

Challenging Glass 9

19 & 20 June 2024

Delft University of Technology, The Netherlands
Aula Congres Centre, Mekelweg 5, 2628 CD, Delft



Organising partners



Conference Proceedings

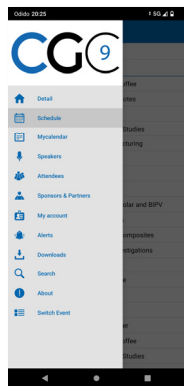


Access abstracts and papers via the conference proceedings. Selected papers will appear in a special issue of the Glass Structures & Engineering journal.



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Welcome!

Welcome at Challenging Glass!

At this 9th edition of the conference, we are thrilled to welcome no less than 120 presentations - a record since the first edition of this international event back in 2008.

Ever since, we have been keeping up our high standards in sharing knowledge, science and best practices on glass engineering and design. Thanks to the great work of bright authors and sharp reviewers, that is not different this time.

What actually is different this edition, is the introduction of a Glass Circularity Debate. We have seen several trends come and go over the past years, but the importance of circular design is to stay! Therefore, on top of the regular technical sessions on the topic, we bring five speakers to the stage who will pitch their views on the circular use of glass and discuss it with each other and the audience. You are warmly invited to actively participate!

Furthermore, we are happy to welcome no less than five top-notch keynote speakers. The first keynote will focus on the Mirage project and will be delivered jointly by Dr Faidra Oikonomopoulou, Dr Telesilla Bristogianni and Mr Alexandros Cannas. The second keynote will be presented by Dr Peter Zoon, who will explain how glass plays an important role in crime scene investigations. It promises to be a criminal talk! Last but not least, Dr Corentin Fivet will share his work on new design paradigms for reuse during his closing plenary lecture.

During the conference you will be able to retrieve all abstracts and papers, but also presenter details and programme updates with our conference app. After the conference, all papers will be available online, either through our online proceedings platform or through the peer-reviewed journal Glass Structures & Engineering (SpringerNature).

We explicitly like to thank the continuous support of our sponsors, Scientific Committee members, authors and attendees.

Together with you and with our co-hosts James O'Callaghan, Mauro Overend and Fred Veer we are eager to kick off Challenging Glass 9!

Christian Louter, Freek Bos and Jan Belis

Conference Organisers

June 2024



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Dr Freek **Bos** – Technical University of Munich

Prof. Jan **Belis** – Ghent University

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Dr Fred **Veer** – Delft University of Technology

Programme Overview Wednesday – June 19th

09:00 – 09:30	Registration & Coffee			
Plenary session	Keynote presentations			
09:30 – 09:45	Opening words			
09:45 – 10:30	Mirage: Transforming deserts to glass Dr. Faidra Oikonomopoulou & Dr. Telesilla Bristogianni – TU Delft Alexandros Cannas, Dipl.-Ing. CEng MICE – Eckersley O’Callaghan			
10:30 – 11:15	Glass meets CSI: How the NFI links shards to suspects and past crimes. Dr. Peter Zoon – Netherlands Forensic Institute			
11:15 – 11:45	Coffee break			
Parallel sessions	Auditorium	Room B	Room C	Room D
11:45 – 12:45	PROJECTS & CASE-STUDIES	ADDITIVE MANUFACTURING	THIN GLASS	CAST GLASS
12:45 – 14:00	Lunch break			
Parallel sessions	Auditorium	Room B	Room C	Room D
14:00 – 15:30	SMART GLAZING, SOLAR & BIPV	LAMINATED GLASS	ADHESIVES & COMPOSITES	EXPERIMENTAL & NUMERICAL INVESTIGATIONS
15:30 – 16:00	Coffee break			
Plenary session	Glass Circularity Debate			
16:00 – 17:30	David Entwistle, Sophie Penner, Lisa Rammig, Gertjan Peters, Adrian Betanzos, <u>Moderator</u> : James O’Callaghan			
17:30 – 17:45	Group photo			
18:00 – 19:00	Boattrip – registration required – Abtswoudsebrug, Schieweg, Delft			
19:00 – 22:00	Conference Dinner – registration required – Loetje, Korte Geer, Delft			

Programme Overview Thursday – June 20th

09:00 – 09:15	Registration & Coffee			
Parallel sessions	Auditorium	Room B	Room C	Room D
09:15 – 10:45	PROJECTS & CASE-STUDIES	CURVED GLASS	STRENGTH, STABILITY & SAFETY	EXPERIMENTAL & NUMERICAL INVESTIGATIONS
10:45 – 11:15	Coffee break			
Parallel sessions	Auditorium	Room B	Room C	Room D
11:15 – 12:45	CIRCULARITY & SUSTAINABLE SOLUTIONS	STRUCTURAL GLASS DESIGN & STANDARDS	STRENGTH, STABILITY & SAFETY	EXPERIMENTAL & NUMERICAL INVESTIGATIONS
12:45 – 14:00	Lunch break			
Parallel sessions	Auditorium	Room B	Room C	Room D
14:00 – 15:30	CIRCULARITY & SUSTAINABLE SOLUTIONS	LAMINATED GLASS	ADHESIVES & COMPOSITES	OPTICAL & THERMAL PERFORMANCE
15:30 – 16:00	Coffee break			
Plenary session	Keynote presentation			
16:00 – 16:45	Waste no more: new design paradigms for reuse Prof. Corentin Fivet – Structural Xploration Lab – EPFL			
16:45 – 17:00	Closing words			
17:00 – 18:00	Drinks at conference			
18:00 – 21:00	No program			
21:00 – 23:00	Drinks in town – Café de Wijnhaven, Wijnhaven 22, Delft			

Keynote Speakers



Dr. Faidra Oikonomopoulou

Dr. Telesilla Bristogianni

Delft University of Technology

Delft, The Netherlands

Dr. Faidra Oikonomopoulou and Dr. Telesilla Bristogianni are both Assistant Professors at the Architectural Engineering + Technology Department, at the TU Delft Faculty of Architecture and the Built Environment. They have conjointly initiated and developed the research on structural cast glass at TU Delft, with particular focus on innovative structural and architectural applications of cast glass components, on glass recycling and on defining the strength of cast glass. Their deep expertise in the field of cast glass has cemented the research group's position as the world leader in this field. Telesilla and Faidra have been involved in the R&D of several realized cast glass structures (Crystal Houses, the Glass Vault, Qaammat Pavilion, Mirage) and have received multiple awards including the Innovation Award by the Society of Façade Engineers (UK, 2016), the Glass Innovation Award (NL, 2017) and the personal Talent met Toekomst Bouwprijs (NL, 2017). Prototypes of their research work on structural cast glass have been exhibited in several prestigious international fairs and exhibitions. For their research, they have received several prestigious grants, awards and nominations and have given multiple invited talks in universities, companies and institutions in Europe and USA.



Alexandros Cannas, Dipl.-Ing. CEng MICE

Eckersley O'Callaghan

London, United Kingdom

Alexandros Cannas is a structural engineer, with experience working on numerous complex structures made with glass, steel, cables and carbon fibre for buildings and other marine applications. He has an affinity for developing details that are functional but minimalist at the same time. Alexandros is an Associate Director at Eckersley O'Callaghan.



Dr. Peter Zoon

Netherlands Forensic Institute

The Hague, The Netherlands

Dr. Zoon is a seasoned forensic scientist with over 15 years of experience, specializing in Microtraces & Materials at the prestigious Netherlands Forensic Institute (NFI). Within the division of chemical and physical traces, he serves as the subject matter lead for forensic glass analysis. His journey in forensic science began after obtaining his PhD in physical organic chemistry from the University of Amsterdam, where he conducted research on single molecule photophysics under the guidance of Prof. Dr. Brouwer. Following this, he pursued a post-doctoral position at the van Leeuwenhoek Centre for Advanced Microscopy in Amsterdam. Here, he focused on the development and implementation of controlled light exposure microscopy in widefield microscopy. After his transition to the NFI; he now is a senior member of the Microtraces & Materials group, where he dedicates his expertise to both forensic casework and research & development. His casework involves intricate microtrace analysis, such as metal particulates embedded in bone, as well as the identification and comparison of unknown particulates. Additionally, he specializes in forensic glass examinations, where his comparative analyses help determine the origins of glass traces found at crime scenes. His work not only assists in criminal investigations, but also contributes to the broader scientific community through research and innovation.



Prof. Corentin Fivet

Structural Xploration Lab

École Polytechnique Fédérale de Lausanne

Lausanne, Switzerland

Prof. Corentin Fivet is associate professor of architecture and structural design at EPFL (Switzerland). Under his direction, the Structural Xploration Lab is a front-runner in developing optimization algorithms, construction methods, and groundbreaking full-scale prototypes that pioneer the reuse of discarded load-bearing components in new building structures. Since April 2024, he is also the Academic Director of the Smart Living Lab, a cross-disciplinary research centre for the future of the built environment.

Wednesday June 19th | 11:45 – 12:45

DAY 1	Auditorium	Room B
	PROJECTS & CASE-STUDIES	ADDITIVE MANUFACTURING
	Chair: Robert Capel	Chair: Dr Rebecca Hartwell
11:45 – 12:00	Panoramic Perfection: Unveiling Technical Insights from “The Henderson” in Hong Kong <i>Andreas Komm, Markus Bruckner, Anna-Maria Heinz</i>	Advancing Sustainable 3D Printing: The Feasibility of Recycled Glass as a Building Material With Additive Manufacturing <i>Michael Stern, Ethan Townsend, Daniel Massimino, Kaitlyn Becker</i>
12:00 – 12:15	Predictability and Performance of High Strength Epoxy Glue Glass Assemblies <i>Paul Covillault, Niccolo Baldassini, Klaas De Rycke</i>	Design of Additive Manufactured Glass Components for Glass Point Fixings <i>Phillip Amir Chhadeh et al.</i>
12:15 – 12:30	Structural Glass Design for External Glazed Walkways in Iceland <i>Augustin Jouy, Philip Wilson, Grammatiki Dasopoulou</i>	Additive Manufacturing of Interlocking Glass Masonry Units <i>Daniel Massimino, Ethan Townsend, Charlotte Folinus, Michael Stern, Kaitlyn Becker</i>
12:30 – 12:45	An Approach for a Passively Shaded Glazed Steel Façade Utilizing Digital Design Strategies <i>Julian Länge, Roman Schieber, Alessandro Fontana</i>	Spray Printed Glass <i>Matthias Seel, Erwin ten Brincke, Emanuel Nowak, Phillip Amir Chhadeh, Miriam Schuster</i>
	-	-
	-	-
12:45 – 14:00	Lunch Break	Lunch Break

Parallel Sessions | Day 1

Room C	Room D	Day 1
THIN GLASS	CAST GLASS	
Chair: Prof. Jürgen Neugebauer	Chair: Dr Vlad Silvestru	
Lightweight IGU <i>Jürgen Neugebauer, Katharina Schachner</i>	Structural Design Optimization of Cast Glass Artwork via a Digital Design Solution <i>Omar Aloui, Minxi Bao</i>	11:45 – 12:00
Lightweight Insulating Glass Unit <i>Pascal Joos, Philippe Willareth, Thomas Wüest</i>	Light Forms: Modular Variation, Pattern, Structure <i>Catie Newell, Alli Hoag, Omid Oliyan</i>	12:00 – 12:15
First Steps Towards a Smart Laminated Safety Glass made of Thin Glass and Polycarbonate <i>Sebastián Andrés López, Thorsten Weimar</i>	Surface and Finishing Quality Exploration of Complex Cast Glass Forms Produced on Disposable Moulds <i>Menandros Ioannidis et al.</i>	12:15 – 12:30
Reducing Deflection of Thin Glass by Prestress <i>Austin Bensed, Marco Zaccaria</i>	More with Less: Topology Optimization Strategies for Structural Glass Design <i>Jackson Jewett et al.</i>	12:30 – 12:45
Lunch Break	Lunch Break	12:45 – 14:00

Wednesday June 19th | 14:00 – 15:30

DAY 1	Auditorium	Room B
	SMART GLAZING, SOLAR & BIPV	LAMINATED GLASS
	Chair: Dr Guido Lori	Chair: Dr Wim Stevels
14:00 – 14:15	Towards New Diagnostic Strategies and Monitoring Tools for Long-Term High-Performance Smart Facades <i>Mohammad Momeni et al.</i>	Adhesion of Laminated Glass Interlayer in a Double Cantilever Beam Test <i>Paul Elziere, Yael Bronstein, Fabien Levasseur, Francis Serruys</i>
14:15 – 14:30	Electrophoretic Light Modulator (ELM) Dynamic Glass Technology: A Daylight and Energy Performance Study <i>Matthew Tee, Carmelo Guido Galante, Romaric Massard</i>	Freely Hanging Multi-Layer Laminated Glass Subjected to Near-Field Blast <i>Alžběta Kohoutová, Paolo Del Linz, Přemysl Kheml, Petr Konrád, Petr Hála</i>
14:30 – 14:45	Environmental Impact of Passive Smart Window Technologies: Framework and Preliminary Results <i>Alessandra Luna Navarro, Paolo Matricardi, Marc Ottele, Christian Louter</i>	Post-Failure Behavior of Point-Fixing Laminated Glass Plates under Out-of-Plane Uniform Pressure <i>Sicheng Zhou, Sara Cattaneo, Luigi Biolzi</i>
14:45 – 15:00	The Preliminary Assessment of Visual Performance of Novel Switchable Glazing Assemblies for Glare Control in a Mediterranean Climate <i>Etienne Magri, Vincent Buhagiar,</i>	Mechanical Enhancement of Fractured Laminated Glass considering Fragment Overlaps and Temperatures <i>Dongdong Xie, Jian Yang, Xing-er Wang, Xianfang Jiang, Gang Li</i>
15:00 – 15:15	Early-Detection of EVA Encapsulant Degradation in PV Modules Based on Vibration Frequency Analysis <i>Chiara Bedon, Alessandro Massi Pavan, Nicola Cella, Nicola Blasuttigh</i>	Adhesion Properties of Polyvinyl-Butyral-Laminated Glass under High-Speed Loading <i>Zhifei Chen, Xing Chen, Suwen Chen</i>
15:15 – 15:30	Photovoltaics in the Building Envelope <i>Barbara Siebert, GERALT Siebert</i>	Predictive Analysis of Laminated Glass Performance Under Static and Dynamic Loading Conditions <i>Amit Kumar Gupta et al.</i>
15:30 – 16:00	Coffee Break	Coffee Break

Parallel Sessions | Day 1

Room C	Room D	Day 1
ADHESIVES & COMPOSITES	EXPERIMENTAL & NUMERICAL INVESTIGATIONS	
Chair: Dr Valérie Hayez	Chair: Prof. Suwen Chen	
The Minimal Wall: A Composite Approach in the Design of Glass-Aluminium Facades to Minimise Embodied Carbon Emissions <i>Stefan Trifonov et al.</i>	Influence of Design Variables on Seismic Performance of Unitized Curtain Walls: A Parametric Experimental Study <i>Simona Bianchi, Guido Lori, Valerie Hayez, Mauro Overend, Giampiero Manara</i>	14:00 – 14:15
Influence of Bonded Air- Versus Tin-side on the Shear Strength of Glass-to-Glass Joints of Transparent Epoxy Adhesive at Elevated Temperatures <i>Yasmina Boutar et al.</i>	Structural Topology Optimization for Abrasive Water-Jet Fabricated Glass <i>Kimhong Heng, Maxime Vassaux, Raveth Hin, Chansopheak Seang, Eric Robin, Jean-Christophe</i>	14:15 – 14:30
Stress Distribution along the Structural Sealant Joint Length of a Cylindrically Curved Glazing Panel <i>Mihail Istratii</i>	Structural Assessment of Translucent Walls Built with a Novel Type of Insulating Aerogel-Filled Glass Bricks <i>Vlad-Alexandru Silvestru, Christian Bianchi, Jannis Wernery, Michal Ganobjak</i>	14:30 – 14:45
Structural performance of adhesively bonded Glass-GFRP sandwich beams <i>Dinith Ranaweera, Behrouz Zafari, Mauro Overend</i>	Advanced Simulation for Thermal Stress Assessment <i>Andrea Zani, Jamie Reyes, Jacob Hanke, Giacomo Zangiacomì, Guido Lori</i>	14:45 – 15:00
Investigation of Glass-to-Concrete Adhesive Joints through 3-Point Bending Tests <i>Cas Maertens et al.</i>	Relation between edge stress, bending strength, surface stress and fracture pattern of thermally toughened glass <i>Lena Efferz et al.</i>	15:00 – 15:15
Methods for Dimensioning an Adhesive Connection for Use in Fluid-Filled Insulating Glazing Units <i>Alina Katzera, Michael Engelmann</i>	In-Process Breakage Analysis of Tempered Glass Based on Fluid-Structure Interaction Approach <i>Asier Iglesias, Manex Martinez-Agirre, Iñigo Llavori, Jon Ander Esnaola</i>	15:15 – 15:30
Coffee Break	Coffee Break	15:30 – 16:00

Thursday June 20th | 09:15 – 10:45

DAY 2	Auditorium	Room B
	PROJECTS & CASE-STUDIES	CURVED GLASS
	Chair: Prof. Steffen Feirabend	Chair: Dr Julian Hänig/Ralf Scheurer
09:15 – 09:30	Case of study: Glass façade of l'Oréal headquarters <i>Arnau Bover i Pagès, Angel Martínez, Núria Guitart</i>	Contribution to the Development of Cold Bent Glass Applications <i>Maximilian Laurs, Markus Feldmann</i>
09:30 – 09:45	Restoring Hi-Tech Architecture <i>Peter Lenk, Peter van de Rotten, Ed Forwood</i>	Laser-Based Bending of Low-E Coated Flat Glass: A Comparative Experimental Study <i>Najoua Bolakhrif, Sandra Mee, Thomas Pauly, Adrian Baab, Tobias Rist</i>
09:45 – 10:00	Glazed Curved Shell for Villers-Cotterêts Castle <i>Thiemo Fildhuth et al.</i>	New Generation of Bending Tempering Equipment: Sustainable Configurations for Double Curved and Spherical Glass <i>Joan Tarrús, Julian Hänig</i>
10:00 – 10:15	Design of a 5m Span All-Glass Walkway <i>Bert Van Lancker, Kenny Martens</i>	Mechanical Properties of Glass Plate During Anticlastic Cold Bending <i>Xiaohan Hao, Suwen Chen</i>
10:15 – 10:30	Port of Montreal Tower - Glass Cage <i>Bethanie Cloutier, Albert Eskenazi</i>	Experimental Investigation of Post Failure Performance of Warm Bent Laminated Glass <i>Minxi Bao, Kevin Yin, Wei Li</i>
10:30 – 10:45	Glass Engineering beyond Buildings: C- 010106 by Sarah Oppenheimer <i>Michele Andaloro, Enrica Oliva, Lucio Blandini</i>	-
10:45 – 11:15	Coffee Break	Coffee Break

Parallel Sessions | Day 2

Room C	Room D	Day 2
STRENGTH, STABILITY & SAFETY	EXPERIMENTAL & NUMERICAL INVESTIGATIONS	
Chair: Dr Fred Veer	Chair: Dr Corinna Datsiou	
Experimental Study on the Thermal Performance of Soda-Lime-Silica Glass by Radiant Panel Testing <i>Evelien Symoens, Ruben Van Coile, Jan Belis</i>	Experimental and Numerical Characterization of Input Forces in Glass Curtain Walls under Soft Body Impact <i>Nicola Cella, Guido Lori, Chiara Bedon, Giampiero Manara</i>	09:15 – 09:30
Design and Stability of Laminated Glass Beams and Cantilevers with Continuous Lateral Silicone Restraint <i>Richard Green, Chiara Bedon, Laura Galuppi, Andrew Crosby</i>	Challenges in Phase-Field Modeling of Glass Fracture <i>Gergely Molnár</i>	09:30 – 09:45
Active Wind Load Sharing Optimization of Double Skin Glazed Façade Design <i>Guido Lori, Giampiero Manara, Marco Chiarioni, Gianluca Casagrande, Matteo Dazzan</i>	Online Stress Calculation in Tempering Process Based on Measured Process Data <i>Antti Aronen</i>	09:45 – 10:00
Temperature Distribution and Stress Relaxation in Glass under High Temperature Exposition <i>Maximilian Möckel, Matthias Seel, Gregor Schwind, Michael Engelmann</i>	Phase Field Fracture Model for Assessing the Load Bearing Capacity of Fractured Glass <i>Mauro Corrado, Arturo Chao Correas, Giulia Ventura</i>	10:00 – 10:15
Design of Glass Handrails <i>Richard Green, Andrew Crosby</i>	Quality Control of Safety Glass and How it Can Reduce CO2 Emissions <i>Jorma Vitkala</i>	10:15 – 10:30
Glass Edges in the Building Industry: Examination Method and Design Approaches <i>Paulina Bukieda et al.</i>	Numerical Study of Laminated Glass with PVB, EVA and Ionoplast Exposed to Out-of- Plane Bending regarding the Influence of Different Parameters <i>Milica Baric et al.</i>	10:30 – 10:45
Coffee Break	Coffee Break	10:45 – 11:15

Thursday June 20th | 11:15 – 12:45

DAY 2	Auditorium	Room B
	CIRCULARITY & SUSTAINABLE SOLUTIONS	STRUCTURAL GLASS DESIGN & STANDARDS
	Chair: Dr Jagoda Cupać	Chair: Francis Serruys
11:15 – 11:30	Reuse Potential of Architectural Glass: Experimental Study on the Strength of Used Window Glazing <i>Jagoda Cupac, Corinna Datsiou, Christian Louter</i>	Spontaneous Breaking of Thermally Toughened Safety Glass in Facades: Can we state if the Heat Soak Test (HST) was done according to EN14179-1:2005 or not? <i>Philippe Letocart, Francis Serruys</i>
11:30 – 11:45	The Reuse Potential of Hundreds of Insulating Glass Units in Buildings: A Case Study in The Netherlands <i>Esther Geboes, Waldo Galle, Niels De Temmerman, Ed Melet,</i>	Benefits of Revised German Code for Glass Design <i>Geralt Siebert</i>
11:45 – 12:00	Remanufacturing <i>Marco Zaccaria, Miriam Schuster, Jagoda Cupać, Bert Van Lancker, Christian Louter, Jan Belis</i>	Structural Glass Design Manual: A Design Guide and Voluntary Specification for the Use of Glass as a Structural Material in Buildings <i>Richard Green et al.</i>
12:00 – 12:15	Case Study on the Re-use Potential of Insulated Glass Units <i>Marcel Reshamvala et al.</i>	Strength Lab AI: A Mixture-of-Experts Deep Learning Approach for Limit State Analysis and Design of Monolithic and Laminate Structures made of Glass <i>Michael Kraus et al.</i>
12:15 – 12:30	Recycle Glass: A contribution to the Circularity of Flat Glass <i>Michael Elstner, Antonella Contino, Marco Zaccaria</i>	Glass Serviceability Limits: New Evidence from Human-Centred Studies <i>Mohammed Hassan, Pedro de la Barra, Sagar Oke, Mauro Overend, Alessandra Luna Navarro, Marcel Bilow</i>
12:30 – 12:45	Glass Bottle Earth Brick for Structural Wall <i>Hoessein Alkisaiei, Hanna Heller, Clarissa Justino de Lima, Chris Noteboom, Christian Louter</i>	-
12:45 – 14:00	Lunch Break	Lunch Break

Parallel Sessions | Day 2

Room C	Room D	Day 2
STRENGTH, STABILITY & SAFETY	EXPERIMENTAL & NUMERICAL INVESTIGATIONS	
Chair: Prof. Christian Schuler	Chair: Prof. Michael Engelmann	
Beneficial Effects of Dissipative Brackets on Glazed Façade Maximum Capacity under Blast Loading <i>Guido Lori, Giampiero Manara</i>	Digital Microscopy as a Tool to Understand Glass Fracture <i>Fred Veer, Telesilla Bristogianni</i>	11:15 – 11:30
Flaw Characteristics of Architectural Glass and Long-Term Strength Prediction Model <i>Siyi Yi, Suwen Chen</i>	Crack Segmentation for High-Speed Imaging: Detection of Fractures in Thermally Toughened Glass <i>Henrik Riedel, Leon Bohmann, Frank Bagusat, Martin Sauer, Miriam Schuster,</i>	11:30 – 11:45
Verifying a Glass Pane Under Combined In-Plane Compression and Out-of-Plane Lateral Loads <i>Philipp Kießlich, Michael Engelmann, Bernhard Weller</i>	Design of a Numerical Sensor Concept as the Basis of a Hybrid Digital Twin for Monitoring Load-Bearing Glass Façades <i>Nathalie Nießer, Geralt Siebert</i>	11:45 – 12:00
Influence of Scratch on the Crack Pattern of Monolithic Glass under Flexural Loading <i>Zhufeng Pan, Jian Yang, Xing-er Wang, Gang Li, Xianfang Jiang</i>	Viscoelastic Fractional Model with a Non-Uniform Time Discretization for Laminated Glass: Experimental Validation <i>Lorenzo Santi, Stephen Bennison, Michael Haerth</i>	12:00 – 12:15
Experimental Behavior of a Prototype 3m-Span Modular Glass Pedestrian Bridge <i>Joseph Robert Yost et al.</i>	Numerical Study of the In-Plane Bending Behaviour of a Novel Steel-Reinforced Glass Frame Prototype <i>Mirko Pejatovic, Robby Caspeepe, Jan Belis</i>	12:15 – 12:30
Structural Damping of Glazed Facades and Resulting Risk of Vibration under Along Wind Excitations <i>Guido Lori, Giampiero Manara</i>	Numerical Investigation of Laser Powder Bed Fusion of Glass <i>Kyriaki Corinna Datsiou, Ian Ashcroft</i>	12:30 – 12:45
Lunch Break	Lunch Break	12:45 – 14:00

Thursday June 20th | 14:00 – 15:30

DAY 2	Auditorium	Room B
	CIRCULARITY & SUSTAINABLE SOLUTIONS	LAMINATED GLASS
	Chair: Dr Miriam Schuster	Chair: Björn Sandén
14:00 – 14:15	<p>Circularity of Existing Aluminium Unitised Curtain Wall Façades</p> <p><i>Rianne Teeuwen, Roel Schipper, Jagoda Cupać, Hans Jansen, Christian Louter</i></p>	<p>Ten years of stiff PVB: An overview of developments and status</p> <p><i>Wim Stevels</i></p>
14:15 – 14:30	<p>Reuse and Remanufacturing of Insulated Glass Units</p> <p><i>Martien Teich, Christian Scherer, Miriam Schuster, Max Brandenstein, Michael Elstner</i></p>	<p>Investigations on the Finite Strain Behavior of PVB: Experiment and Modeling</p> <p><i>Alexander Pauli, Geralt Siebert</i></p>
14:30 – 14:45	<p>Traceability: Paving the Path to a Sustainable Life Cycle of Architectural Flat Glass</p> <p><i>Angelica Rota, Marco Zaccaria, Francesco Fiorito</i></p>	<p>Material Characterization of Three Liquid Interlayers for Laminated Glass Solutions</p> <p><i>Julian Hänig, Alina Gutjahr, Paulina Bukieda, Michael Engelmann</i></p>
14:45 – 15:00	<p>Up-cycling Glass Waste for Bioreceptive Applications by Foaming</p> <p><i>Georgina Giassia, Telesilla Bristogianni, Faidra Oikonomopoulou</i></p>	<p>Mechanical Performance of Liquid Cold-Poured Interlayer Adhesives in Comparison to PVB, EVA and Ionomers</p> <p><i>Dominik Offereins, Alexander Pauli, Geralt Siebert</i></p>
15:00 – 15:15	<p>Whole Life-cycle Carbon Assessment of Building Retrofits with Water-Filled Glass (WFG) Secondary Glazing</p> <p><i>Giulio Cavana, Brandon Mok, Matyas Gutai, Abolfazl Ganji Kheybari</i></p>	<p>Influence of a Multilayer Interlayer with a Stiff Core on the Performance of Laminated Glass</p> <p><i>Elena Fleckenstein et al.</i></p>
15:15 – 15:30	<p>Re-Glass: Product Development Pathways for Post-Consumer Glass</p> <p><i>Sophie Pennetier, Baizhen Yu</i></p>	<p>Imperfections in Laminated Safety Glass: An Experimental Case Study</p> <p><i>Paul Müller, Christian Schuler, Jakob Grötzner, Steffen Dix, Stefan Hiss</i></p>
15:30 – 16:00	Coffee Break	Coffee Break

Parallel Sessions | Day 2

Room C	Room D	Day 2
ADHESIVES & COMPOSITES	OPTICAL & THERMAL PERFORMANCE	
Chair: Dr Bert Van Lancker	Chair: Adrián Betanzos	
<p>Holistic Review of the Permanent Shear Deformation Effects on Structural Silicone Joints in SSG Façade Systems</p> <p><i>Jordi Alcaine, Ed Forwood, et al.</i></p>	<p>Optical Distortions in Architectural Glass: Review of Categorization, Evaluation and Measurement Methods</p> <p><i>Thomas Henriksen, Edwin Stokes, Christian Louter, Mauro Overend</i></p>	14:00 – 14:15
<p>Experimental Work on Thick Epoxy Adhesive Bonds for Glass-Steel Joints in a Ship</p> <p><i>Daniël Wium, Bert Van Lancker, Evert Lataire, Jan Belis</i></p>	<p>Optical Anisotropy Effects in Laminated Tempered Glass</p> <p><i>Lena Efferz, Steffen Dix, Christian Schuler, Stefan Kolling</i></p>	14:15 – 14:30
<p>Calibration of a Hyperviscoelastic Material Model for Silicone Structural Glazing Joints in the Context of Earthquakes</p> <p><i>Tom Reisewitz, Alexander Pauli, Geralt Siebert</i></p>	<p>The Thermal Resistance of a Vacuum Insulated Glass Panel</p> <p><i>Cenk Kocer</i></p>	14:30 – 14:45
<p>Time-Dependent Design of Hyperelastic Bonded Joints in Structural Glass</p> <p><i>Benjamin Schaaf, Markus Feldmann</i></p>	<p>Luminance-Based Methodology for Assessment of Haze in Glazing</p> <p><i>Alessandra Luna Navarro, Eleonora Brembilla, Pedro de la Barra, Louis Moreau, Mauro Overend</i></p>	14:45 – 15:00
<p>Experimental Investigations on the Cyclic Load-Bearing Behavior of Structural Glazing Joints under Seismic Load</p> <p><i>Paul Müller, Christian Schuler, Geralt Siebert</i></p>	<p>A Portable Technology for Measuring Haze Levels in Thick Laminated Glass Panels</p> <p><i>Guillermo Casas, Javier Marcipar, Adrian Betanzos</i></p>	15:00 – 15:15
<p>Experimental Characterisation and Calibration of Hyperelastic Material Models for Finite Element Modelling of Timber-Glass Adhesive</p> <p><i>Tine Engelen et al.</i></p>	<p>Optical and Structural Developments in Air Traffic Control Tower Glazing</p> <p><i>Louis Moreau</i></p>	15:15 – 15:30
Coffee Break	Coffee Break	15:30 – 16:00

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