepler University, Linz/A; ² Johannes Kepler University, Linz/A; ³ Voestalpine, Linz/A
-
- P 17 **Progressive damage modeling on the Impact and CAI Behavior of curved composite Aerospace**
B. Derias¹; A. Maziz¹; T. Birro¹; B. Gely¹; ¹ Capgemini Engineering, Toulouse/F

POSTER PROGRAMME

- P 18 **In-situ monitoring of damage evolution through acoustic emission applied to bonded assembly**
I. Beriah¹; J. Jumel¹; M. Diakhaté²; F. Lavelle³; ¹ ENSTA Bretagne, Brest/F; ² UBO, Brest/F; ³ CNES, Paris/F
-
- P 19 **Development and testing of hybrid thermoplastic/steel induction welding technique**
T. Fkyerat¹; R. Creac’hcadec¹; F. Le Poulain²; ¹ ENSTA Bretagne, Brest/F; ² Université de Bretagne Occidentale, Brest/F
-
- P 20 **A critical look at the status on the design regulations for structural adhesively bonded joints of fiber reinforced polymers**
T. Vallée¹; ¹ Fraunhofer IFAM Bremen, Bremen/D
-
- P 21 **New test method for adhesive CFRP joint by DIC measurement**
T. Matsuo¹; T. Iwata¹; S. Akiyama¹; T. Yamatogi²; T. Sakurai²; T. Inoue²; ¹ National Maritime Research Institute, Japan, Tokyo/J; ² Nakashima Propeller, Okayama/J
-
- P 22 **New equipment for in situ assessment of the extent and kinetics of self-healing of polyurethane adhesives**
Y. Paez Amieva¹; J. Carpena-Montesinos¹; J. Martín Martínez¹; ¹ University of Alicante, Alicante/E
-
- P 23 **Investigation and optimization of process parameters and tools for underwater bonding of mounting systems**
L. Fröck¹; T. Hassel²; ¹ Fraunhofer IGP, Rostock/D; ² Leibniz Universität Hannover LUH, Hannover/D
-
- P 25 **Comparison of Adhesion Effect between a Recycled Carbon Fiber Composite and Aeronautic Prepreg Waste as Reinforcements in Polyamide-11 Composites**
J. Butenegro¹; M. Bahrami¹; J. Abenojar¹; Y. Swolfs²; J. Ivens²; M. Martínez¹; ¹ Universidad Carlos III Madrid, Leganés, Madrid/E; ² KU Leuven, Leuven/B
-
- P 26 **Carbon Fiber Composites-Steel Joints for Strengthening Bus Structures**
M. Martínez¹; D. Lavayen²; J. Butenegro¹; M. López-Boada¹; J. Abenojar¹; M. Bahrami¹; ¹ Universidad Carlos III Madrid, Leganés, Madrid/E; ² Pontificia Universidad Católica de Perú, Lima/PE
-
- P 27 **Effective polymer adhesive for bridge strengthening**
K. Krzywinski¹; S. El Awad²; L. Sadowski¹; ¹ Wroclaw University of Science and Technology, Wroclaw/PL; ² University of Houston/USA
-
- P 28 **Synthesis and Characterization of Oligomeric Lignin-Modified Phenol-Formaldehyde Resins**
F. Zeppetzauer¹; T. Frater¹; R. Süß¹; R. Putz¹; B. Kamm¹; ¹ Kompetenzzentrum Holz GmbH, Linz/A
-
- P 29 **Curing kinetics of an anaerobic adhesive on copper and steel substrates**
J. Abenojar¹; S. Lopez de Armentia²; J. Butenegro¹; M. Bahrami¹; J. del Real Romero²; M. Martínez¹; ¹ Universidad Carlos III Madrid, Leganes (Madrid)/E; ² Universidad Pontificia Comillas, Madrid/E
-
- P 30 **Thermoplastic polyurethane pressure sensitive adhesives with controlled adhesion in a short temperature range**
M. Fuensanta¹; Y. Paez Amieva¹; J. Martín Martínez¹; ¹ University of Alicante, Alicante/E

POSTER PROGRAMME

- P 31 **The Effect of Mechanical Properties of Epoxy Structural Adhesives via Modified Epoxy Resins**
H. Kim¹; C. Lim¹; B. Seo¹; ¹ Korea Research Institute of Chemical Technology (KRICT), Ulsan/KR
-
- P 32 **Adhesion mechanisms of silane-terminated polymers**
G. Mello Santos¹; J. Lacombe²; P. Fourton²; M. Savonnet²; C. Creton¹; M. Ciccotti¹; Y. Tran¹;
¹ ESPCI Paris, PSL University, CNRS, Sorbonne Université, Paris/F; ² Saint-Gobain Research Paris, Aubervilliers/F
-
- P 33 **Stretchable Pressure-Sensitive Adhesives with Topological Cross-linking and Bottlebrush Structure**
M. Yi¹; H. Kim¹; ¹ Seoul National University, Seoul/KR

(Programme subject to change)

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