

# ICCS21 Program

## 21st International Conference on Composite Structures

4th-7th September 2018 - University of Bologna, Italy

### Conference Chairs:

Antonio J.M. Ferreira, University of Porto, Portugal  
Francesco Tornabene, University of Bologna, Italy  
Nicholas Fantuzzi, University of Bologna, Italy  
Erasmus Viola, University of Bologna, Italy

### Local Organizing Committee:

Michele Baccocchi, University of Bologna, Italy

## General Information

Venue: School of Engineering and Architecture, University of Bologna  
Viale del Risorgimento 2, 40136 Bologna, Italy.  
<https://events.unibo.it/iccs21>

### 3rd September

15h00 - 18h00 - Pre-Registration

### 4th September

09h00 - Registration opens

11h30 - Opening ceremony (Ferreira)

12h00 - 13h30 - Plenary Lectures (Araujo, Luciano)

13h30 - 14h45 - Lunch-break (Terrace Second Floor)

14h45 - 17h00 - Plenary Lectures (Echtermeyer, Tornabene, Sinapius)

17h00 - 19h30 - Welcome Cocktail (Terrace Second Floor)

### 5th September

09h00 - 11h00 - Parallel Sessions

11h00 - 11h30 - Coffee break (Terrace Second Floor)

11h30 - 13h30 - Parallel Sessions

13h30 - 14h30 - Lunch-break (Terrace Second Floor)

14h30 - 18h00 - Parallel Sessions

### 6th September

09h00 - 11h00 - Parallel Sessions

11h00 - 11h30 - Coffee break (Terrace Second Floor)

11h30 - 13h30 - Parallel Sessions

13h30 - 14h30 - Lunch-break (Terrace Second Floor)

14h30 - 17h30 - Parallel Sessions

17h30 - 19h30 - Informal Standing Dinner (Terrace Second Floor)

### 7th September

09h00 - 11h00 - Parallel Sessions

11h00 - 11h30 - Coffee break (Terrace Second Floor)

11h30 - 13h30 - Parallel Sessions

**TUESDAY 4 September @ 11h30**  
**Opening Ceremony - Conference Chair: Antonio Ferreira**  
**Room 6.2**

**Plenary Lectures**

**Chair: Johannes Michael Sinapius**

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12h00    **1003 | Multifunctional Adaptive Sandwich Structures: Modeling and Optimization**  
Aurelio Araujo (aurelio.araujo@tecnico.ulisboa.pt), University of Lisbon, Portugal

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12h45    **1006 | Nonlocal models for micro- and nano-composites**  
Raimondo Luciano (luciano@unicas.it), University of Cassino and Southern Lazio, Italy

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13h30    **Lunch-Break**

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**Chair: Aurelio Araujo**

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14h45    **1005 | Challenges of using composite materials in subsea oil and gas applications**  
Andreas Echtermeyer (andreas.echtermeyer@ntnu.no), NTNU-Norwegian University of Science and Technology, Norway

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15h30    **1004 | Higher-order Formulations for the Mechanical Analysis of Doubly-Curved Shell Structures Made of Advanced and Innovative Materials**  
Francesco Tornabene (francesco.tornabene@unibo.it), University of Bologna, Italy

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16h15    **1002 | Recent Advances in Nanotechnology for Fibre Reinforced Polymer Composites**  
Johannes Michael Sinapius (michael.sinapius@dlr.de), Technische Universität Braunschweig, Germany

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17h00    **Welcome Cocktail**

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## Parallel Sessions

Every paper 20 minutes  
Including 5 minutes discussion

**WEDNESDAY 5 September (Morning)**  
**Room 6.1**  
**Composite Structures 1**

Chairs: Guillaume Meyer, Hao Yang

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|       |  |
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| 09h00 | <b>032   Cost-efficient lightweight design and performance increase of tooling machines through the implementation of fibre reinforced composite components</b><br>Guillaume Meyer (guillaume.meyer@klub.tu-darmstadt.de), Christian Mittelstedt |
| 09h20 | <b>044   TLS-based Crack Detection and Analysis for Large Scale Composite Structures</b><br>Hao Yang (yanghao_de@qq.com), Xiangyang Xu, Ingo Neumann   |
| 09h40 | <b>045   Composite Tunnel Structures Monitoring with Highly Accurate Model Generation</b><br>Xiangyang Xu, Hao Yang (yanghao_de@qq.com), Ingo Neumann  |
| 10h00 | <b>057   Damage evolution analysis of composite materials with circular holes subjected to static and cyclic load</b><br>Marek Barsk (mbar@mech.pk.edu.pl), Piotr Kędziora, Aleksander Muc   |
| 10h20 | <b>061   Three-dimensional topology optimization of continuous fiber-reinforced structures via natural evolution method</b><br>Alexander Safonov (a.safonov@skoltech.ru)   |
| 10h40 | <b>196   Influences of interface on the mechanical and corrosion properties of steel-CFRP hybrid structures manufactured by vacuum assisted resin transfer moulding</b><br>Zheng Wang (zheng.wang@uni-paderborn.de), Thomas Troester             |
| 11h00 | <b>Coffee-break</b>  |

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**Room 6.2**  
**Analysis of composite beams, plates and shells 1**

Chairs: Christian Mittelstedt, Salvatore Brischetto

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|       |   |
|-------|---|
| 09h00 | <b>007   The dynamic response of a nonlinear composite plate with initial geometric imperfection to harmonic excitation</b><br>Liu Liu (liuliu@bit.edu.cn), Jinming Li, Georgia. A. Kardomateas |
| 09h20 | <b>013   Mixed-mode buckling of thick-walled composite beams</b><br>Siham Mittelstedt, Christian Mittelstedt (christian.mittelstedt@klub.tu-darmstadt.de)                                       |
| 09h40 | <b>040   The studies of bending behavior of composite T-joint of Auto body</b><br>Wenbin Hou (houwb@dlut.edu.cn), Haifeng Wang, Xianzhe Xu, Hongzhe Zhang                                       |
| 10h00 | <b>042   On the wave propagation in thin transversally graded cylindrical shells</b><br>Barbara Tomczyk, Pawel Szczerba (pawel.szczerba@dokt.p.lodz.pl)   |
| 10h20 | <b>048   A new asymptotic-tolerance model of dynamic problems for thin biperiodic cylindrical shells</b><br>Barbara Tomczyk (barbara.tomczyk@p.lodz.pl), Anna Litawska                          |
| 10h40 | <b>052   Thermo-Mechanical Analysis of Composite Structures via a 3D Exact Shell Model</b><br>Salvatore Brischetto (salvatore.brischetto@polito.it), Roberto Torre                              |
| 11h00 | <b>Coffee-break</b>   |

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## WEDNESDAY 5 September (Morning)

### Room 5.4

#### Modeling in Mechanics and Materials 1

Chairs: Bo Liu, Yufeng Xing

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|       |   |
|-------|---|
| 09h00 | <b>015   Modelling delamination migration by using floating node method</b><br>Xiaofei Hu (hxf@dlut.edu.cn), Tong Earn Tay, Vincent Tan, Weian Yao  |
| 09h20 | <b>026   Investigation of hygro/thermo-mechanical properties for the semi-crystal polypropylene polymer via molecular dynamics simulation</b><br>Dong-Hyun Kim, Yeon-Taek Hwang, Hak-Sung Kim (kima@hanyang.ac.kr)  |
| 09h40 | <b>029   Micro-mechanical modeling for elastic modulus and damage behavior of woven fabric composite materials considering fiber yarn geometry and strain-rate condition</b><br>Yeon-Taek Hwang, Kyung-Hee Choi, Jae-Young Lim, Byeung-Gun Nam, Hak-Sung Kim (kima@hanyang.ac.kr)                               |
| 10h00 | <b>034   Finite element modeling and analysis of shear deformed textile composites based on micro-mechanics</b><br>Kyung-Hee Choi, Yeon-Taek Hwang, Jae-Young Lim, Byeung-Gun Nam, Hak-Sung Kim (kima@hanyang.ac.kr)  |
| 10h20 | <b>035   Prediction of the vacuum assisted resin transfer molding (VARTM) process considering the directional permeability of sheared woven textiles and cure reaction of the resin matrix</b><br>Jae-In Kim, Yeon-Taek Hwang, Kyung-Hee Choi, Jae-Young Lim, Byeung-Gun Nam, Hak-Sung Kim (kima@hanyang.ac.kr) |
| 10h40 | <b>054   Free vibration of functionally graded sandwich and laminated shells in thermal environments by a differential quadrature hierarchical finite element method</b><br>Bo Liu (liubo68@buaa.edu.cn), Cuiyun Liu, Yufeng Xing   |
| 11h00 | <b>Coffee-break</b>   |

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### Room 5.5

#### Failure of Composites 1

Chairs: Mohamad Fotouhi, Hak-Sung Kim

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| 09h00 | <b>027   Impact simulation considering the interfacial delamination consist of two different composite using finite element analysis based on cohesive zone model</b><br>Myeong-Hyeon Yu, Sung-Jun Joo, Hak-Sung Kim (kima@hanyang.ac.kr)  |
| 09h20 | <b>028   Development of cylindrical mixed mode pull out test for investigation of bond characteristics between the reinforced continuous glass fiber and overmolded polypropylene composite interface</b><br>Sung-Jun Joo, Myeong-Hyeon Yu, Won Seock Kim, Hak-Sung Kim (kima@hanyang.ac.kr) |
| 09h40 | <b>030   Study of the mechanical behavior of self-reinforced polypropylene composite under the high strain rates</b><br>So-Young Kang, Yeon-Taek Hwang, Do-Hyoung Kim, Hak-Sung Kim (kima@hanyang.ac.kr)   |
| 10h00 | <b>031   Development of the modified rule of mixture considering of fiber volume fraction and strain-rate dependent behavior of carbon fiber/epoxy composites</b><br>Dug-joong Kim, Kyung-hee choi, Jae-in Kim, Jae-Young Lim, Byeung-Gun Nam, Hak-Sung Kim (kima@hanyang.ac.kr)             |
| 10h20 | <b>106   Compact tension test behaviour of Pseudo-ductile thin-ply carbon/ glass hybrids</b><br>Mohamad Fotouhi (mohammad.fotouhi@uwe.ac.uk), Meisam Jalalvand   |
| 10h40 | <b>137   Progressive failure analysis of carbon prepreg tape wound composite flywheel</b><br>Xingjian Dai (daixj@mail.tsinghua.edu.cn), Yong Wang, Kunpeng Wei   |
| 11h00 | <b>Coffee-break</b>  |

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## WEDNESDAY 5 September (Morning)

### Room 5.6

#### Nano-Composites and Micro-mechanics 1

Chairs: Crainic Nicolae, Masoud Asgari

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| 09h00 | <b>023   Buckling Response of Nonhomogeneous Microcolumns with Variable Cross-Section</b><br>Bekir Akgöz (bekirakgoz@akdeniz.edu.tr)   |
| 09h20 | <b>051   Preparation and properties of lightweight carbon/phenolic aerogel nanocomposite</b><br>Haiming Cheng (chenghm@hrbust.edu.cn), Tao Zeng, Changqing Hong, Xinghong Zhang  |
| 09h40 | <b>248   Effect of electrospun PVA nanofiber mats on the transformation of crystalline structures of PVDF film</b><br>Hyunsoo Hong, Seung-A Song, Seong Su Kim (seongsukim@kaist.ac.kr)  |
| 10h00 | <b>105   Void Detection in Electrically and Thermally Conductive MWCNT Cement Grout</b><br>Heeyoung Lee, Wonseok Chung (wschung@khu.ac.kr)   |
| 10h20 | <b>185   Particularity concerning the use of the nanomagnetic fluids and the magnetic field in nanocomposites processing technologies</b><br>Crainic Nicolae (nicolae.crainic@upt.ro), Torres Marques Antonio, Vekas Ladislau, Correia Nuno, Novoa Paulo, Maria Inês da Rocha Barros, Popa Nicolae Calin |
| 10h40 | <b>073   Thermo-mechanical vibration of double-layer graphene nanocomposites considering surface effects</b><br>Ehsan Allahyari, Masoud Asgari (asgari@kntu.ac.ir), Asma Masoumi   |
| 11h00 | <b>Coffee-break</b>  |

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### Room 5.7

#### Porous and cellular materials 1

Chairs: Jin-Shui Yang, Seong Su Kim

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| 09h00 | <b>036   On the mechanics of lattice structures in selective laser melting</b><br>Alexander Großmann (alexander.grossmann@klub.tu-darmstadt.de), Christian Mittelstedt   |
| 09h20 | <b>056   Vibration damping response of composite auxetic double-arrow corrugated sandwich panels</b><br>Jin-Shui Yang (yangjinshui@hrbeu.edu.cn), Li Ma, Yun-Long Chen, Lin-Zhi Wu   |
| 09h40 | <b>085   Improving the mechanical properties of extrudable cellular concrete by embedded fiber reinforcement</b><br>Devid Falliano (dfalliano@unime.it), Dario De Domenico, Giuseppe Ricciardi, Ernesto Gugliandolo  |
| 10h00 | <b>366   Fabrication of carbon foam derived from carbonization of phenolic foam with open cell</b><br>Seunga Song, Seong Su Kim (seongsukim@kaist.ac.kr)   |
| 10h20 | <b>107   Cryogenic and high temperature behavior of metal foam matrix composites (MFMCs) under static and impact compression loads</b><br>Emanoil Linul (emanoil.linul@upt.ro), Liviu Marsavina, Petrica Linul, Jaroslav Kovacik, Slovak Academy of Sciences, Slovak Republic, Tomasz Sadowski, Adrian But |
| 10h40 | <b>108   Investigation of energy absorption characteristics of 3D printed polymeric cellular materials with triply periodic minimal surface architectures: experiment and numerical simulation</b><br>D.Y. Hu (hudayong@buaa.edu.cn), L.W. Dang, Y.Z. Wang   |
| 11h00 | <b>Coffee-break</b>  |

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## WEDNESDAY 5 September (Midday)

### Room 6.1

#### Composite Structures 2

Chairs: Monika Ostapiuk, Murat Yazici

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| 11h30 | <b>083   Dynamic Buckling Behaviour of Composite Plate Subjected to In-plane Pulse Loading</b><br>Rajesh Kumar (rajesh.kr@pilani.bits-pilani.ac.in), Mainak Choudhury, S. N. Patel                           |
| 11h50 | <b>086   Investigation on repairs of aircraft composite structures made with various joining techniques</b><br>Siddharth Pitta (dharth.pitta@upc.edu), Francesc Roure, Daniel Crespo, Jose Ignacio Rojas     |
| 12h10 | <b>087   Degradation analysis of aluminium-based fiber metal laminates under corrosive conditions</b><br>Monika Ostapiuk (m.ostapiuk@pollub.pl), Jarosław Bieniaś, Barbara Surowska                          |
| 12h30 | <b>088   Numerical Investigation and Design Optimization of a Hybrid CFRP Pedicle Screw System</b><br>Y. N. Becker (yves.becker@ivw.uni-kl.de), N. Motsch, J. Hausmann                                       |
| 12h50 | <b>099   Continuous Carbon Fiber/Polypropylene Thermoplastic Composite Telescopic Crash Box for a Passenger Car</b><br>Yücel Can, Harun Güçlü, İbrahim Kürşad Türkoğlu, Murat Yazici (myazici@uludag.edu.tr) |
| 13h10 | <b>101   Two-stage Layup Optimization of Blended Composite Structures using Lamination Parameters</b><br>Xiaoyang Liu (LiuX72@cardiff.ac.uk), David Kennedy, Carol Ann Featherston                           |
| 13h30 | <b>Lunch-break</b>   |

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### Room 6.2

#### Analysis of composite beams, plates and shells 2

Chairs: Eelco Jansen, Michele Baccocchi

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| 11h30 | <b>063   FEM analysis of flexural behaviour of grooved, perforated and web-foamed marine sandwich composite beams: Effects of core machining configuration</b><br>Fatih Balikoğlu (fatihbalikoglu@gmail.com), Tayfur Kerem Demircioğlu, Oğuzcan İnal, Akın Ataş, Nurettin Arslan |
| 11h50 | <b>065   Modal Interaction in Composite Cylindrical Shells Triggered by Global and Localized Imperfections</b><br>Tanvir Rahman, Eelco Jansen (e.jansen@isd.uni-hannover.de)   |
| 12h10 | <b>068   Flexural behaviour of balanced and unbalanced marine sandwich beams with different span-to depth ratios: Experimental and numerical study</b><br>Tayfur Kerem Demircioğlu (tkeremdemircioglu@gmail.com), Fatih Balikoğlu, Oğuzcan İnal, Akın Ataş, Nurettin Arslan      |
| 12h30 | <b>075   Free vibration problem of composite plates of arbitrary shape: where do we stand?</b><br>Nicholas Fantuzzi, Michele Baccocchi, Francesco Tornabene (francesco.tornabene@unibo.it)   |
| 12h50 | <b>080   Numerical study of the mixed-mode delamination of generally-shaped composite interfaces</b><br>Rossana Dimitri, Francesco Tornabene (francesco.tornabene@unibo.it)  |
| 13h10 | <b>113   Reliability analysis of reinforced concrete columns after high temperature under comprehensive considering failure paths</b><br>Lili Bai (lily0907@hrbeu.edu.cn), Fengguo Jiang, Bowei Fan  |
| 13h30 | <b>Lunch-break</b>   |

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**WEDNESDAY 5 September (Midday)**  
**Room 5.4**  
**Modeling in Mechanics and Materials 2**

Chairs: Bo Liu, Yufeng Xing

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| 11h30 | <b>066   A Numerical Description of a Fibre Reinforced Concrete Using a Genetic Algorithm</b><br>Henrik L. Funke (henrik.funke@mb.tu-chemnitz.de), Lars Ulke-Winter, Sandra Gelbrich, Lothar Kroll                            |
| 11h50 | <b>090   In-situ Evaluation of Laminates with Gaps and Overlaps - Uncertainties in Modeling and Analysis</b><br>Falk Heinecke (falk.heinecke@dlr.de), Tobias Wille  |
| 12h10 | <b>129   Delamination in composite laminates of variable stiffness based on a novel CUC failure criterion</b><br>Ruixiang Bai (bairx@dlut.edu.cn), Chen Liu, Zhenkun Lei  |
| 12h30 | <b>206   Investigation of damping characteristics of complex polymer concrete sleeper for moving train and railway</b><br>Sangkeun Ahn, Semin Kwon, Hyo-In Koh, Hak-Sung Kim, Junhong Park (parkj@hanyang.ac.kr)              |
| 12h50 | <b>235   Numerical analysis of the mechanical behavior of cement matrix composites reinforced with natural fibers</b><br>Gonzalo Ruano (gonzalo.ruano@gmail.com), Facundo Bellomo, Ricardo Quinteros, Juan Vera, Sergio Oller |
| 13h10 | <b>359   Analysis of nanoplates with complex shape using Kirchhoff nonlocal elastic plate theory and a C1 differential quadrature finite element method</b><br>Yang Wu, Yufeng Xing (xingyf@buaa.edu.cn), Bo Liu              |
| 13h30 | <b>Lunch-break</b>  |

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**Room 5.5**  
**Failure of Composites 2**

Chairs: Ik Hyeon Choi, Kim Branner

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|-------|---|
| 11h30 | <b>301   Matrix crack onset analysis of composite cryogenic tank for launcher application</b><br>Ik Hyeon Choi (ihchoi@kari.re.kr)  |
| 11h50 | <b>264   Steady-State Kink Band Broadening in Fibre-reinforced Composites and Layered Materials</b><br>Simon P. H. Skovsgård (sphs@eng.au.dk), Henrik Myhre Jensen  |
| 12h10 | <b>309   On the virtual definition of B-value design chart for the open hole strength of laminated composites</b><br>Oriol Vallmajó Martín (oriol.vallmajo@udg.edu), Ivan Ruíz Cozar, Carolina Furtado, Rodrigo Tavares, Albertino Arteiro, Albert Turon Travesa, Pedro Camanho |
| 12h30 | <b>318   Buckling and progressive failure of trailing edge subcomponent of wind turbine blade</b><br>Xiao Chen, Peter Berring, Kim Branner (kibr@dtu.dk), Steen Hjelm Madsen, Sergei Semenov, Federico Belloni  |
| 12h50 | <b>335   Damage Mechanisms of UD and Woven Curved Composite Laminates Under Static and Fatigue Loading</b><br>Burcu Tasdemir, Demirkan Coker (coker@metu.edu.tr)  |
| 13h10 | <b>161   Effect of arbitrary cohesive zone implementation for the determination of the failure behavior of balanced symmetric carbon fiber/epoxy laminates</b><br>Hande Yavuz (hyavuz@thk.edu.tr), Durdu Hakan Utku   |
| 13h30 | <b>Lunch-break</b>  |

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## WEDNESDAY 5 September (Midday)

### Room 5.6

#### Marine Applications of Composites

Chairs: Andreas T. Echtermeyer

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| 11h30 | <b>135   Fluid diffusion in fiber reinforced composites in the presence of cracks and delamination</b><br>Abedin I. Gagani (abedin.gagani@ntnu.no), Andrey E. Krauklis, Andreas T. Echtermeyer  |
| 11h50 | <b>147   Hygrothermal Aging of Fiber-Reinforced Composites: Introduction to Phenomenological Perspective and Mass Balance Approach</b><br>Andrey E. Krauklis (andrejs.krauklis@ntnu.no), Abedin I. Gagani, Andreas T. Echtermeyer                               |
| 12h10 | <b>155   An Overview On The Applicability Of Fiber-Reinforced Alkali-Activated Composite Materials For Submerged Structures</b><br>H.N. Yoon, S.M. Park, H.K. Lee (haengki@kaist.ac.kr)   |
| 12h30 | <b>162   Retention of Mechanical Properties After Water Immersion for Glass-Fibre Polymer Composite Laminates with Thermosetting &amp; Thermoplastic Infusible Resins</b><br>Niamh Nash, Carlos Bachour, Ioannis Manolakis, Anthony Comer (anthony.comer@ul.ie) |
| 12h50 |   |
| 13h10 |   |
| 13h30 | <b>Lunch-break</b>  |

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### Room 5.7

#### Porous and cellular materials 2

Chairs: Salvatore Brischetto, Gabriele Imbalzano

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|-------|--|
| 11h30 | <b>232   Experimental tests and numerical evaluation of sandwich panels with trabecular core subjected to uniaxial compression, made by additive manufacturing</b><br>Carlo Ferro (carlo.ferro@polito.it), Michele Bici, Gabriele Imbalzano, Andrea Mazza, Francesca Campana, Salvatore Brischetto, Carlo Seclì, Mariangela Lombardi |
| 11h50 | <b>138   Porous polymer scaffolds for the in vitro simulation of the bone marrow niche</b><br>Antonella Sola (antonella.sola@unimore.it), Jessika Bertacchini, Daniele D'Avella, Sandra Marmiroli, Massimo Messori   |
| 12h10 | <b>299   Fatigue Testing of Additively Manufactured Lattice Structures: A Numerical and Experimental Study</b><br>Gabriele Imbalzano (gabriele.imbalzano@gmail.com), Carlo Ferro, Tuan Ngo, Peter Vee Sin Lee  |
| 12h30 | <b>089   Polymer/Clay Composite Aerogels</b><br>David Schiraldi (das44@case.edu), Miguel Sánchez-Soto, Hong-Bing Chen  |
| 12h50 | <b>367   Study on the carbon felt electrodes with conductive coating for vanadium redox flow batteries</b><br>Kwang Il Jeong, Seong Su Kim (seongsukim@kaist.ac.kr)  |
| 13h10 |  |
| 13h30 | <b>Lunch-break</b>   |

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# WEDNESDAY 5 September (Afternoon)

## Room 6.1

### Composite Structures 3

Chairs: Jose Humberto Almeida Jr., Hessam Ghasemnejad

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| 14h30 | <b>238   Post-buckling of variable-axial composite shells under axial compression</b><br>Jose Humberto Almeida Jr. (humberto@ipfdd.de), Lars Bittrich, Volnei Tita, Eelco Jansen, Axel Spickenheuer   |
| 14h50 | <b>182   Compression behaviour of composite laminates using the Serial/Parallel mixing theory</b><br>A. Solís (alsolisf@ing.uc3m.es), S. Sánchez-Sáez, E. Barbero   |
| 15h10 | <b>153   Development of Automotive Part with Prepreg Compression Forming Process</b><br>Jeong-Min Lee, Byung-Min Kim, Joon-Hong Park, Dae-Cheol Ko (dcko@pusan.ac.kr)   |
| 15h30 | <b>169   An inverse identification of mechanical properties of individual phases of composite materials</b><br>Witold Ogierman (witold.ogierman@polsl.pl)   |
| 15h50 | <b>171   Analysis of the composite I-beam reinforced with PU foam with the addition of chopped glass fiber</b><br>Piotr Lacki (piotr@lacki.com.pl), Anna Derlatka, Julita Winowiecka  |
| 16h10 | <b>180   Deep Drawing Of Fiber Metal Laminates For Automotive Lightweight Structures</b><br>Thomas Heggemann (th@luf.upb.de), Werner Homberg  |
| 16h30 | <b>261   Lightweight Design to Improve Crushing Behaviour of Multi-Stitched Composite Tubular Structures under Impact Loading</b><br>Ali Rabiee, Hessam Ghasemnejad (hessam.ghasemnejad@cranfield.ac.uk)  |
| 16h50 | <b>273   Bending and impact properties of foamed and long glass fiber reinforced polyphenylene sulfide integral sandwich structures manufactured by direct thermoplastic foam injection molding</b><br>Christoph Lohr (christoph.lohr@kit.edu), Björn Beck, Frank Henning, Kay André Weidenmann, Peter Elsner |
| 17h10 | <b>209   Optimization of Inconel Tube Drawing Mold Shape by FEM (Finite Element Method)</b><br>Seok-hyeon Park (acttom@dau.ac.kr), Joon-hong Park, Ji-ho Jang   |
| 17h30 | <b>348   Fibre-based bio-receptive architectural composite materials for augmented knitted tectonics with graded material distribution</b><br>Bastian Beyer (bastian.beyer@rca.ac.uk), Daniel Suarez  |

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## Room 6.2

### Delamination and fracture

Chairs: Giuseppe Catalanotti, Demirkan Coker

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| 14h30 | <b>104   Optimisation study on the fracture performance of adhesively bonded CFRP thin-walled structure under axial crushing load</b><br>Xiao Han (hanxiao@dlut.edu.cn), Wenbin Hou, Shaoqiang Hou, Liang Ying, Ping Hu   |
| 14h50 | <b>154   Adaptive Discrete-Smeared Crack (A-Disc) Model For Progressive Damage In Composite Structures</b><br>Tong-Earn Tay (mpetayte@nus.edu.sg), Xin Lu, Boyang Chen, Muhammad Ridha, Vincent B.C. Tan  |
| 15h10 | <b>179   Characterization of delamination behavior of carbon/epoxy laminates using double cantilever beam (DCB) specimens</b><br>Ashok Kumar Prodduturi (ashprodduturi@gmail.com), Ravinder Reddy Pinninti, Gupta Avssks  |
| 15h30 | <b>212   Study on the Progressive Failure of Composite Lattice Structure Unit Cell Including Variation of Fiber Volume Fraction</b><br>Jae-Moon Im, Kwang-Bok Shin (shin955@hanbat.ac.kr), Sang-Woo Lee   |
| 15h50 | <b>254   Coated Carbon Fibre Fabric Reinforcement for Improved Composite Fracture Behaviour</b><br>Arthur Wilkinson (arthur.wilkinson@manchester.ac.uk), Zijie Wu, Xiao-Su Yi, Kinjal Patel, Prasad Potluri   |
| 16h10 | <b>329   Two-way global-local coupling approach based on preserving energy dissipation for progressive skin-stringer debonding in composite panels</b><br>Margarita Akterskaia (m.akterskaia@isd.uni-hannover.de), Pedro Camanho, Albertino Arteiro, Eelco Jansen, Raimund Rolfes |
| 16h30 | <b>364   Measuring the dynamic intralaminar fracture toughness of fibre-reinforced composites</b><br>Giuseppe Catalanotti (g.catalanotti@qub.ac.uk)   |
| 16h50 | <b>336   Computational Investigation Of The 3-D Effects On Dynamic Fracture Of Curved Composite Laminates</b><br>Tamer Tahir Ata, Demirkan Coker (coker@metu.edu.tr)  |
| 17h10 | <b>109   Kinetics analysis of the damage surrounding the tip of a propagating crack in a composite beam</b><br>Hammoudi Imane, Touati Mokhtar, Chabaat Mohamed (mchabaat@yahoo.com)   |

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## WEDNESDAY 5 September (Afternoon)

### Room 5.4

#### Modeling in Mechanics and Materials 3

Chairs: Bo Liu, Yufeng Xing

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|       |   |
|-------|---|
| 14h30 | <b>278   Analysis of Strength and Fatigue Performance of Vascular Stent During Service</b><br>Zhang Hongpeng (hp_z@yahoo.com), Li Hong, Zang Riqiang  |
| 14h50 | <b>279   Vibration Characteristics of Elliptical Thin Plate</b><br>Zhanzhou Tang, Hongliang Li (hongliang@hrbeu.edu.cn), Yunxuan Gong   |
| 15h10 | <b>175   Structural modifications of the manganese(II) thiophosphate phase by the presence of intercalated zinc(II) ions or complexes</b><br>Pablo Fuentealba (pfuentealbacastro@gmail.com), Catalina Cortes, Evgenia Spodine, Jorge Manzur, Nathalie Audebrand, Ricardo Costa de Santana, Claudio Jose Magon |
| 15h30 | <b>173   Lanthanide (III) species intercalated in <math>K0.4Mn0.8PS3 \cdot H2O</math></b><br>Jeannette Morales, Pablo Fuentealba, Jorge Manzur, Nathalie Audebrand, Evgenia Spodine (espodine@ciq.uchile.cl)  |
| 15h50 | <b>297   Molecular dynamics simulation of rheological and dynamic properties of dental resin monomer mixtures</b><br>Bei Li (libei@whut.edu.cn), Xu Zhang, Gang Chen, Hanxin Liu, Xiaomin Cheng, Quanling Yang  |
| 16h10 | <b>111   A simplified method for predicting the matrix cracking formation in symmetric composite laminates subjected to bending loads</b><br>Amin Farrokhabadi (amin-farrokhabadi@modares.ac.ir), Mohammad Bahrami  |
| 16h30 |   |
| 16h50 |   |

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### Room 5.5

#### Adhesive Free Timber Structures - AFTB Project (chaired by A Makradi, S Belouettar, M Oudjene, G Zhongwei)

Chairs: Marc Oudjene, Salim Belouettar

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|       |   |
|-------|---|
| 14h30 | <b>167   An orthotropic multi-surface yield with damage model for 3D FEM analysis of adhesively bonded wood-steel elements</b><br>Vincenzo De Luca (vincenzo.deluca@unibas.it), Cosimo Marano   |
| 14h50 | <b>327   Mathematical simulation of composite wooden roof slab based on different-modulus theory</b><br>Gleb Gorynin (ggorynin@list.ru), Yuriy Grigoryev  |
| 15h10 | <b>338   Experimental study of the feasibility to use compressed wood dowels as joint elements for structural bearing capacity</b><br>I. El Houjeyri, M. Oudjene (marc.oudjene@univ-lorraine.fr), M. Khelifa, Y. Rogaume, A. Sotayo, Z. Guan          |
| 15h30 | <b>339   Experimental analysis of vibration uncertainty of free adhesive laminated timber beams assembled using compressed wood dowels</b><br>Tuan Anh Bui, Pascal Lardeur, Marc Oudjene (marc.oudjene@univ-lorraine.fr)                              |
| 15h50 | <b>340   Experimental and numerical investigations of the relative fire performance of thermo-mechanically densified wood</b><br>T-T. Tran, V-D. Thi, M. Oudjene (marc.oudjene@univ-lorraine.fr), M. Khelifa, P. Girods, Y. Jannot, Y. Rogaume        |
| 16h10 | <b>365   Elasto-plastic coupled anisotropic damage model for timber-based composite structural elements</b><br>V.D. Thi, M. Oudjene (marc.oudjene@univ-lorraine.fr), M. Khelifa, Y. Rogaume, S. Belouettar, A. Makradi                                |
| 16h30 | <b>368   Mechanical Study on the Swelling and Shrinkage Behavior of Densified Wood under Constraint</b><br>Siavash Namari (siavash.namari@tu-dresden.de), David Schwarzbach, Peer Haller  |
| 16h50 | <b>369   An investigation of the structural behaviour of beam-beam connections systems utilising compressed wood dowels and plates</b><br>Samee Mehra, Conan O'Ceallaigh, Zhongwei Guan, Adeayo Sotayo, Annette M. Harte (annette.harte@nuigalway.ie) |
| 17h10 | <b>315   Finite Element Modelling and Analysis of Adhesive Free Laminated Timber Beams with Compressed Wood Fasteners</b><br>Adeayo Sotayo (a.sotayo@liverpool.ac.uk), Siu-Kui Au, Zhongwei Guan  |
| 17h30 | <b>370   Parametric design of wood structures using Abaqus based on Python</b><br>Bouhala Lyazid (lyazid.bouhala@list.lu), Makradi Ahmed, Belouettar Salim, Fiorelli David  |

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## WEDNESDAY 5 September (Afternoon)

### Room 5.6

**Durability and Ageing of Composite Materials and Structures (chaired by F Jacquemin, Y Joliff, M Gigliotti)**

Chairs: Yoann Joliff, Marco Gigliotti

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|       |  |
|-------|--|
| 14h30 | <b>096   Effect of water absorption on the mechanical properties of carbon-polyamide 6 laminates</b><br>Yongpeng Lei, Jifeng Zhang (jfzhang@hrbeu.edu.cn)  |
| 14h50 | <b>178   Impact of the interphases on the macroscopic properties of a composite in humid environment</b><br>Yoann Joliff (joliff@univ-tln.fr), Lénaik Belec, Jean Francois Chailan   |
| 15h10 | <b>240   Moisture diffusion, induced swelling and stress in carbon/epoxy 3D textile composite materials with porosity</b><br>Yuriy Sinchuk, Yannick Pannier, Raquel Antoranz Gonzalez, Stepan V. Lomov, Marco Gigliotti (marco.gigliotti@ensma.fr) |
| 15h30 | <b>263   Effect of aggressive environment exposure on mechanical performance of Ferrocement and Textile Reinforced Concrete (TRC)</b><br>Cesare Signorini (cesare.signorini@unimore.it), Andrea Nobili   |
| 15h50 | <b>298   Synergistic effect of expansive and shrinkage reducing admixture on high-performance concrete</b><br>Tian-Feng Yuan, Kyung-Teak Koh, Eui-Kyun Choi, Young-Soo Yoon (ysyoon@korea.ac.kr)   |
| 16h10 | <b>237   Mechanical behaviour of carbon fibre/epoxy composites after hygrothermal ageing</b><br>Yucheng Zhong (zhong_yucheng@ihpc.a-star.edu.sg)   |
| 16h30 | <b>276   Impact of sulphates on the mechanical behaviour of Stabilized Earth Blocks</b><br>Chaibeddra Sihem (sihemchaibeddra@yahoo.fr), Kharchi Fattoum  |
| 16h50 |  |
| 17h10 |  |

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### Room 5.7

#### Experimental methods 1

Chairs: Salvatore Brischetto, Luís Miguel Durão

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|       |   |
|-------|---|
| 14h30 | <b>053   Characterization, in Analogy with Composites Embedding Unidirectional Long Fibres, of PLA Specimens Produced via FDM Printing Process</b><br>Roberto Torre (roberto.torre@polito.it), Salvatore Brischetto, Carlo Giovanni Ferro, Paolo Maggiore |
| 14h50 | <b>081   Accurate Strain and Stiffness Evaluation of Single Carbon Fibres by Means of Digital Image Correlation</b><br>Jonas Huether (jonas.huether@kit.edu), Daniel Esse, Peter Rupp, Michael Seitz, Kay André Weidenmann                                |
| 15h10 | <b>130   Experimental study on compressive buckling behavior of J-stiffened composite panels</b><br>Zhenkun Lei (leizk@dlut.edu.cn), Ruixiang Bai, Ru Wang, Chen Liu, Yang Chen   |
| 15h30 | <b>193   Damage Effects On The Flexural Properties Of Carbon Fibre Reinforced Laminates</b><br>Luís Miguel Durão (lmd@isep.ipp.pt), João E. Matos   |
| 15h50 | <b>300   Enhancing structural performance of ultra-high-performance fiber-reinforced concrete beams subjected to shock wave</b><br>Jin-Young Lee, Hassan Aoude, Denis Mitchell, Young-Soo Yoon (ysyoon@korea.ac.kr)                                       |
| 16h10 | <b>324   Numerical and Experimental analysis of the metal-composite interface in hybrid tubes</b><br>Marco Povolo (marco.povolo2@unibo.it), Luca Raimondi, Tommaso Maria Brugo, Angelo Pagani, Dario Comand, Luca Pirazzini, Andrea Zucchelli             |
| 16h30 | <b>294   Effect of Fiber Orientation on the Low Cycle Fatigue of Intraply Carbon-Kevlar Epoxy Hybrid Composites</b><br>Nurain Hashim, Dayang Laila Majid (dlaila@upm.edu.my), El-Sadig Mahdi, Rizal Zahari, Norfaizal Yidris                              |
| 16h50 |   |
| 17h10 |   |

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## THURSDAY 6 September (Morning)

### Room 6.1

#### Composite Structures 4

Chairs: Marco Montemurro, Anita Catapano

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|       |   |
|-------|---|
| 09h00 | <b>258   Lightning Protection Test Simulation of Aircraft Metal Shield</b><br>Hu Ting (ht_01@nuaa.edu.cn), Xu Cheng   |
| 09h20 | <b>259   Effect of Variable Core Stiffness on the Impact Response of Curved Sandwich Plates</b><br>Hessam Ghasemnejad (hessam.ghasemnejad@cranfield.ac.uk), Buddhi Arachchige             |
| 09h40 | <b>115   Homogenization of particulate and fiber-reinforced composites with some non-Gaussian material uncertainties</b><br>Kamiński Marcin (Marcin.Kaminski@p.lodz.pl)                   |
| 10h00 | <b>116   Bearing and bearing-bypass of pseudo-ductile thin-ply carbon/ glass hybrids</b><br>Mohamad Fotouhi (mohammad.fotouhi@uwe.ac.uk), Meisam Jalalvand, Xun Wu, Michael R. Wisnom     |
| 10h20 | <b>118   Improvement in energy absorption of composite sandwich panels under in-plane compression loads</b><br>Yuan Chen, Kunkun Fu, Lin Ye (lin.ye@sydney.edu.au)                        |
| 10h40 | <b>123   On the use of a laminate-level failure criterion for the optimum design of variable angle tow laminates</b><br>Anita Catapano (anita.catapano@bordeaux-inp.fr), Marco Montemurro |
| 11h00 | <b>Coffee-break</b>   |

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### Room 6.2

#### Analysis of composite beams, plates and shells 3

Chairs: V. Sladek, Riccardo Vescovini

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|       |   |
|-------|---|
| 09h00 | <b>136   Consistent 2D formulation of thermoelastic bending problems for FGM plates</b><br>V. Sladek (vladimir.sladek@savba.sk), L. Sator, J. Sladek  |
| 09h20 | <b>141   The effect of an elastomer interlayer thickness variation on the mechanical properties of Fiber-Metal-Laminates</b><br>Matthias Stoll (Matthias.Stoll@kit.edu), Kay Weidenmann                         |
| 09h40 | <b>157   Numerical study of size effects in micro/nano plates by moving finite elements</b><br>Miroslav Repka (miroslav.repka@savba.sk), Vladimir Sladek, Jan Sladek  |
| 10h00 | <b>170   Vibration behaviours of composite sandwich beams with different face/core debonding and fibre orientations</b><br>Shang-Nan Tsai (s.tsai15@imperial.ac.uk), Ambrose C. Taylor                          |
| 10h20 | <b>181   Analysis of post-buckled variable stiffness panels using Ritz and Koiter's method</b><br>Enrico Spigarolo, Riccardo Vescovini (riccardo.vescovini@polimi.it), Lorenzo Dozio, Eelco Jansen, Ayan Haldar |
| 10h40 | <b>190   Analysis of sandwich SCB test specimen using vlasov foundation model</b><br>Keishiro Yoshida (k-yoshida@neptune.kanazawa-it.ac.jp)   |
| 11h00 | <b>Coffee-break</b>   |

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## THURSDAY 6 September (Morning)

### Room 5.4

#### Experimental methods 2

Chairs: Halim Kovacı, Joao M.L. Reis

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|       |  |
|-------|--|
| 09h00 | <b>257   An alternative method to design composite structures to repair pipelines systems</b><br>Joao M.L. Reis (jreis@id.uff.br), Julia F. Satler, Joao F. S. Brandao, Felipe C. Amorim, Heraldo S. da Costa Mattos                       |
| 09h20 | <b>317   Study on influence factor of fastening force by vibration analysis of staking joint</b><br>Gyungmin Toh, Hyukju Ham, Wanwoo Park, Junhong Park (parkj@hanyang.ac.kr)  |
| 09h40 | <b>302   Experimental Study on Microwave-Based Curing Process of Carbon/Epoxy Composite</b><br>Eu-Tteum Park, Youngeon Lee, Jeong Kim, Beom-Soo Kang, Woojin Song (woodysong@pusan.ac.kr)  |
| 10h00 | <b>353   Experimental study of T-RTM process for the carbon/PA6 composite using anionic polymerization of <math>\epsilon</math>-caprolactam</b><br>Minkook Kim (minkook@kist.re.kr), Jun Woo Lim   |
| 10h20 | <b>233   Residual stress measurements on fiber reinforced plastics by the use of digital image correlation and the hole drilling method</b><br>Thomas Rief (thomas.rief@ivw.uni-kl.de), Nicole Motsch, Joachim Hausmann, Peter Mäckel      |
| 10h40 | <b>224   Effects of duplex composite layers produced by plasma nitriding and DLC coating on fatigue crack growth behavior of a low-alloy steel</b><br>Halim Kovacı (halim.kovaci@atauni.edu.tr), Ali Fatih Yetim, Özlem Baran, Ayhan Çelik |
| 11h00 | <b>Coffee-break</b>  |

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### Room 5.5

#### Impact Problems 1

Chairs: Waldemar Swiderski, Pietro Russo

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|       |   |
|-------|---|
| 09h00 | <b>010   Study on equivalent single degree of freedom method and performance assessment for the dynamic response of concrete-filled steel tubular columns under impact load</b><br>Yanhui Liu (yhliu@swjtu.edu.cn), Luming Wang, Jiahuan Song, Weizhu Ci, Zhe Wang                  |
| 09h20 | <b>043   Non-destructive testing of light armours made of CFRP after ballistic impacts by IR thermography methods</b><br>Waldemar Swiderski (waldemar.swiderski@wp.pl)  |
| 09h40 | <b>070   Temperature effect in 2 phase ceramic based composite during impact conditions</b><br>Postek Eligiusz (ewpostek@gmail.com), Sadowski Tomasz  |
| 10h00 | <b>184   Effect of fiber type and temperature on the low velocity impact performance of thermoplastic fiber metal laminates</b><br>Fabrizio Sarasini (fabrizio.sarasini@uniroma1.it), Jacopo Tirillò, Luca Ferrante, Claudia Sergi, Pietro Russo, Giorgio Simeoli, Andrea Calzolari |
| 10h20 | <b>110   Inline monitoring of basalt-based composites under impact tests</b><br>Simone Boccardi, Natalino Daniele Boffa, Giovanni Maria Carlomagno, Giuseppe Del Core, Carosena Meola (carmeola@unina.it), Pietro Russo, Giorgio Simeoli  |
| 10h40 | <b>246   Experimental study on the impact and CAI response of thin composite laminates: Effect of fabric architecture and ply thickness</b><br>Aravind Sasikumar (aravind.sasikumar@udg.edu), Daniel Trias, Peter Linde, Josep Costa  |
| 11h00 | <b>Coffee-break</b>   |

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## THURSDAY 6 September (Morning)

### Room 5.6

#### Composite structures in civil engineering 1

Chairs: Giosuè Boscato, Fabio De Angelis

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|       |   |
|-------|---|
| 09h00 | <b>227   Structural testing of an all-composite GFRP bridge girder</b><br>Tomasz Siwowski (siwowski@prz.edu.pl), Mateusz Rajchel, Maciej Kulpa, Damian Kaleta   |
| 09h20 | <b>192   An experimental study of post-tensioned CFRP for strengthening RC beams</b><br>Berthet Jean-Fabien, Ho Manh-Hung (manh-hung.ho@etudiant.univ-reims.fr), Perrenot Gilles, Li Alex   |
| 09h40 | <b>194   Time dependent deflection of NSM strengthened RC beams with different CFRP areas and loading histories</b><br>Mohamed Moawad, Lluís Torres (lluis.torres@udg.edu), Cristina Barris, Marta Baena, Ricardo Perera, Mohamed Emara                     |
| 10h00 | <b>201   Innovation on GFRP beam to column connections</b><br>Giosuè Boscato (gboscato@iuav.it), Francesco Byloos, Micheal Camillo, Giorgio Costantini, Maurizio Ondei, Vincenzo Scafuri  |
| 10h20 | <b>208   Numerical Modeling Of Hybrid Roller-Compacted Concrete Under Monotonic And Cyclic Loading</b><br>Andrea Zanichelli (andrea.zanichelli1@studenti.unipr.it), Andrea Carpinteri, Giovanni Fortese, Camilla Ronchei, Daniela Scorza, Sabrina Vantadori |
| 10h40 | <b>217   Dynamic nonlinear analysis for structures with base isolation systems</b><br>Fabio De Angelis (fabio.deangelis@unina.it), Donato Cancellara  |
| 11h00 | <b>Coffee-break</b>   |

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### Room 5.7

#### Joining (chaired by Seyed Goushegir) 1

Chairs: Seyed Goushegir, Huirong Le

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|       |  |
|-------|--|
| 09h00 | <b>219   The influence of injection molding parameters on the orientation of fibrous fillers in polymer-metal hybrid joints</b><br>Oliwia Trzaska (oliwia.trzaska@pwr.edu.pl), Roma Wróblewski, Jacek W. Kaczmar, Kamil Siodlak, Anna Ziobro |
| 09h20 | <b>332   Fatigue Behaviour of Multi-Material Hybrid Joints</b><br>Laura Gendre (l.gendre@warwick.ac.uk), Helen Ascroft, Geraint Williams, Darren Hughes  |
| 09h40 | <b>017   Static strength of double lap composite bonded joints under thermal ageing</b><br>El Hage Joseph, Challita Georges (georges.challita@ul.edu.lb)   |
| 10h00 | <b>038   On the design of anchor bolts for load introductions in continuous fiber-reinforced plastics</b><br>Jens Klein (jens.klein@klub.tu-darmstadt.de), Christian Mittelstedt   |
| 10h20 | <b>092   Fracture toughness of CNT reinforced adhesive for CFRP composite to metal joints</b><br>Maozhou Meng, Huirong Le (h.le@derby.ac.uk), Muhammad Yasir   |
| 10h40 | <b>114   Debondable adhesives with shape memory materials</b><br>Hui Yun Hwang (hyhwang@andong.ac.kr), Soo Ho Han  |
| 11h00 | <b>Coffee-break</b>  |

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**THURSDAY 6 September (Midday)**  
**Room 6.1**  
**Composite Structures 5**

Chairs: Ian Lane, Ataur Rahman

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|       |   |
|-------|---|
| 11h30 | <b>124   A novel computational method for the design of variable-stiffness fiber-reinforced composites using lamination parameters</b><br>Pouya Yousefi-Louyeh, Mehmet Yildiz, Eralp Demir (eralpd@sabanciuniv.edu)   |
| 11h50 | <b>126   Experimental characterization of the direction and time-dependent characteristics for the layers constituting the tissue of descending thoracic human aortas</b><br>Giovanni Ferrari (giovanni.ferrari@mail.mcgill.ca), Prabakaran Balasubramanian, Marco Amabili, Ivan Breslavski, Eleonora Tubaldi |
| 12h10 | <b>134   Blending constraints for composite optimization: an approach based on polar invariants</b><br>Enrico Panettieri (enrico.panettieri@ensam.eu), Anita Catapano, Marco Montemurro   |
| 12h30 | <b>139   The Challenges of Engineering the Airbus Composite Wing of Tomorrow</b><br>Ian Lane (ian.lane@airbus.com), Gordon Taylor   |
| 12h50 | <b>102   Construction Of Masonry Wall Using Recycled Plastic Bottles</b><br>Ataur Rahman (ataur107@yahoo.com), A.S.M Shamim   |
| 13h10 |   |
| 13h30 | <b>Lunch-break</b>  |

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**Room 6.2**  
**Analysis of composite beams, plates and shells 4**

Chairs: Jüri Majak, Lennart Weiß

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|       |  |
|-------|--|
| 11h30 | <b>197   Identification of dynamic characteristics of complex polymer concrete sleeper according to meta-structure of polymer concrete</b><br>Semin Kwon, Sangkeun Ahn, Hyo-in Koh, Hak-sung Kim, Junhong Park (parkj@hanyang.ac.kr) |
| 11h50 | <b>205   Numerical simulation of the dynamic response of fibre metal laminated plate under blast load</b><br>Xiangshao Kong, Jingbo Xu, Zheng Cheng, Fang Liu (fang_liu@whut.edu.cn), Weiguo Wu                                      |
| 12h10 | <b>291   Dynamic analysis of an axially moving free-free beam</b><br>Han Guangcai, Zheng Mingxue (837348366@qq.com), Wu Yanhong, Liu Fei   |
| 12h30 | <b>251   A higher order Haar wavelet method for analysis of composite structures</b><br>Jüri Majak (juri.majak@ttu.ee), Meelis Pohlak, Kristo Karjust, Martin Eerme, Boris Shvartsman  |
| 12h50 | <b>287   Modeling of a Reissner-type plate theory for monoclinic material</b><br>Patrick Schneider (patrick.schneider@klub.tu-darmstadt.de), Reinhold Kienzler   |
| 13h10 | <b>223   Parametric Finite Element Model of a CFRP Beam used in the SAMPE Bridge Contest</b><br>Lukas Rafalski (lukas.rafalski@outlook.de), Lennart Weiß, Hardy Köke, Christian Hühne  |
| 13h30 | <b>Lunch-break</b>   |

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## THURSDAY 6 September (Midday)

### Room 5.4

#### Health Monitoring Techniques in Composite Structures 1

Chairs: Hao Yang, Vittorio Memmolo

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|-------|--|
| 11h30 | <b>001   Early-warning model of deformation safety for arch dam considering time-varying characteristics</b><br>Huaizhi Su (su_huaizhi@hhu.edu.cn), Hongping Liu, Zhiping Wen, Meng Yang                                     |
| 11h50 | <b>008   An Automatic Approach for Health Monitoring of Composite Structures Based on Multi-sensors Technology</b><br>Hao Yang (Yanghao_lmu@yahoo.com), Xiangyang Xu, Ingo Neumann   |
| 12h10 | <b>041   Acoustic Data Communications in Composite Structures Using Ultrasonic Guided Waves: Numerical and Experimental Results</b><br>Christian Kexel, Moritz Mälzer (christian.kexel@physik.uni-frankfurt.de), Jochen Moll |
| 12h30 | <b>058   Material-specified peculiarities of elastic guided wave propagation in layered composite structures</b><br>Artem Eremin (eremin_a_87@mail.ru), Eugen Zimmermann, Rolf Lammering                                     |
| 12h50 | <b>266   Simultaneous health monitoring of stiffeners in composite structures through wave scattering analysis: a numerical assessment</b><br>Vittorio Memmolo (vittorio.memmolo@unina.it), Leandro Maio, Ernesto Monaco     |
| 13h10 | <b>330   Damage investigation and assessment due to low-velocity impact in composite laminated plates using numerical models and micro-CT imaging</b><br>Antigoni Barouni (antigoni.barouni@port.ac.uk), Hom Dhakal          |
| 13h30 | <b>Lunch-break</b>   |

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### Room 5.5

#### Impact Problems 2

Chairs: Reimar Unger, Adrian Gliszczynski

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|       |  |
|-------|--|
| 11h30 | <b>166   Low Velocity Impact Response of Thermoplastic Composites Reinforced with Metal Turnings</b><br>Ata Pourfarivarnezhad (ata_farivar@yahoo.com), Okan Ozdemir  |
| 11h50 | <b>131   FEM simulations of high velocity impact discerning various ply and interface damage mechanisms</b><br>Martin Schwab, Melanie Todt, Jürgen Tauchner, Heinz E. Pettermann (pettermann@ilsb.tuwien.ac.at)                |
| 12h10 | <b>199   Material behavior of carbon and glass fibers on strain rates between 10 and 1000 1/s</b><br>Reimar Unger (reimar.unger@tu-dresden.de), Andreas Nocke, Chokri Cherif   |
| 12h30 | <b>202   Experimental study of dynamic response and failure of composite wall container under blast load</b><br>Xiangshao Kong (kongxs@whut.edu.cn), Xuyang Wang, Jingbo Xu, Weiguo Wu   |
| 12h50 | <b>221   Numerical investigation of onset and evolution of LVI damages in Glass-Epoxy plates</b><br>Adrian Gliszczynski (adrian.gliszczynski@p.lodz.pl), Leszek Czechowski   |
| 13h10 | <b>285   Comparison of numerical modelling techniques for impact investigation on a wind turbine blade</b><br>Amrit Shankar Verma (Amrit.s.verma@ntnu.no), Nils Petter Vedvik, Philipp Ulrich Haselbach, Zhen Gao, Zhiyu Jiang |
| 13h30 | <b>Lunch-break</b>   |

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**THURSDAY 6 September (Midday)**  
**Room 5.6**  
**Composite structures in civil engineering 2**

Chairs: Pierluigi Colombi, Thomas Keller

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|       |   |
|-------|---|
| 11h30 | <b>230   Analytical study of the intermediate crack-induced fiber debonding in FRCM reinforced concrete or masonry structural elements</b><br>Pierluigi Colombi (pierluigi.colombi@polimi.it)   |
| 11h50 | <b>234   Influence of Sugar cane bagasse and hemp fibers reinforcement in cement based matrix composites</b><br>Guillermo Lopez, Facundo J Bellomo (facundobellomo@gmail.com), Alejandra Bertuzzi, Rita Rango, Gonzalo Ruano, Liz G. Nallim, Sergio Oller |
| 12h10 | <b>286   Shear behavior of Apulian tuff masonry panels strengthened with PBO-FRCM</b><br>Anna Castellano, Gabriella Filannino, Aguinardo Fraddosio, Giusy Magaletti (giusy.magaletti@poliba.it), Mario Daniele Piccioni                                   |
| 12h30 | <b>304   Influence of material properties on the dynamic characteristics of an FRP suspension bridge</b><br>Justin Russell (j.russell.3@warwick.ac.uk), Xiaojun Wei, Stana Živanović, J. Toby Mottram   |
| 12h50 | <b>346   Energy dissipation under cyclic loading in adhesively-bonded and bolted pultruded GFRP double-lap joints</b><br>Eslami Ghazaleh, Yanes Armas Sonia, Keller Thomas (thomas.keller@epfl.ch)  |
| 13h10 |   |
| 13h30 | <b>Lunch-break</b>  |

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**Room 5.7**  
**Joining (chaired by Seyed Goushegir) 2**

Chairs: Seyed Goushegir, Francesco Gagliardi

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|       |  |
|-------|--|
| 11h30 | <b>203   Process parameters evaluation of an innovative joining technique for Aluminum and woven polyamide fabric</b><br>Francesco Gagliardi (francesco.gagliardi@unical.it), Giuseppina Ambrogio, Romina Conte, Johannes Buhl, Markus Bambach |
| 11h50 | <b>349   An analytic tri-linear load-slip curve model of Perfobond shear connector</b><br>Hao Meng (cehmeng@zju.edu.cn), Rongqiao Xu   |
| 12h10 | <b>351   Analysis of dynamic properties of gears affecting on vibration response of connected structures</b><br>Deokman Kim (deokman@hanyang.ac.kr), Hyukju Ham, Chunkyu Park, Junhong Park  |
| 12h30 | <b>356   A novel load frame for sub-component testing of wind turbine blades</b><br>Malo Rosemeier (malo.rosemeier@iwes.fraunhofer.de), Alexandros Antoniou, Catherine Lester, Yannic Schmitt  |
| 12h50 | <b>308   Multiscale optimal variable selection and optimization model for composite bolted joints</b><br>Libin Zhao, Longwei Zhou, Fengrui Liu, Zhilong Yang, Jianyu Zhang (jyzhang@cqu.edu.cn)  |
| 13h10 |  |
| 13h30 | <b>Lunch-break</b>   |

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## THURSDAY 6 September (Afternoon)

### Room 6.1

#### Composite Structures 6

Chairs: Marina L. Moretti, Hardy Köke

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|       |   |
|-------|---|
| 14h30 | <b>195   Flexural capacity of CFSTs Beams using different cross-sections</b><br>Farid Abed (fabad@aus.edu), Yosri Abdelmageed   |
| 14h50 | <b>204   Enhancement of Properties of PMMA Hybrid Syntactic Foams Containing Polyhedral Oligomeric Silsesquioxane (POSS)</b><br>Merve Ozkutlu, Cerag Dilek, Goknur Bayram (gbayram@metu.edu.tr)                                     |
| 15h10 | <b>210   Analysis of the waviness and the variation of the fiber volume content in continuous carbon fiber reinforced plastics made by Tailored Fiber Placement</b><br>Kai Uhlig (uhlig@ipfdd.de), Lars Bittrich, Axel Spickenheuer |
| 15h30 | <b>213   Numerical Investigation of the Influence of the Face Sheet Stiffness on the Crack Growth in Honeycomb Sandwich Cores</b><br>Alexander Bugiel (alexander.bugiel@tu-dresden.de), Falk Hähnel, Klaus Wolf                     |
| 15h50 | <b>284   Strengthening of RC columns with buckled longitudinal bars through CFRP jacketing</b><br>Marina L. Moretti (mmore@central.ntua.gr), Evangelos Miliokas, Ioannis Paparizos  |
| 16h10 | <b>218   Effect of high specific surface area aluminium on the mechanical properties of epoxy resin</b><br>Chethana P Rao, Murthy H (hsnmurthy@gmail.com), Ramakrishna P A  |
| 16h30 | <b>255   Experimental Investigation of Mechanical Properties of Carbon Nanotube Reinforced Cement Composites</b><br>Sumit Sharma, Uday Krishna Ravella (uday.18604@lpu.co.in), Krishan Mohan Dubey                                  |
| 16h50 | <b>281   Graph-Based Calculation Of Drapable Layups Of Fiberreinforced Materials</b><br>Hardy Köke (hardy.koeke@dlr.de)   |
| 17h10 | <b>243   Strength and Stiffness Limited Multiple Constraints Design for the Construction of Aircraft Composite Components</b><br>Sevde Sena Kaplan (st159606@stud.uni-stuttgart.de), Asutay Çetin, Hande Yavuz                      |

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### Room 6.2

#### Nano-Composites and Micro-mechanics 2

Chairs: Raffaele Barretta, Tuba Yetim

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|       |  |
|-------|--|
| 14h30 | <b>265   Properties of natural and precipitated calcium carbonate in polyamide 6 Composites</b><br>Mara Zeni (mzandrad@ucs.br), Luiza B. Rocetto, Rosmary N. Brandalise  |
| 14h50 | <b>326   Thermal, mechanical and morphological characterization of poly(lactic acid)/aliphatic-aromatic copolyesters nanocomposites generated in situ by shear induced crystallization</b><br>Ramin Hosseinezhad, Iurii Vozniak (wozniak@cbmm.lodz.pl), Jerzy Morawiec, Slawomir Dutkiewicz, Andrzej Galeski |
| 15h10 | <b>363   Non-Local Continuum Mechanics for Nanostructures</b><br>Raffaele Barretta (rabarret@unina.it), Luciano Feo, Raimondo Luciano, Francesco Marotti de Sciarra  |
| 15h30 | <b>295   Structure and physical properties of polyetherimide foams containing low amounts of graphene nanoplatelets prepared by supercritical CO2 dissolution</b><br>Hooman Abbasi, Marcelo Antunes (marcelo.antunes@upc.edu), José Ignacio Velasco  |
| 15h50 | <b>249   Synthesis and Thermophysical Property Measurement of Composite Nanofluids</b><br>Eyuphan Manay (emanay@erzurum.edu.tr)  |
| 16h10 | <b>198   Comparison of Electrochemical Properties of TiO2, ZrO2 and TiO2-ZrO2 Nanocomposite Films Deposited on Ti45Nb Alloys</b><br>Tuba Yetim (tuba.yetim@erzurum.edu.tr)   |
| 16h30 | <b>307   Cryogenic Properties of CNT/HDPE Nanocomposites</b><br>Gülşah Bahçeli (geyikh@itu.edu.tr), Bilim Atli-Veltin, Hulya Cebeci  |
| 16h50 |  |

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## THURSDAY 6 September (Afternoon)

### Room 5.4

#### Health Monitoring Techniques in Composite Structures 2 / Nondestructive Testing (NDT) of composite

Chairs: Vittorio Memmolo, Till Vallée

|       |   |
|-------|---|
| 14h30 | <b>352   Optimal piezoelectric sensors location for cracks and damage detection in dynamic structures using genetic algorithms</b><br>Ali Daraji (ac7202@coventry.ac.uk)  |
| 14h50 | <b>362   Edge Detection Of Distributed Strain Profile For Non Model Based Damage Monitoring</b><br>Monica Ciminello, Natalino Daniele Boffa, Antonio Concilio, Vittorio Memmolo, Ernesto Monaco (ermonaco@unina.it), Fabrizio Ricci   |
| 15h10 | <b>188   Improved nondestructive evaluation for investigating laminated multi-delamination in glass fiber reinforced plastic composite via numerical procedures with predictions of propagated terahertz waves</b><br>Yunsang Kwak, Sang Mok Park (parkj@hanyang.ac.kr), Hak-sung Kim, Junhong Park |
| 15h30 | <b>253   Modelling of the electrical conductivity response of polypropylene-based electroconductive nanocomposites to large-scale deformations</b><br>Oleg V. Lebedev (oleg.lebedev@phystech.edu), Anton Trofimov, Sergey Abaimov, Alexander Ozerin   |
| 15h50 | <b>305   Inclination adjustable phased array transducers for detection of delaminations in composites</b><br>Mariam Achbal, Abdellatif Khamlichi (khamlichi7@yahoo.es), Fadoua El Khannoussi  |
| 16h10 | <b>344   Numerical simulation of the propagation of Lamb waves and their interaction with defects in CFRP laminates for non-destructive testing</b><br>Morten Voß, Till Vallée (till.vallee@ifam.fraunhofer.de), Mathis Eppmann, Detlef Ilse, Wolfgang Hillger, Friedrich von Dungern               |
| 16h30 | <b>345   Reversible actuator coupling for the non-destructive testing of composites</b><br>Mathis Eppmann, Morten Voss, Martin Rütters, Wolfgang Hillger, Artur Szewieczek, Friedrich von Dungern   |
| 16h50 | <b>094   A hybrid guided wave phase velocity dispersion estimation technique, based on spectrum decomposition and zero-crossing methods</b><br>Lina Draudviliene (lina.draudviliene@ktu.lt), Vykintas Samaitis, Renaldas Raisutis, Hacene Ait-Aider   |
| 17h10 |   |

### Room 5.5

#### Impact Problems 3

Chairs: Marina V. Shitikova, Jin Wang

|       |   |
|-------|---|
| 14h30 | <b>320   Impact of a rigid sphere upon an infinite viscoelastic Kirchhoff-Love plate considering bulk and shear relaxation</b><br>Marina V. Shitikova (mvs@vgasu.vrn.ru)  |
| 14h50 | <b>321   Crash Energy Management in Composite Automotive Structures</b><br>Jaipal Gupta (Jai.Gupta@warwick.ac.uk), Neil Reynolds, Teodor Chiciudean, Kenneth Kendall  |
| 15h10 | <b>186   In-plane impact response characteristics of auxetic cellular structure under low speed oblique impact</b><br>Wei Zhang (weizhang@dlut.edu.cn), Xiaoyu Bai, Yongsong Ye, Dean Chen  |
| 15h30 | <b>289   Experimental investigation on crashworthiness of empty/wood-filled composite columns</b><br>Jin Wang (wangjin830@sina.cn), Yong Zhang, Ning He, Tengting Chen, Xiang Xu  |
| 15h50 | <b>310   Influence of nano alumina particles on Quasi static and dynamic mechanical behavior of cementitious composites</b><br>Shirali Farsavani Mohamadi, Gholamhossein Liaghat (ghlia530@modares.ac.ir), Hadi Sabouri, Ehsan Pedram |
| 16h10 |   |
| 16h30 |   |
| 16h50 |   |

## THURSDAY 6 September (Afternoon)

### Room 5.6

#### Composite structures in civil engineering 3

Chairs: Anna Derlatka, Krzysztof Zerdzicki

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|       |   |
|-------|---|
| 14h30 | <b>127   Static analysis for the deployable structure based on the 'star' tensegrity unit</b><br>Ani Luo, Heping Liu (liuheping1234@sohu.com), Rongqiang Liu, Yuxuan Liu  |
| 14h50 | <b>163   Numerical and experimental tests of steel-concrete composite beam with the connector made of top-hat profile</b><br>Piotr Lacki, Jacek Nawrot, Anna Derlatka (aderlatka@bud.pcz.pl), Julita Winowiecka                     |
| 15h10 | <b>164   Optimization of composite dowels shape in steel-concrete composite floor</b><br>Piotr Lacki, Przemysław Kasza (przemekkasza@bud.pcz.czyst.pl), Konrad Adamus   |
| 15h30 | <b>168   Investigation on rheological properties of polyester reinforced PVC coated architectural fabric upon uniaxial and biaxial short term creep tests</b><br>Krzysztof Zerdzicki (krzzerdz@pg.edu.pl)                           |
| 15h50 | <b>177   Flexural Behaviour of RC Beams Strengthened with FRP Composites: Analytical Assessment and Design Issues</b><br>Elisabetta Monaldo (elisabetta.monaldo@unicusano.it), Gabriele Mirasoli, Francesca Nerilli, Giuseppe Vairo |
| 16h10 | <b>360   A New Type Of GFRP Shear Reinforcement In Slab-Column Edge Connections Subjected To Reversed-Cyclic Lateral Loading</b><br>Mohammed El-Gendy (elgendym@myumanitoba.ca), Ehab El-Salakawy                                   |
| 16h30 | <b>160   Retrofitting of Improperly Repaired Reinforced Concrete Columns Using FRP Confinement</b><br>Hasan Elci, Erkan Tore (tore@balikesir.edu.tr)  |
| 16h50 | <b>226   Vibration control of structure under earthquake excitation with passive and active control</b><br>Chitaoui Houssameddine (h.chitaoui@outlook.fr), Hamdaoui Karim, Benadla Zahira, Megnounif Abdellatif                     |
| 17h10 | <b>242   Recycling and use of expanded polystyrene, using it as a reinforcing agent for composite materials for the elaboration of civil construction elements</b><br>Gustavo Urueña (guruenaozco@gmail.com), Vivian Suarez         |

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### Room 5.7

#### Joining (chaired by Seyed Goushegir) 3

Chairs: Salih Akpınar, Johnnidel Tabucol

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|       |  |
|-------|--|
| 14h30 | <b>122   Dynamic Behavior of Composite Joints in Hydrodynamic Ram Simulator</b><br>Hongsu Bae, Kyeongsik Woo (kw3235@chungbuk.ac.kr), Eun-su Go, In-Gul Kim  |
| 14h50 | <b>125   Finite element study on the static and fatigue behaviour of wide single lap bonded joints with semi-circular defect</b><br>Yiding Liu (liuy116@uni.coventry.ac.uk), Stuart Lemanski, Xiang Zhang, David Ayre, Hamed Yazdani Nezhad  |
| 15h10 | <b>132   Effect of Nanostructure Reinforcement on Thermal Cycling Performance in Adhesively Bonded Single-Lap Composite Joints</b><br>Salih Akpınar (salih.akpinar@erzurum.edu.tr), İclal Avinc Akpınar  |
| 15h30 | <b>146   The Mechanical Strength of Carbon/epoxy Composite Plate with Open and Pin-Loaded Hole under Tensile Loading Based on Progressive Ply Failure Analysis</b><br>Bambang K. Hadi (bambang.hadi60@gmail.com), Bambang S. Widiyanto, Aat Solihat, M. Giri Suada, Hendri Syamsudin, Djarot Widagdo |
| 15h50 | <b>325   CFRP Spherical Joint for Robotic Limbs</b><br>Johnnidel Tabucol (johnnidel.tabucol2@unibo.it), Davide Cocchi, Tommaso Maria Brugo, Andrea Zucchelli, Raffaella Carloni  |
| 16h10 | <b>268   New Approach Of Pipelines Joining Using Fiber Reinforced Plastics Composites</b><br>M. H. Farag, E. Mahdi (elsadigms@qu.edu.qa), D. Laila, E. J. Abdullah   |
| 16h30 |  |
| 16h50 |  |

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## FRIDAY 7 September (Morning)

### Room 6.1

#### Composite Structures 7

Chairs: Marco Montemurro, Milan Gaff

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|       |   |
|-------|---|
| 09h00 | <b>144   Multi-scale optimization of a composite fuselage by considering a global/local modeling approach</b><br>Michele Iacopo Izzi, Enrico Panettieri, Anita Catapano, Marco Montemurro (marco.montemurro@ensam.eu), Jérôme Pailhès |
| 09h20 | <b>280   Improving the design of the Eurofighter aircraft airbrake by creating a hybrid assembly of 3D printed brackets and composite structures</b><br>Jochen Schmidt (jochen.schmidt@dlr.de)  |
| 09h40 | <b>149   Basic Mathematical Principles for Developing Layered Composite Materials</b><br>Milan Gaff (gaffmilan@gmail.com), Marián Babiak, Adam Sikora   |
| 10h00 | <b>150   The Effect of Shear Stress and Moisture Content on the Elastic and Plastic Potential in Three- and Four-Point Bending</b><br>Milan Gaff (gaffmilan@gmail.com), Marián Babiak   |
| 10h20 | <b>151   The Placement of Selected Non-wood Components in Layered Composite Materials and Their Elasticity Properties</b><br>Tomáš Svoboda, Milan Gaff (gaffmilan@gmail.com)  |
| 10h40 | <b>152   The Effect of the Placement of Selected Non-wood Components in Layered Composite Materials on Their Plasticity Properties</b><br>Milan Gaff (gaffmilan@gmail.com), Tomáš Svoboda   |
| 11h00 | <b>Coffee-break</b>   |

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### Room 6.2

#### Analysis of composite beams, plates and shells 5

Chairs: Monika Kamocka, Yufeng Xing

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|       |   |
|-------|---|
| 09h00 | <b>323   Numerical investigation on the influence of delamination on the postbuckling behaviour of thin-walled FML profiles</b><br>Monika Kamocka (188247@edu.p.lodz.pl), Radostaw Mania                      |
| 09h20 | <b>358   Closed-form solutions for free vibration and eigenbuckling of rectangular nanoplates based on nonlocal theory</b><br>Zekun Wang, Yufeng Xing (xingyf@buaa.edu.cn), Qiaozhen Sun                      |
| 09h40 | <b>156   Mechanical Properties of Composite hierarchical Square Honeycombs with Unidirectional Carbon Fibers</b><br>Guo-Cai Yu (yuguocai@hrbeu.edu.cn), Zhi-Tao Yang, Xiao-Jian Chen, Li-Jia Feng, Lin-Zhi Wu |
| 10h00 | <b>003   Effect of fiber missalignment on thermally cured laminated plates</b><br>Majed A. Majeed (m.majeed@ku.edu.kw), Laila G. Al-Sarraj  |
| 10h20 | <b>293   A novel Chebyshev spectral method for dynamic analysis of FGM structures</b><br>Yixin Huang, Tianshu Wang (tswang@tsinghua.edu.cn), Yang Zhao, Jing Sun  |
| 10h40 | <b>241   Nonlinear structural behavior of full-scale screwed timber-to-concrete beams</b><br>Hacene Ait-Aider (h_aitaider@yahoo.fr), Marc Oudjene, El-Mahdi Meghlat   |
| 11h00 | <b>Coffee-break</b>   |

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**FRIDAY 7 September (Morning)**  
**Room 5.4**  
**Composite structures in civil engineering 4**

Chairs: Hao Yang, Janina Adamus

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|       |  |
|-------|--|
| 09h00 | <b>018   TLS-based Crack Detection and Analysis for Composite Structures</b><br>Xiangyang Xu, Hao Yang (Yanghao_lm@yahoo.com), Ingo Neumann  |
| 09h20 | <b>019   Analytical and numerical investigation of the mechanical behavior of hybrid concrete and paper based sandwich structures</b><br>Salim Jallouf (salim.jallouf@klub.tu-darmstadt.de), Christian Mittelstedt |
| 09h40 | <b>020   Bond strength of reinforcing bars in basalt-polypropylene fibre high performance concrete</b><br>Piotr Smarzewski (p.smarzewski@pollub.pl)  |
| 10h00 | <b>039   The application of CFRP in BSS: design and analysis of a bridge model</b><br>Jianhua Zhang (245446766@qq.com), Shuoqi Gao, Chengyu Guan, Enwei Zhou, Hao Yang, Lili Tong                                  |
| 10h20 | <b>072   Selected Issues Of Choosing Composite Materials For Window Mounting Elements</b><br>Janina Adamus (janina.adamus@gmail.com), Marta Pomada   |
| 10h40 | <b>076   Highway Frame Structures Wrapped with Aramid Fiber Reinforced Polymer Sheets</b><br>Wael Zatar (zatar@marshall.edu)   |
| 11h00 | <b>Coffee-break</b>  |

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**Room 5.5**  
**Composites in Innovative Applications 1**

Chairs: Luigi Solazzi, Piervincenzo G. Catera

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|       |   |
|-------|---|
| 09h00 | <b>022   An alternative concept for pressure vessels made of fiber-reinforced thermoplastics</b><br>Erik Dahl (erik.dahl@klub.tu-darmstadt.de), Jan Simon Becker, Christian Mittelstedt, Helmut Schürmann   |
| 09h20 | <b>055   Lightweight of hydraulic cylinder by using aluminium and composite material</b><br>Luigi Solazzi (luigi.solazzi@unibs.it)  |
| 09h40 | <b>172   Mechanical behaviour of a manipulation arm structure integrated with inflatable coated fabric tubes and bellows-type joints</b><br>Daxu Zhang (daxu.zhang@sjtu.edu.cn), Yu Liu, Jianhui Hu, Wujun Chen, Chengjun Gao, Zhenyu Qiu                               |
| 10h00 | <b>191   Excellent lateral damping characteristics of prototypes of advanced GRP railway leaf springs in comparison with conventional steel springs</b><br>Ivo Černý (Ivo.Cerny@seznam.cz), Rayner M. Mayer, Miroslav Jersák, Jiří Vlasák, Marie Černá, Stanislav Neček |
| 10h20 | <b>270   Static transmission error evaluation in hybrid metal-composite spur gear pairs</b><br>Piervincenzo G. Catera (piervincenzo.catera@unical.it), Domenico Mundo, Alessandra Treviso, Francesco Gagliardi, Amit Visrolia   |
| 10h40 | <b>269   Folding Analysis of Thin-walled Deployable Composite Boom</b><br>Jiang-Bo Bai (baijiangbo@buaa.edu.cn), Di Chen, Jun-Jiang Xiong, R Ajit Sheno   |
| 11h00 | <b>Coffee-break</b>   |

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## FRIDAY 7 September (Morning)

### Room 5.6

#### Functionally graded materials and structures 1

Chairs: Aurélio Lima Araújo, Victor Franco Correia

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|       |  |
|-------|--|
| 09h00 | <b>103   Higher-Order Finite Element Model For Through - Thickness Stress Analysis Of Functionally Graded Materials Plate-Shells Structures: Linear And Nonlinear Analysis</b><br>José Simões Moita, Aurélio Lima Araújo, Victor Franco Correia, Cristóvão M. Mota Soares (cistovao.mota.soares@tecnico.ulisboa.pt), José Herskovits |
| 09h20 | <b>100   Coupled thermo-mechanical analysis of multilayered functionally graded plates by a layerwise mixed model</b><br>F. Moleiro (filipa.moleiro@tecnico.ulisboa.pt), V.M. Franco Correia, C.M. Mota Soares, A.L. Araújo, J.N. Reddy  |
| 09h40 | <b>062   Multiobjective Optimization Of Functionally Graded Materials</b><br>Victor Franco Correia (victorfranco@enautica.pt), José Aguilar Madeira, Filipa Moleiro, José S. Moita, Aurélio A. Araújo, Cristóvão M. Mota Soares  |
| 10h00 | <b>074   The analysis of strength of samples made of functionally graded material</b><br>Leszek Czechowski (leszek.czechowski@p.lodz.pl)   |
| 10h20 | <b>082   Nonlinear behavior of functionally graded plates containing crack under compression</b><br>S. Amir M. Ghannadpour (a_ghannadpour@sbu.ac.ir), F. Tornabene, M. Karimi  |
| 10h40 | <b>025   Free vibration of circular panel with CNT and FGM composite material</b><br>Ali Kemal Baltacıoğlu, Kadir Mercan, Ömer Civalek (civalek@yahoo.com)   |
| 11h00 | <b>Coffee-break</b>  |

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### Room 5.7

#### Smart Composites

Chairs: Ada Amendola, Raul Campilho

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|       |   |
|-------|---|
| 09h00 | <b>117   Evaluation of crack-closing in cement mortar beams using NiTi SMA fibers with different martensite temperatures</b><br>Jong-Han Lee (jonghan@daegu.ac.kr), Kun-Joon Lee, Chi-Young Jung, Hyung-Woo Lee   |
| 09h20 | <b>256   Prestress tuning of the wave dynamics of composite metamaterials</b><br>Ada Amendola (adamendola@gmail.com), Anastasiia Krushynska, Chiara Daraio, Nicola M. Pugno, Fernando Fraternali  |
| 09h40 | <b>274   Variable Deflection Control of Composite Structure using Shape Memory Alloy under Disturbance</b><br>Ermira Junita Abdullah (ermira@upm.edu.my), Elsadig Mahdi Ahmed Saad, Dayang Laila Abdul Majid, Azmin Shakrine Mohd. Rafie, Nurkhairunisa Awang Jumat, Priyanka Subhash Gaikwad |
| 10h00 | <b>189   Novel core-shell structured fiber strain sensor with load bearing characteristics in composite structures</b><br>Seung Yoon On, Seong Su Kim (seongsukim@kaist.ac.kr)  |
| 10h20 | <b>215   Geometrical study of curved composite adhesive joints using cohesive zone models</b><br>João Correia, Raul Campilho (raulcampilho@gmail.com), Yiding Liu   |
| 10h40 |   |
| 11h00 | <b>Coffee-break</b>   |

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# FRIDAY 7 September (Midday)

## Room 6.1

### Composite structures 8

Chairs: Vincenzo Oliveri, Monali Dahale

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|       |  |
|-------|--|
| 11h30 | <b>216   Non-linear analysis of variable stiffness doubly curved shells by a Ritz approach</b><br>Vincenzo Oliveri (vincenzo.oliveri@ul.ie), Paul M. Weaver  |
| 11h50 | <b>229   Effect of pick density on the tensile, compressive and shear properties of glass/epoxy 3D layer to layer woven composites</b><br>Monali Dahale (m.dahale@ulster.ac.uk), Geoffrey Neale, Alistair McIlhagger, Edward Archer, Eileen Harkin Jones |
| 12h10 | <b>239   Numerical Analysis of Modified Honeycomb Models</b><br>Jeongho Choi (choicaf@kyungnam.ac.kr)  |
| 12h30 | <b>247   A particular nonlinear composite shell element formulation based on Mindlin-Reissner plate theory</b><br>Zahra Soltani (Z.Soltani83@gmail.com), Seyed Ali Hosseini Kordkheili   |
| 12h50 | <b>143   Effects of Stacking Sequence on Failure Behaviour of Narrow Curved Cross-Ply Composite Laminates - Experiments and Analysis</b><br>Shuxin Li (lishuxin@whut.edu.cn), Qingfeng Duan, Haixiao Hu, Lisheng Liu, Dongfeng Cao                       |
| 13h10 | <b>145   Failure of Carbon/Epoxy and Glass/Epoxy Composite Plates Subjected to Blast Loading: Experimental and Numerical Analysis</b><br>Gunaryo (gunaryo92000@gmail.com), Heriana, Bambang K. Hadi, Sigit P. Santoso, Yayat Ruyat                       |
| 13h30 | <b>Lunch-break</b>   |

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## Room 6.2

### Bio-inspired design of composites / Multi-scale Analysis of Natural Fibre Composites

Chairs: Forkan Sarker, Jyotika Singh

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|       |  |
|-------|--|
| 11h30 | <b>275   Buckling and sensitivity analysis of a composite slender tibia with theoretical and numerical methods</b><br>Yun Xing, Jialing Yang (jlyangbuaa@aliyun.com), Yuxin Sun  |
| 11h50 | <b>220   The Effect of Fibre Length on the Mechanical and Sorption Properties of Natural Fibre Composites</b><br>Jyotika Singh (Jyotika.Singh@wits.ac.za), Robert Grant Reid   |
| 12h10 | <b>319   Adsorption behaviour of xyloglucan and cellulose nanocrystals on flax fabrics and effects on the mechanical behaviour of flax/epoxy composites</b><br>Doineau Estelle (estelle.doineau@lgp2.grenoble-inp.fr), Le Moigne Nicolas, Benezet Jean-Charles, Bras Julien, Cathala Bernard |
| 12h30 | <b>331   Designing a novel jute fibre composites: Effect of fibrillation and alkali treatment on the mechanical performance of jute fibre composites</b><br>Forkan Sarker, Vivek Koncherry, Prasad Potluri (prasad.potluri@manchester.ac.uk)   |
| 12h50 | <b>049   Evaluation of time-dependent viscoelastic property for 3D braided composites by multi-scale modeling</b><br>Jun-jun Zhai, Tao Zeng (taozeng@hrbust.edu.cn), Li-li Jiang   |
| 13h10 |  |
| 13h30 | <b>Lunch-break</b>   |

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-- End of Conference --

## FRIDAY 7 September (Midday)

### Room 5.5

#### Composites in Innovative Applications 2

Chairs: Stefano Amadori, Mahesa Akbar

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|       |   |
|-------|---|
| 11h30 | <b>148   Energy Harvesting from Transport Aircraft Wingbox under Gust Load</b><br>Mahesa Akbar (makbar2@sheffield.ac.uk), Jose Luis Curiel-Sosa   |
| 11h50 | <b>283   Mechanical modeling and experimental identification of the model parameters of multilayer coated specimens for high damping industrial applications</b><br>Stefano Amadori (stefano.amadori4@unibo.it), Giuseppe Catania |
| 12h10 | <b>343   Development of carbon composite bipolar plate for VRFB</b><br>Jun Woo Lim (jul170@jbnu.ac.kr)  |
| 12h30 | <b>128   Post-cracking behavior of arch-type steel fibre reinforced cementitious composite</b><br>Su-Jin Lee, Konkuk University, Republic of Korea<br>Jong-Pil Won (jpwon@konkuk.ac.kr), Konkuk University, Republic of Korea     |
| 12h50 | <b>314   Cellulose-based nanocomposites with enhanced gas barrier and energy storage properties</b><br>Quanling Yang (yangql@whut.edu.cn), Jinyu Wang, Chenggang Zhang, Zhuqun Shi, Haiyu Xu, Bei Li, Chuanxi Xiong               |
| 13h10 | <b>361   Carbonized solvent-free carbon nanotube nanofluids for high performance supercapacitor</b><br>Chuanxi Xiong (cxiong@whut.edu.cn), Weili Shi, Zhaodongfang Gao, Jianping Chen, Quanling Yang                              |
| 13h30 | <b>Lunch-break</b>  |

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### Room 5.6

#### Functionally graded materials and structures 2

Chairs: Antonio Zippo, Hakan Ersoy

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|-------|---|
| 11h30 | <b>262   A new finite element formulation based on deformation approach for bending of functionally graded beams</b><br>Hassina Ziou (hassina.geniecivil@gmail.com), Mohamed Himeur, Mohamed Guenfoud                           |
| 11h50 | <b>272   Free vibration analysis of FGM composite and laminated skew plates with shear-deformation theory by discrete singular convolution technique</b><br>Hakan Ersoy (hakanersoy@akdeniz.edu.tr), Kadir Mercan, Ömer Civalek |
| 12h10 | <b>312   Experimental study on non-linear dynamic of FGM shell</b><br>Antonio Zippo (antonio.zippo@unimore.it), Francesco Pellicano   |
| 12h30 | <b>174   Thermal Performance of Double-Layered Carbon-Carbon Composites for Missile Launching Systems</b><br>Jin-Young Yoon (yjyanthony@gmail.com), Juhwan Lim, Jun-Young Kim   |
| 12h50 | <b>071   No-Creep Conditions of FGM Rotating Discs</b><br>Hodais Zharfi (zharfi@esfarayen.ac.ir), Hamid Ekhteraei Toussi, Hamid Jarfi   |
| 13h10 |   |
| 13h30 | <b>Lunch-break</b>  |

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-- End of Conference -

-- NOTES --

