International Institute for
FRP in Construction

İTÜ

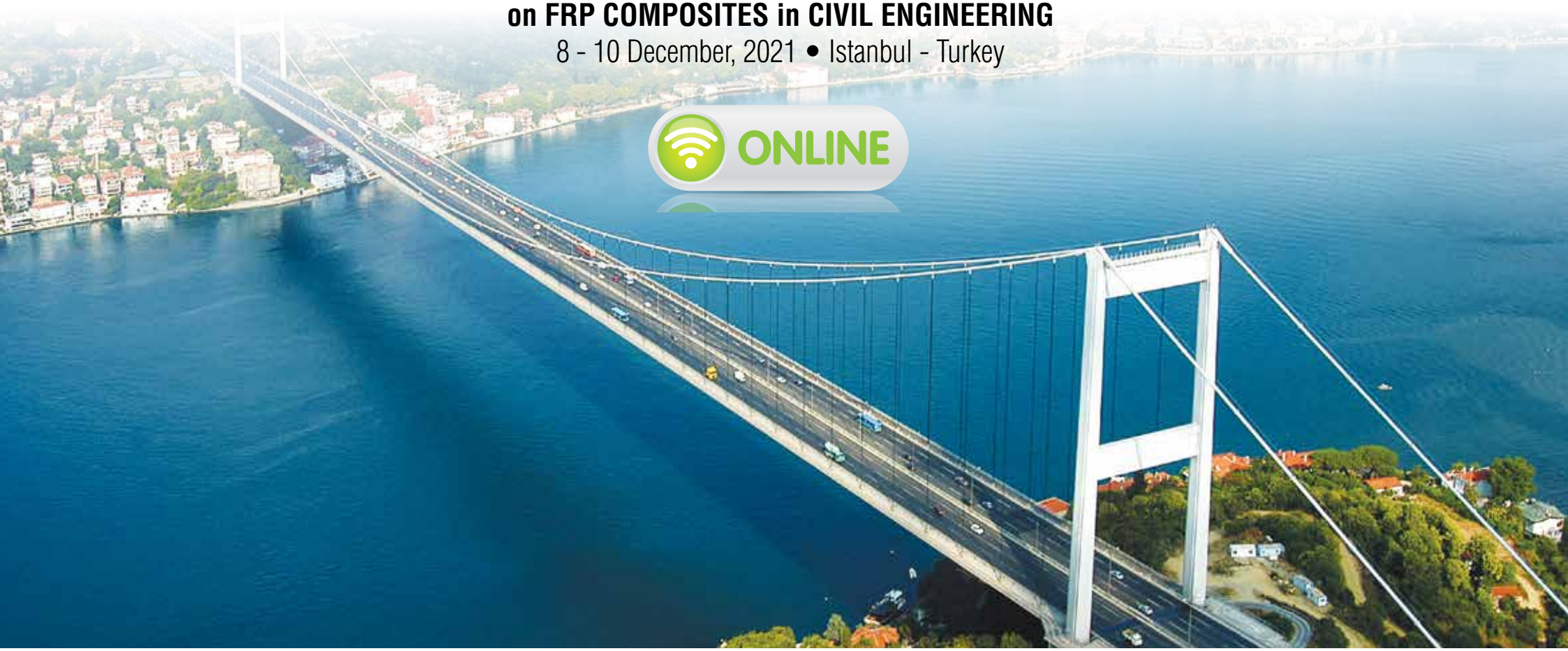
İSTANBUL TEKNİK ÜNİVERSİTESİ 1773

CICE2020/2021

10TH INTERNATIONAL CONFERENCE
on FRP COMPOSITES in CIVIL ENGINEERING

8 - 10 December, 2021 • Istanbul - Turkey

ONLINE



PROGRAM

PROGRAM

"All given times are in UTC. i.e. UTC 11:00 = Vancouver 03:00 - NewYork 06:00 - Istanbul 14:00 - Tokyo 20:00 - Melbourne 22:00"

8th December 2021						
Time (UTC)	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**
11:00-11:15	Opening Session **Conference Chair:** (A. ILKI) **IIFC President:** (S. SMITH) Music Performance Violin: Başak Elkutlu Piano: Ceyda Pirali					
11:15-12:45	Session 8A1 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Rami Eid, Cem Demir	Session 8A2 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Piero Lignola, Ömer Faruk Halıcı	Session 8A3 - Concrete structures reinforced or pre-stressed with FRP **Session Chairs:** Farid Abed, Deniz Korhan Dalgıç	Session 8A4 - Mini symposium - Towards the Structural Eurocode of Design of FRP Structures **Session Chairs:** José Sena-Cruz, Luigi Ascione, Jean-François Caron, Erkan Akpınar	Session 8A5 - Fire, impact and blast loading / Confinement **Session Chairs:** Lesley Sneed, Çağlar Göksu	Session 8A6 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites **Session Chairs:** Tommaso D'Antino, Christian Carloni, Ali Osman Ateş
12:45-13:00	Break					
13:00-13:30	KEYNOTE LECTURER Triantafillou Thanasis University of Patras, Greece **Session Chairs:** Andrea Prota, Cem Haydaroğlu					
13:30-14:00	KEYNOTE LECTURER Andrea Prota University of Naples Federico II, Italy **Session Chairs:** Triantafillou Thanasis, Cem Haydaroğlu					
14:00-15:00	**IIFC General Meeting**					
15:00-15:15	Break					
15:15-15:35	INVITED-THEME LECTURER Fabio Matta University of South Carolina, USA **Session Chairs:** Riadh Al-Mahaidi, Uğur Demir					
15:35-15:55	INVITED-THEME LECTURER Riadh Al-Mahaidi - Swinburne University of Technology, Australia **Session Chairs:** Fabio Matta, Uğur Demir					
15.55-16.10	Break					
16.10-17.55	Session 8B1 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Pedram Sadeghian, Erkan Akpınar	Session 8B2 - Seismic retrofit of structures (using fiber polymers) **Session Chairs:** Jovan Tatar, Cem Demir	Session 8B3 - Bond and interfacial stresses **Session Chairs:** Joaquim Barros, Emre Akın	Session 8B4 - FRP as Internal reinforcement / Concrete structures reinforced or pre-stressed with FRP **Session Chairs:** Amir Fam, Ali Osman Ateş	Session 8B5 - Materials and products / Concrete-filled FRP tubular members **Session Chairs:** Radhouane Masmoudi, İdris Bedirhanoğlu	Session 8B6 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites / Bond and interfacial stresses **Session Chairs:** Tommaso D'Antino, Christian Carloni, Uğur Demir

PROGRAM

"All given times are in UTC. i.e. UTC 11:00 = Vancouver 03:00 - NewYork 06:00 - Istanbul 14:00 - Tokyo 20:00 - Melbourne 22:00"

9th December						
Time (UTC)	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**
10:30-11:00	KEYNOTE LECTURER Jian Fei Chen – Southern University of Science and Technology, China **Session Chairs:** Alper İlki, Çağlar Göksu					
11:00-12:30	Session 9A1 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Scott Smith, Oğuz Cem Çelik	Session 9A2 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites **Session Chairs:** Tommaso D'Antino, Christian Carloni, Uğur Demir	Session 9A3 - Mini symposium - Reinforcing and Strengthening Structures using Prestressed FRP **Session Chairs:** Raafat El-Hacha, Deniz Korhan Dalgıç	Session 9A4 - Mini symposium - Towards the Structural Eurocode of Design of FRP Structures **Session Chairs:** José Sena-Cruz, Luigi Ascione, Jean-François Caron, Ali Osman Ateş	Session 9A5 - FRP as internal reinforcement **Session Chairs:** Farid Abed, Canan Girgin	Session 9A6 – Testing **Session Chairs:** Giovanni Terrasi, İdris Bedirhanoğlu
12:30-12:45	Break					
12:45-13:15	KEYNOTE LECTURER Peng Feng - Tsinghua University, China **Session Chairs:** Alper İlki, Ali Osman Ateş					
13:15-14:30	IIFC Council Meeting					
14:30-14:45	Break					
14:45-15:05	INVITED-THEME LECTURER Theodoros Rousakis - Democritus University of Thrace, Greece **Session Chairs:** Nicola Nistico, İdris Bedirhanoğlu					
15:05-15:25	INVITED-THEME LECTURER Nicola Nistico - Sapienza University of Rome, Italy **Session Chairs:** Theodoros Rousakis, İdris Bedirhanoğlu					
15:25-15:40	Break					
15:40-17:40	Session 9B1 - Durability and long-term performance / Concrete-filled FRP tubular members **Session Chairs:** Karim Benzarti, Deniz Korhan Dalgıç	Session 9B2 - Design issues/ guidelines **Session Chairs:** Baolin Wan, Uğur Demir	Session 9B3 - Mini symposium - Reinforcing and Strengthening Structures using Prestressed FRP **Session Chairs:** Raafat El-Hacha, Alper İlki	Session 9B4 - All FRP structures / Hybrid structures of FRP and other materials **Session Chairs:** Salvatore Russo, Cem Haydaroğlu	Session 9B5 - Testing / FRP as internal reinforcement **Session Chairs:** Ehab El-salakawy, Kutay Orakçal	Session 9B6 - Mini symposium - Advances and challenges in seismic strengthening of RC structures with fibre-reinforced composite materials (FRP, FRCM/TRM, FRCC) **Session Chairs:** Marco Di Ludovico, Marta Del Zoppo, Mehmet Emin Arslan

PROGRAM

"All given times are in UTC. i.e. UTC 09:00 = Vancouver 01:00 – New York 04:00 - Istanbul 12:00 - Tokyo 18:00 - Melbourne 20:00"

10th December						
Time (UTC)	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**
09:00-10:30	Session 10A1 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Asad-ur-Rehman Khan, Cem Demir	Session 10A2 - Mini symposium - Strengthening of Steel Structures **Session Chairs:** Elyas Ghafoori, QianQian Yu, Şevket Şenel	Session 10A3 - Fire, impact and blast loading / Confinement **Session Chairs:** João R. Correia, Çağlar Göksu	Session 10A4 - FRP as internal reinforcement / Concrete structures reinforced or pre-stressed with FRP **Session Chairs:** Rebecca J. Gravina, Şevket Özden	Session 10A5 - All FRP structures / Hybrid structures of FRP and other materials **Session Chairs:** Riadh Al-Mahaidi, Cem Haydaroğlu	Session 10A6 - Materials and products / Concrete-filled FRP tubular members **Session Chairs:** Thiru Aravinthan, Ahmet Murat Türk
10:30-10:45	Break					
10:45-12:00	Session 10B1 - Strengthening of concrete, steel, masonry and timber structures **Session Chairs:** Akhrawat Lenwari, Erdem Canbay	Session 10B2 - Mini symposium - Strengthening of Steel Structures **Session Chairs:** Elyas Ghafoori, QianQian Yu Çağlar Göksu	Session 10B3 - Seismic retrofit of structures (using fiber polymers) **Session Chairs:** Marina Moretti, Oğuz Cem Çelik	Session 10B4 - Bond and interfacial stresses **Session Chairs:** İdris Bedirhanoğlu, Pınar İnci	Session 10B5 - Design issues/ guidelines / Mini symposium - Advances and challenges in seismic strengthening of RC structures with fibre-reinforced composite materials (FRP, FRCM/ TRM, FRCC) **Session Chairs:** Marco Di Ludovico, Marta Del Zoppo, Cem Haydaroğlu	Session 10B6 - Durability and long-term performance **Session Chairs:** Milad Bazli, Şevket Özden
11:00-12:00	Combined Ex-Com and AC meeting					
12:00-12:15	Break					
12:15-12:35	INVITED-THEME LECTURER Yu Fei Wu - Shenzhen University, China **Session Chairs:** Peng Feng, Mehmet Şentürk					
12:35-12:50	Break					
12:50-13:20	KEYNOTE LECTURER Libo Yan - Technical University of Braunschweig, Germany **Session Chairs:** Kent Harries, Mehmet Şentürk					
13:20-13:50	KEYNOTE LECTURER Kent Harries - University of Pittsburgh, USA **Session Chairs:** Libo Yan, Mehmet Şentürk					
13:50-14:50	Closing Ceremony					

PROGRAM

8th December

11:00-11:15 Opening Session

11:15-12:45 Session 8A1 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Rami Eid, Cem Demir

1502 - Experimental and Numerical Study of Strengthening Concrete Specimens by Composite Materials Based Natural Hemp Fibers
Ivelina Ivanova, Jules Assih, Stanislav Slavov, Dimitar Dontchev

1071 - Near Surface Mounted Technique for Strengthening Continuous RC Beams with FRP Bars
Mohammad Abdallah, Firas Al Mahmoud, Abdelouahab Khelil, and Julien Mercier

1501 - Interface Response of CFRP Fabrics for Concrete Substrates Enhanced with Toughened Epoxy Adhesive Layers.
Dimitra V Achillopoulou, Antonino Montalbano, Fabien Choffat

1480 - Experimental analysis of R.C. beams preloaded, repaired and flexural strengthened with carbon fibre reinforced polymer (CFRP)
Juliane da Costa Santos, Ana Caroline da Costa Santos, Paul Archbold, Rogério Francisco Küster Puppi

1243 - Tests of Authentic Low-Performance Concrete Specimens Strengthened with CFRP Sheets
Rami Eid, Ghali Jaber, Avraham N. Dancygier, Avigdor Rutenberg

1069 - Fibre Reinforced Mortar (FRM) for in Plane Strengthening of Masonry Panels
Alberto Balsamo, Marco Di Ludovico, Marta Del Zoppo, Maddaloni Gennaro, Andrea Prota, and Giulio Morandini

11:15-12:45 Session 8A2 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Piero Lignola, Ömer Faruk Halıcı

1110 - Mechanical Performances of FRCM Shear-Strengthened Reinforced Concrete Beams: Experimental and Theoretical Investigation
Luciano Ombres and Salvatore Verre

PROGRAM

1142 - Effect of Matrix on Flexural Capacity of Masonry Members Strengthened with Composites
Giancarlo Ramaglia, Giovanni Crisci, Gian Piero Lignola, Francesco Fabbrocino and Andrea Prota

1143 - Retrofit of Masonry Walls with Composites to Reduce Vulnerability to Tsunami Loads
Stefano Belliazzi, Gian Piero Lignola and Andrea Prota

1292 - Quick Reparation of Infills in RC Frames after Seismic Damages – Experimental Tests on Shaking Table
Theodoros Rousakis, Arkadiusz Kwiecien, Alberto Viskovic, Alper Ilki, Petra Tiller, Bahman Ghiassi, Andrea Benedetti, Matija Gams, Zoran Rakicevic, Omer Faruk Halici, Bogusław Zając, Łukasz Hojdys, Piotr Krajewski, Fabio Rizzo, Camilla Colla, Elena Gabrielli, Anastasios Sapalidis, Efthimia Papadouli, Vachan Vanian, Aleksandra Bogdanovic

1246 - Prediction of Deflection Progression of RC Beams Strengthened with NSM FRP Composites
Tamer Eljufout and Houssam Toutanji

1332 - Crack Development in Normal Section of RC Elements Strengthened with Pre-Stressed FRP Under External Load Action in Bending
Justas Slaitas, Juozas Valivonis

11:15-12:45 Session 8A3 - Concrete structures reinforced or pre-stressed with FRP
Session Chairs: Farid Abed, Deniz Korhan Dalgıç

1334 - Shear Code Provisions Applied to the Prediction of FRP Strengthened Prestressed I-Girders
Muhammad Arslan Yaqub, Stijn Matthys, Christoph Czaderski

1258 - Unloading behaviour and analysis of GFRP prestressed concrete beams
Mohamed Zawam, Martin Noël

1077 - Thin Sandwich Elements Prestressed with CFRP Tendons
Ann-Christine von der Heid, Sven Bosbach, Alexander Stark, Jan Philip Schulze-Ardey, Josef Hegger

1357 - FRP reinforcement to retrofit bridge pier after repair: experimental test results
Junqing Xue, Davide Lavorato, Gabriele Fiorentino, Alessandro Vittorio Bergami, Bruno Briseghella and Camillo Nuti

PROGRAM

1035 - Shear Response of BFRP-Reinforced Short Beams using Fiber Reinforced Concrete
Farid Abed, Mohamad Kusay Sabbagh

1123 - Experimental Monitoring of Long-term Structural Behaviour and Prestress Losses of BFRP Pretensioned Beams under Sustained Loading
Ana Pavlović, Ted Donchev, Diana Petkova

11:15-12:45 Session 8A4 - Mini symposium - Towards the Structural Eurocode of Design of FRP Structures
Session Chairs: José Sena-Cruz, Luigi Ascione, Jean-François Caron, Erkan Akpınar

1210 - A Preliminary Design of a New Lightweight Floor System
Pier Giovanni Benzo, José Sena-Cruz and João M. Pereira

1387 - Mechanical Properties of FRP Materials at Elevated Temperature. Definition of a Temperature Conversion Factor for Design in Service Conditions
João R. Correia, Thomas Keller, Mário Garrido, Mário Sá, João P. Firmo, Md Abu Shahid, Marina Machado

1393 - Influence of The Manufacturing Process on The Tensile Stress-Strain Response of Hybrid Glass/Carbon and Carbon/Carbon Composites
Zahir Namourah, Filipe Ribeiro, José Sena-Cruz

1394 - Cyclic Behaviour of Unidirectional Hybrid Interlayer Glass/Carbon and Carbon/Carbon Composites
Filipe Ribeiro, José Sena-Cruz and Anastasios P. Vassilopoulos

1461 - Flexural Behaviour of Hybrid FRC-GFRP/PUR Sandwich Panels
Luís Correia,Tiago Silva, José Sena Cruz, Eduardo Pereira, Isabel Valente, and Joaquim Barros

1362 - Shear Force in Bolted Connection due to Traffic and Temperature Loads in Hybrid Steel-FRP Bridges
Koen Gribnau, Johan de Boon, Gerhard Olivier, Marko Pavlović

PROGRAM

11:15-12:45 Session 8A5 - Fire, impact and blast loading / Confinement
Session Chairs: Lesley Sneed, Çağlar Göksu

1085 - Ratio Between Protection Coefficients and Oversized Coefficients for Pultruded Elements in Fire
Harkaitz García, Aimar Insausti, Mikel Zubizarreta and Iñaki Garmendia

1145 - Flexural Performance of NSM CFRP Strengthened Concrete Beams under Temperature
Younes Jahani, Marta Baena, Javier Gómez, Cristina Barris and Lluís Torres

1106 - Key Parameters in the Calculation of the Reinforcement of Rectangular Columns with FRP. Review of Design Guidelines and Comparison with Experimental Results.
Viviana J. Castro, Ana de Diego, Sonia Martínez, Luis Echevarría and José Pedro Gutiérrez

1114 - Compressive Behavior of Masonry Columns Confined with Multi-layer SRG Composite
Sarah Jemison-Parr , Carolina Senesi , Lesley H. Sneed , and Christian Carloni

1465 - Temperature Effects on the Mechanical Properties of the GFRP Sheets
M.F. Qureshi, S.A. Sheikh and H. Almansour

1470 - A Novel Design Procedure for CFRP-Strengthened Concrete-Filled Steel Tubes to Resist Impact Loads
Dikshant Saini and Behrouz Shafei

11:15-12:45 Session 8A6 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites
Session Chairs: Tommaso D'Antino, Christian Carloni, Ali Osman Ateş

1315 - Understanding Degradation of Fiber/Matrix Interface under Environmental Effects using Molecular Simulation
Chao Wu, Ruidong Wu, and Lik-ho Tam

1127 - The Role of Top Matrix Layer on the GTRM-to-Masonry Bond
Paraskevi D. Askouni and Catherine G. Papanicolaou

1221 - Effect of Groove Depth on Behavior of CFRP Sheets Bonded to Heat-Damaged Concrete by Using EBROG Method
Amir Tajmir-Riahi, Niloufar Moshiri and Davood Mostofinejad

PROGRAM

1098 - Experimental Evidences and Numerical Modelling of Srg Systems Under Uniaxial Load
Francesca Roscini, Marialaura Malena and Gianmarco de Felice

1179 - Tensile Tests of FRCM Coupons: The Influence of the Fiber-Matrix Bond Properties
Francesco Focacci, Tomaso D'Antino and Christian Carloni

1218 - Bond Performances of SRG Composites: Experimental and Numerical Investigation
Luciano Ombres, Salvatore Verre

12:45-13:00 **Break**

13:00-13:30 **KEYNOTE LECTURER - Triantafillou Thanasis - University of Patras, Greece**
Integrated Seismic and Energy Retrofitting System using Textile-Reinforced Mortars Combined with Thermal Insulation
Session Chairs: Andrea Prota, Cem Haydaroğlu

13:30-14:00 **KEYNOTE LECTURER - Andrea Prota - University of Naples Federico II, Italy**
Fast and Low Impact Retrofit Using Advanced Materials for a Diffused Seismic Risk Mitigation
Session Chairs: Triantafillou Thanasis, Cem Haydaroğlu

14:00-15:00 **IIFC General Meeting**
All registered delegates are welcome to attend the IIFC General Meeting. As registered delegates they are also members of IIFC and are hence eligible to vote at the meeting

15:00-15:15 **Break**

15:15-15:35 **INVITED-THEME LECTURER - Fabio Matta - University of South Carolina, USA**
Discrete Meso-Scale Concrete Model for Simulation of Size-Dependent Shear Response of GFRP Reinforced Concrete Beams
Session Chairs: Riadh Al-Mahaidi, Uğur Demir

15:35-15:55 **INVITED-THEME LECTURER - Riadh Al-Mahaidi - Swinburne University of Technology, Australia**
An Experimental Study on Concavely Curved Soffit Reinforced Concrete Beams Externally Bonded with FRP
Session Chairs: Fabio Matta, Uğur Demir

15.55-16.10 **Break**

PROGRAM

16.10-17.55 Session 8B1 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Pedram Sadeghian, Erkan Akpınar

1057 - Experimental Study of Slender Concrete Columns Strengthened with Longitudinal FRP Laminates and FRP Wrapping System
Koosha Khorramian, Pedram Sadeghian

1116 - Effect of Fabric Reinforced Cementitious Mortar (FRCM) on the Strength of Shear-Damaged Reinforced Concrete Beams
Dylan Kennedy and Ahmad Rteil

1240 - Strengthening in Shear of RC T-beams with CFRP fabrics: Multilayer versus Monolayer
Ndongo Samb, Georges El-Saikaly and Omar Chaallal

1033 - Structural Behavior of Disturbed Regions in RC Beams Strengthened with NSM Steel Bars and Externally Bonded GFRP
Mustafa M. Raheem and Hayder A. Rasheed

1204 - Enhancing Fire Resistance Rating of Reinforced Concrete Members Strengthened with Externally Applied FRP Composites
Anuj M. Shakya and Tarek Alkhrdaji

1452 - Flexural Analysis and Optimized Design Software for Reinforced Concrete Beams Strengthened with NSM or Externally Bonded FRP
Hayder A. Rasheed, and Alaaeldin Abouelleil

1310- Difference in Performance between FRP-retrofitted and FRP-repaired Reinforced Concrete Shear Walls
Jazalyn Dukes, Christopher Segura and Siamak Sattar

16.10-17.55 Session 8B2 - Seismic retrofit of structures (using fiber polymers)
Session Chairs: Jovan Tatar, Cem Demir

1263 - Cyclic Tests on Masonry Vaults Strengthened through Composite Reinforced Mortar: The Role of the Connection with the Abutments
Natalino Gattesco, Ingrid Boem

1229 - Seismic Retrofitting Clay Brick Masonry with Visco-Elasto-Plastic Adhesive Bonded CFRP Strips: Efficient Utilization of CFRP Laminates without Significantly Damaging the Substrate.
Ömer S. Türkmen, Boy T. de Vries, Simon N.M. Wijte

PROGRAM

1379 - Seismic Performance of CFRP Jacketed Sub-standard RC Columns under High Axial Stress and Shear Demand
Merve Nur Demir, Ugur Demir, Cem Demir, Alper Ilki

1012 - Tensile Behavior of Large Diameter Carbon Fiber Anchors
Emrah Tasdemir, Rudolf Seracino, Mervyn Kowalsky and James Nau

1058 - Seismic and Durability Assessment of Externally Bonded FRP Retrofits in Reinforced Concrete
Structures after 2018 Anchorage, AK Earthquake
Sandra Milev, Shafique Ahmed, Mariam Hassan, Siamak Sattar, David Goodwin and Jovan Tatar

1239 - Backbone Curves of FRP Confined Concrete Columns for Nonlinear Analysis
Mohammad Jalalpour and Tarek Alkhrdaji

1493 - Effectiveness of U-wrap Anchorage of Flexural CFRP Reinforcement in Strengthened Reinforced Concrete Beams
Jovan Tatar, Christian Viniarski, Kent A. Harries, Monique Head

16.10-17.55 Session 8B3 - Bond and interfacial stresses
Session Chairs: Joaquim Barros, Emre Akın

1225 - Fatigue Behavior of FRCM Strengthened RC Beams: State of the Art and Future Developments
Angelo Savio Calabrese, Tommaso D'Antino, Pierluigi Colombi, Christian Carloni and Carlo Poggi

1226 - Numerical Study of the Effective Lap-Splice Length of FRCM Composites
Tommaso D'Antino, Angelo Savio Calabrese, Pierluigi Colombi and Carlo Poggi

1411 - Bond Behavior of Steel Plates Externally Bonded on Concrete Elements
Elena Ciampa, Francesca Ceroni2 and Maria Rosaria Pecce

1039 - Thermo-mechanical bonding behaviour of CFRP NSM system using cement-based adhesive
Reza MohammadiFirouz, Eduardo Pereira, and Joaquim Barros

1460 - Bond Behaviour of GFRP Bars with Concrete at Normal and High Temperatures
Jahanzaib, Shamim A. Sheikh, Zahra Kharal and Husham Almansour

PROGRAM

1016 - Evaluating the Bond Characteristics of Intermediate and Ultra-High Modulus CFRP Laminates Adhered to Steel
Akram Jawdhari, Abheetha Peiris, and Issam Harik

1425 - Bond Assessment of GFRP Bars Embedded in Fiber-Reinforced Eco-Concrete
Ali F. Al-Khafaji, John J. Myers, Hayder Alghazali

16.10-17.55 Session 8B4 - FRP as internal reinforcement / Concrete structures reinforced or pre-stressed with FRP
Session Chairs: Amir Fam, Ali Osman Ateş

1089 - Development Length of GFRP Reinforcing Bars in Concrete Containing Seawater
Mehran Parvizi, Martin Noël

1023 - Testing a GFRP-Reinforced Concrete Bridge Deck Using a New Rolling Load Simulator
Laura Tauskela, Severus Gao, Amir Fam

1045 - Structural Behavior of BFRCC Layered Deep Beams Reinforced with GFRP Headed-End Bars
Ahmed Bediwy, Karam Mahmoud, and Ehab El-Salakawy

1297 - Numerical Investigation of a New Floor System with GFRP Stay-in-Place Forms and Embedded I-Beams
Philopateer Boules, Amir Fam and Aikaterini Genikomsou

1061 - Effect of Under-stressing on The Fatigue Strength of RC Beams Rehabilitated with NSM CFRP Reinforcement
Houssam Toutanji and Tamer Eljufout

1155 - Parametric Study of Slender Columns Retrofitted with NSM CFRP Rods
Rafael A. Salgado, Azadeh Parvin

1184 - Numerical Investigation on the Shear Behavior of Reinforced Concrete Beams Strengthened with Textile Reinforced Mortar Jackets
Azadeh Parvin, Mohannad Alhusban

PROGRAM

16.10-17.40 Session 8B5 - Materials and products / Concrete-filled FRP tubular members
Session Chairs: Radhouane Masmoudi, İdris Bedirhanoğlu

1377 - Frp Bridges in the Flanders Region: Experiences from the C-Bridge Project
Wouter De Corte, Jordi Uyttersprot, and Robert Somers,

1139 - Modelling the High Strain Rate Tensile Behavior of Steel Fiber Reinforced Concrete Using Artificial Neural Network Approach
Honeyeh Ramezansefat , Mohammadali Rezazadeh, Joaquim Barros, Isabel Valente, and Mohammad Bakhshi

1467 - The Re-Use of End-Of-Life Fiber Reinforced Polymer Composites in Construction
André Alann, Juntikka Magdalena, Mattsson Cecilia, Nedev Georgi and Haghani Reza

1073 - Combined Torsion, Flexure, and Axial Compression Applied to Concrete Filled FRP Tubes
James St. Onge, Amir Fam

1075 - Segmental Hollow Concrete Filled FRP Tubes (CFFT) for Wind Turbine Towers
Abdul Watfa, Mark Green, Amir Fam and Martin Noel

1194 - Flexural Performance of Post-Tensioned Rectangular Concrete-Filled FRP Tubes (CFFT) Beams Using High and Normal Strength Concrete
Asmaa Abdeldaim Ahmed, Mohamed Hassan, M. Iqbal Khan and Radhouane Masmoudi

16.10-17.55 Session 8B6 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites / Bond and interfacial stresses
Session Chairs: Tommaso D'Antino, Christian Carloni, Uğur Demir

1341 - Influence of Elevated Temperatures on the Bond Between CFRP Strips and Concrete Using the NSM Technique - Definition of Local Bond vs. Slip Laws
Adriana S. Azevedo, João P. Firmo, João R. Correia, Carlos Tiago

1006 - Experimental Study on Comparison of Cyclic Bond Behavior of Ribbed and Sand-Coated CFRP Bars in High Strength Concrete
T. Tibet Akbas, Oguz C. Celik, Cem Yalcin and Alper Ilki

1108 - Experimental Study on Increase of Bonding Strength of FRP Reinforcement in Concrete
Furkan Taskin and Cihan Ciftci

PROGRAM

1005 - Fatigue Bond Characteristics of NSM CFRP in Concrete due to Adhesive and Surface Treatment
Xun Wang and Lijuan Cheng

1013 - Characterization of Debonding Strain in Lightweight Concrete T-Beams Strengthened in Flexure Using Different Levels of CFRP
Mohammed A. Zaki, Hayder A. Rasheed, and Tarek Alkhrdaji

1119 - A Comparative Study of Bond Test Methods for Externally Bonded FRCM and SRG Composites
Marco Frallonardo , Lesley H. Sneed , Tommaso D'Antino , and Christian Carloni

1289 - A Cohesive Contact Algorithm to Describe the Multi-Axial Bond Behavior of FRCM Composites
Gianluca Mazzucco, Tommaso D'Antino, Valentina Salomoni, and Christian Carloni

PROGRAM

9th December

10:30-11:00 **KEYNOTE LECTURER - Jian Fei Chen – Southern**
University of Science and Technology, China
Session Chairs: Alper İlki, Çağlar Göksu

11:00-12:30 Session 9A1 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Scott Smith, Oğuz Cem Çelik

1007 - Analytical Model for Predicting the Torsional Capacity of Thin Walled Tubular RC Beams Strengthened with NSM CFRP Laminates
Chandan Gowda, Joaquim Barros and Maurizio Guadagnini

1125 - Theoretical Prediction of Axial Response of FRP Fully/partially Confined Circular Concrete under Axial Loading
Javad Shayanfar, Mohammadali Rezazadeh and Joaquim A. Barros

1137 - Measurement and Analysis of Cracking Behaviour of RC Beams Strengthened with NSM CFRP Strips Using Digital Image Correlation
Cristina Barris, Javier Gómez,Paula Zubillaga, Ricardo Perera,Younes Jahani and Lluís Torres

1257 - Damage Identification in NSM FRP Strengthened RC Beams Using Linear Mixed Effects Models
Ricardo Perera, Antonio Ruiz, Lluis Torres, Cristina Barris and Marta Baena

1056 - Adhesively Bonded FRP Composites for Strengthening of RC Structures: Recent Advances
Reza Haghani, Jincheng Yang, Rami Hawileh, Jamal Abdullah, Karrar Al-Lami, Pierluigi Colombi, Tommaso D'Antino

1079 - The Effectiveness of CFRP Ropes to Anchor FRP Shear-Strengthened RC T-Beams with Continuous Sheets
Farah Hammad and Ahmed Godat

11:00-12:30 Session 9A2 - Mini symposium - Advances in the investigation of the bond mechanism of FRP, FRCM, TRM, and SRG composites
Session Chairs: Tommaso D'Antino, Christian Carloni, Uğur Demir

1277 - Testing vs Application Issue for Fiber Reinforced Materials
Antonio Bilotta,, Gian Piero Lignola

PROGRAM

1286 - Bond Behaviour of PBO FRCM on Curved Masonry Substrates
Giulia Misseri, Gianfranco Stipo and Luisa Rovero

1295 - Carbon nanotubes strengthened interphase in Textile Reinforced Mortar (TRM) composites
Cesare Signorini

1100 - Bond Behaviour of NSM Strengthening Systems on Concrete Elements Under Sustained Load and High Ambient Temperature
Javier Gómez, Cristina Barris, Younes Jahani, Marta Baena1 and Lluís Torres

1041 - Bond between Flax-Trm and Masonry: Effect of Bond Length
Niki Trochoutsou, Matteo Di Benedetti, Kypros Pilakoutas, Maurizio Guadagnini

1280 - An Experimental Investigation on the TRM to Masonry Bond Under Fatigue Loading
Kuanysh Makashev, Savvas P. Triantafyllou, Walid Tizani, and Dionysis Bournas

11:00-12:30 Session 9A3 - Mini symposium - Reinforcing and Strengthening Structures using Prestressed FRP
Session Chairs: Raafat El-Hacha, Deniz Korhan Dalgıç

1391 - Experimental Investigation of a Novel Circular Anchor System for Prestressed CFRP Plates
Cheng Tan, Song Han, Shaolei Dai

1392 - Numerical Analysis of a Novel Circular Anchor System for Prestressed CFRP Plates
Shaolei Dai, Yue Liu, Cheng Tan, Song Han,

1201 - Experimental Study on the Static and Fatigue Behaviour of a New Mechanical Wedge-barrel anchor
Hossein Heydarinouri , Masoud Motavalli , Alain Nussbaumer , Elyas Ghafoori

1212 - Iron-Based Shape Memory Alloy (FE-SMA) Vs. CFRP for Prestressed Strengthening of Civil Metallic Structures
E. Ghafoori, A. Hosseini, J. Michels,, M.R. Izadi, E. Pellissier

1172 - Effect of FRP Anchor Inclination Angle on Shear Strengthening of Reinforced Concrete T-beams
Haya H. Mhanna, Rami A. Hawileh, Jamal A. Abdalla

PROGRAM

1290 - Novel Wedge Anchorage for CFRP Plates
Mustafa Alhusain, Adil Al-Mayah

11:00-12:30 Session 9A4 - Mini symposium - Towards the Structural Eurocode of Design of FRP Structures
Session Chairs: José Sena-Cruz, Luigi Ascione, Jean-François Caron, Ali Osman Ateş

1227 - Determination of Creep Behaviour of Adhesively Bonded Assembly – Application to Adhesively
Bonded Steel Fasteners, M. Loiseau, S. Chaitaigner, R. Créac'hcadec, Q. Sourisseau, M.O. Quéméré, J.P. Court, F. Sayed Ahmad

1433 - Design Approach for FRP Structures: A Focus on Thermal Design
Emilie Lepretre, Philippe Jandin, Nihal El Bourkadi, Samuel Durand and Jean-François Caron

1354 - A Critical Look at the Current Status on the Design Regulations for Structural Adhesively Bonded Joints of Fibre Reinforced Polymers
Till Vallée and Andreas Groß

1231 - Influence of Hygrothermal Effect on the Modeli Fracture Toughness of Epoxy Resins for Civil Engineering Applications
Francesco Ascione, Luigi Granata, Liberata Guadagno, Carlo Naddeo

1102 - Definition of a Moisture Conversion Factor for the Durability Design of GFRP Materials for Civil Engineering Applications
Mário Garrido, João Ramôa Correia, Md Toyob Shahid, Marina Machado

1209 - Multi-objective Design Optimization of Sandwich Panel
Pier Giovanni Benzo1José Sena-Cruz and João M. Pereira

11:00-12:30 Session 9A5 - FRP as internal reinforcement
Session Chairs: Farid Abed, Canan Girgin

1329 - Tensile Tests at GFRP Rebars
André Weber, Christian Caspari, Matthias Pahn

1400 - Modelling the Bond of GFRP Bar and Concrete for the Thermo-Mechanical Behaviour of RC Slabs
Ana Veljkovic, Valter Carvelli and Mohammadali Rezazadeh

PROGRAM

1287 - Accuracy of Existing Theoretical Models on The Assessment of the Design Shear Capacity of Slender RC Beams with Steel and GFRP Rods without Transverse Reinforcement
Monika Kaszubska, Renata Kotynia

1401 - The Influence of Reinforcement Ratio on the Shear Behaviour of Sand Coated Basalt FRP Bars reinforced beams
Abathar Al-Hamrani , Wael Alnahhal

1028 - Compressive Behaviour of Glass Fiber-Reinforced Polymer (GFRP) Reinforced Concrete Columns
Farid Abed, Ahmed El Refai and Nouran ElMesalami

1091 - Behaviour of Columns Constructed with Internal FRP Reinforcement Under Axial Loading
Parviz Nabi, Diana Petkova, Ted Donchev

11:00-12:30 Session 9A6 – Testing
Session Chairs: Giovanni Terrasi, İdris Bedirhanoğlu

1082 - Assessment of Steel-Composite and Concrete-Composite Adhesively Bonded Joints by Acousto-Ultrasonic Technique
Cheikh Sarr,, Sylvain Chataigner, Laurent Gaillet and Nathalie Godin

1076 - Carbon reinforced concrete members under concentrated load
Jan Philip Schulze-Ardey, Sven Bosbach, Ann-Christine von der Heid and Josef Hegger

1330 - European Assessment for GFRP-Sandwich Connectors
André Weber, Stefan Carstens, Matthias Pahn

1337 - Comparison between Direct Shear and Flexural Tests on RC Elements Strengthened with SRG Composites Subjected to Cyclic Loading
Andrea Incerti, Alessandro Bellini and Claudio Mazzotti

1478 - Mechanical Characterization of a Basalt Fabric for TRM Composites: Role of the Test Variables
Jennifer D'Anna, Giuseppina Amato, Jian Fei Chen, Giovanni Minafò, Lidia La Mendola

1182 - Structural Performance of All-Composite GFRP Bridge Girder
Tomasz W. Siwowski, Mateusz Rajchel and Maciej Kulpa

PROGRAM

12:30-12:45 **Break**

12:45-13:15 **KEYNOTE LECTURER - Peng Feng - Tsinghua University, China**
FRP Confined Concrete: What, Why, and How?
Session Chairs: Alper İlki, Ali Osman Ateş

13:15-14:30 **IIFC Council Meeting**

14:30-14:45 **Break**

14:45-15:05 **INVITED-THEME LECTURER - Theodoros Rousakis - Democritus University of Thrace, Greece**
Strengthening and Repair with Advanced Materials and Hybrid Techniques for Increased Resilience of RC Structures with the use of Pseudo-Dynamic 3D Finite Element Analysis
Session Chairs: Nicola Nistico,İdris Bedirhanoğlu

15:05-15:25 **INVITED-THEME LECTURER - Nicola Nistico - Sapienza University of Rome, Italy**
Design of an FRP Cable-stayed Pedestrian Bridge. Morphology, Technology and Required Performances
Session Chairs: Theodoros Rousakis, İdris Bedirhanoğlu

15:25-15:40 **Break**

15:40-17:25 Session 9B1 - Durability and long-term performance / Concrete-filled FRP tubular members
Session Chairs: Karim Benzarti, Deniz Korhan Dalgıç

1214 - Durability and Lifetime Prediction of Flax Fiber Reinforced Polymer Composites
Robert Chlela, David Bigaud, Hassen Riahi, Marc Quiertant, Laurence Curtil, Karim Benzarti

1333 - Characterisation of the Degradation Behaviour of a Loaded Vinyl Ester Gfrp Bar in Alkaline Concrete Environment
Nora S. Bies, Mona L. Keller and Matthias Pahn

1101 - Hygrothermal Ageing of Pultruded GFRP Profiles: Experimental Study and Prediction Models
João Sousa, Mário Garrido, João Ramôa Correia, Susana Cabral-Fonseca, and Md Toyob Shahid

PROGRAM

1096 - Externally Bonded CFRP Strengthened RC Slabs, Four Years of External Environment Exposure And Evaluation of The Load Carrying Capacity
Matteo Breveglieri, Christoph Czaderski

1323 - Three-Dimensional Characterization of Naturally Corroded Steel-Reinforced Concrete Using Computed Tomography
Mustafa Alhusain, Trevor G Quayle, Adil Al-Mayah

1426 - Microscopic and Durability Evaluation of In-situ Extracted Internal GFRP Reinforcing Bars after Temporal Exposure
Ali F. Al-Khafaji, John J. Myers, Antonio Nanni

1103 - Experimental Behaviour of ±55° GFRP Filament Wound Tubes Under Uniaxial Tension and Compression
Dillon Betts, Pedram Sadeghian and Amir Fam

15:40-17:40 Session 9B2 - Design issues/guidelines
Session Chairs: Baolin Wan, Uğur Demir

1228 - Maximum FRP Bar Diameter and Bar Spacing for Crack Control in Flexural Reinforced Concrete Members
Tomislav Kišiček, Tvrtko Renić, Ivan Hafner and Mislav Stepinac

1178 - Estimation of the Shear Strength of RC Members with Externally Bonded, Fully-Wrapped FRCM Composites
Tommaso D'Antino, Lesley H. Sneed, Francesco Focacci

1148 - GFRP Beam-to-Column Connections Using Stainless Steel Cleats
David Martins, José Gonilha, João R. Correia and Nuno Silvestre

1146 - A Progressive Failure Model for FRP Structures: Numerical and Experimental Analyses
José Gonilha, Nuno Silvestre, João R. Correia, Volnei Tita, Lourenço A. Fernandes and David Martins

1358 - Design of a Replacement Fibre-Reinforced Polymer Footbridge
Enrico Nuti, Sam Fleischmann-Allen and Mark Chambers

1014 - Implementation of GFRP-Reinforced Concrete Draft Code Provisions in Design Examples: What Works and What Doesn't
Isaac Higgins, Vicki L. Brown and Brendan Kearns

PROGRAM

1074 - Reliability Analysis of FRP-Concrete Joint with or without Epoxy Interlocking Enhancement
Zhao Wang, Baolin Wan

1211 - A Discussion of Differences between Single-Lap Tests and Full-Scale Beam Tests in Terms of Frcm-Concrete Debonding
Tommaso D'Antino, Francesco Focacci, Lesley H. Sneed and Christian Carloni

15:40-17:25 Session 9B3 - Mini symposium - Reinforcing and Strengthening Structures using Prestressed FRP
Session Chairs: Raafat El-Hacha, Alper İlki

1222 - Effect of Groove Depth on Behavior of Prestressed CFRP Strips Bonded to Concrete by Using EBROG Method
Niloufar Moshiri, Christoph Czaderski, Davood Mostofinejad, Ardalan Hosseini and Masoud Motavalli

1021 - Flexural Behaviour of RC Beams Strengthened with Post-Tensioned CFRP Strips with Various Prestressing Level
Bartosz Piątek, Tomasz Siwowski

1128 - Load Deflection Behaviour of Self Consolidating Concrete Beams Prestressed with CFRP Bars
Slamah Krem, Khaled Soudki, Adel El-Gelani and Farhat G.F. Ahmida

1343 - Strengthening of Concrete Structures Using Prestressed FRP – A Review
Raafat El-Hacha, Oumaima Awassa

1003 - Assessment of UHPC Bonded with FRP Bars
Jun Wang and Yail J. Kim

1004 - Stochastic Modeling for Time-Dependent Behavior of CFRP-Prestressed Concrete Girders
David Micnhimer and Yail J. Kim

1159 - Self-Prestressed Carbon-Reinforced High Performance Concrete Elements
Mateusz Wyrzykowski, Pietro Lura and Giovanni Terrasi

PROGRAM

15:40-17:40 Session 9B4 - All FRP structures / Hybrid structures of FRP and other materials
Session Chairs: Salvatore Russo, Cem Haydaroğlu

1350 - Maintenance and Structural Check of an All FRP Pultruded Construction
Ileana Ippolito, Salvatore Russo

1459 - Concept And Preliminary Test of the Intelligent FRP Bridge Deck for the Vehicular Bridges
Maciej Kulpa, Mateusz Rajchel, Tomasz Siwowski

1361 - Feasibility of Bolted Connectors In Hybrid FRP-Steel Structures
Gerhard Olivier, Fruzsina Csillag, Liesbeth Tromp, Martijn Veltkamp, Marko Pavlovic

1088 - Influence of the Degree of Inclination of Applied Load on the Behaviour of Hybrid and FRP Elements
Ausra Vadapolaite, Mohammad Dakhel and Ted Donchev

1136 - Structural Re-Use of FRP Composite Wind Turbine Blades as Power-Line Utility Poles and Towers
Ammar Alshannaq, Lawrence C. Bank, David Scott, Jamieson Pye, Mehmet Bermek and Russell Gentry

1072 - Seismic Design Guideline for Hybrid GFRP-Steel RC Bridge Pier Considering Performance-Based Design
Sherif M. Shaaban, Saif Aldabagh, M. Shahria Alam , and Shamim A. Sheikh

1457 - Application of Steel and FRP Reinforcement Combination in Moment Resisting Frames: Prospects and Challenges
Haitham A. Ibrahim, Mohamed F.M. Fahmy

15:40-17:10 Session 9B5 - Testing / FRP as internal reinforcement
Session Chairs: Ehab El-salakawy, Kutay Orakçal

1040 - Diagonal Shear Tests for Glass Fiber Reinforced Gypsum (GFRG) Panels with and without Concrete Filled Cells
Beyza Kapucu Guzelbulut, Ergun Binbir and Oguz C. Celik

1117 - Performance of T-Beams, Using GFRP Reinforced and Geopolymer Concrete
Mohamad A Hasan, Therese Sheehan, Ashraf Ashour

PROGRAM

1047 - Toward a Practical Approach to Experimental Evaluation of Cracking Behaviour of GFRPreinforced Concrete
Elayne Silva, Kent Harries, Péter Ludvig and Shawn Platt

1044 - Behaviour of High-Strength Concrete Circular Columns Reinforced with GFRP Bars and Spirals under Simulated Seismic Loading
Amr E. M. Abdallah, Ehab El-Salakawy

1313 - Mechanical Characterization of GFRP Through Experimental Dynamic Testing
Jessé Beserra, Cássio Gaspar, Daniel Cardoso

1176 - "Feasibility Study on the Recycling of FRP Materials from Wind Turbine Blades in Concrete".
Dmitry Baturkin, Radhouane Masmoudi, Arezki Tagnit-Hamou, Slimane Metiche, Luc Massicotte

15:40-17:25 Session 9B6 - Mini symposium - Advances and challenges in seismic strengthening of RC structures with fibre-reinforced composite materials (FRP, FRCM/TRM, FRCC)
Session Chairs: Marco Di Ludovico, Marta Del Zoppo, Mehmet Emin Arslan

1043 - Rapid Heating of Textile Reinforced Concrete: Effect of Textile Coating and Hybrid Textile Layups
Panagiotis Kapsalis, Tine Tysmans and Thanasis Triantafillou

1031 - Integrated Structural and Energy Retrofitting of Masonry Walls: The Effect of In-plane Damage on the Out-of-plane Response
Panagiotis Gkournelos and Thanasis Triantafillou

1068 - Experimental Investigation on Full Scale Cast in Place R.C. Floor Strengthened with FRCC Strengthening Technique
Alberto Balsamo, Marco Di Ludovico, Maddaloni Gennaro, Andrea Prota and Luca Albertario

1080 - Rc Columns Upgrade: Opportunities Given by FRP and Potential of FRCC Systems
Marta Del Zoppo, Marco Di Ludovico, Alberto Balsamo, Andrea Prota and Giulio Morandini

1288 - Design Procedure for the Frcc Strengthening of Beam-Column Joints
Ciro Del Vecchio, Marco Di Ludovico, Andrea Prota

1281 - Preliminary in-Plain Shear Test of Damaged Infill Strengthened by Frpu
Petra Triller, Arkadiusz Kwiecień, Uros Bohinc, Bogusław Zając, Theodoros Rousakis and Alberto Viskovic

1403 - Development of GFRP Guyed Communication Towers
Sami Alshurafa, Mohammed A. AlNaafa, Dimos Polyzois

PROGRAM

10th December

09:00-10:30 Session 10A1 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Asad-ur-Rehman Khan, Cem Demir

1048 - Hybrid Anchors in Reinforced Concrete Slabs Strengthened with FRP sheets
Bahaa Al-Atta, Robin Kalfat, Riadh Al-Mahaidi, Alaa Al-Mosawe

1423 - Strength of RC Beams with an FRP-Strengthened Web Opening
Xue-Fei Nie, Shi-Shun Zhang, Jin-Guang Teng

1458 - Debonding Failure in RC Beams Strengthened in Flexure with Cfrp Strips: Mitigation Using Cfrp U-Jackets
Y. Ke, S.S. Zhang and X.F. Nie

1481 - Experimental Study on Mechanical Properties of Bamboo Culms and Joints Reinforced with GFRP Sheets
Zhancheng Zhang, Xinmiao Meng, Jiaqi Zhai2 and Peng Feng

1284 - Numerical Investigation on Size and Shape Effects on Hybrid FRP Strengthened Non-Circular RC Columns under Axial Compression
Balla Taraka Malleswara Rao, S. Suriya Prakash

1497 - Strengthening of Recycled Concrete Aggregates Two-way RC Slabs by Externally Bonded CFRP
Shamsoon Fareed and Asad-ur-Rehman Khan

09:00-10:30 Session 10A2 - Mini symposium - Strengthening of Steel Structures
Session Chairs: Elyas Ghafoori, QianQian Yu, Şevket Şenel

1264 - Fatigue Durability in Welded Gusset Joints Strengthened by Carbon Fiber Sheets Using VARTM Technique
Visal Thay, Takumi Ozawa, Chang Tan, Hitoshi Nakamura, Takahiro Matsui

1054 - Durability of Structural Adhesive Exposed to Marine Environment
Ruixin Gao, Qian-Qian Yu, Xiang-Lin Gu, Xian-Yu Jin, Nan-Guo Jin

PROGRAM

1220 - Durability Behaviour of Notched Steel Beam Strengthened with Prestressed CFRP Plate
Jun Deng, Junhui Li

1050 - Rapid SIF Calculation of Inclined Cracked Steel Plates Bonded with CFRP Materials, Prestressed and Non-prestressed
Lingzhen Li, Tao Chen, and Ruoyu Liu

1282 - Iron-based Shape Memory Alloy Strengthening of a 113-Years Steel Bridge
Jakub Vůjtěch, Pavel Ryjáček, Jose Campos Matos, Elyas Ghafoori

09:00-10:30 Session 10A3 - Fire, impact and blast loading / Confinement
Session Chairs: João R. Correia, Çağlar Göksu

1216 - Effects of Impactor Geometry on Pultruded Composites Under Low-Velocity Impact Loading
Zongjun Li, Amar Khennane, Hongxu Wang, Paul J. Hazell, Juan Pablo Escobedo-Diaz

1304 - Axial Behaviour of Damaged Concrete Columns Repaired with Novel Prefabricate FRP Jacket
Ali A. Mohammed, Allan C. Manalo, Omar Alajarmeh, Yan Zhuge, and John Pettigrew

1090 - Residual Tensile Strength of Textile Reinforced Mortars After Have Been Exposed to Elevated Temperatures
Theofanis Krevaikas, Pengliang Yang

1180 - Behaviour of Recycled Aggregate RC Columns Wrapped with CFRP under Axial Compression
Asad-ur-Rehman Khan and Shamsoon Fareed

1164 - Influence of Elevated Temperatures on the Bond Behaviour of Sand-Coated and Ribbed GFRP Rebars in Concrete - Pull-Out Tests and Calibra tion of Temperaturedependent Bond Stress vs. Slip Laws
Inês C. Rosa, João P. Firmo, João R. Correia, Pietro Mazzuca

1167 - Fire Behaviour of GFRP-Reinforced Concrete Slab Strips: Fire Resistance Tests and Numerical Simulation
António P.C. Duarte, Inês C. Rosa, Mário R.T. Arruda, João P. Firmo and João R. Correia

PROGRAM

09:00-10:30 Session 10A4 - FRP as internal reinforcement / Concrete structures reinforced or pre-stressed with FRP
Session Chairs: Rebecca J. Gravina, Şevket Özden

1369 - Review of FRP Bar to Concrete Bond in Hygrothermal Conditions
Rebecca J. Gravina, Junwei Li, Scott T. Smith and Phillip Visintin

1190 - Axial Load Performance of GFRP-Reinforced Hollow Concrete Columns
Omar Alajarmeh,, Allan Manalo, Karu Karunasena, Brahim Benmokrane, and Priyan Mendis

1345 - Experimental Study on the Compression Behaviour of Concrete Column Reinforced with Steel-Frp Composite Bar
Yaofeng Zong, Weihua Yan, Wenjie Ge, Yi Wang

1482 - Structural Behavior of Axially Loaded Geopolymer Concrete Sandwich Wall Panel Reinforced with BFRP Grids
Sushil Kumar, Binqi Chen, Yuye Xu, Jian-Guo Dai

1175 - Behaviour of Square Concrete Columns Reinforced with Macro-Synthetic Fibres and GFRP Rebars under Axial Compression
Ganapati M Patil and S. Suriya Prakash

1382 - Multiscale Reinforcement of Epoxy Composites with Glass Fibre and Carbon Nanotube
Nurul Hidayah I, Mariatti M

09:00-10:30 Session 10A5 - All FRP structures / Hybrid structures of FRP and other materials
Session Chairs: Riadh Al-Mahaidi, Cem Haydaroğlu

1479 - Behaviour of Filament Wound FRP-Rubberised Concrete-Steel Hybrid Double Skin Tubular Column (Hybrid RuDSTC) Under Axial Loading
Shovona Khusru, Sabrina Fawzia , David P Thambiratnam , Mohamed Elchalakani

1485 - Flexural Performance of BFRP Bar Reinforced High-Strength Concrete Beam
Yan Xie, Kaiyuan Zhuo, Khuram Rashid, Jun Deng, Faji Zhang

1476 - Finite Element Modeling and Statistical Analysis of Fire-damaged Reinforced concrete Columns Repaired Using Smart materials and FRP Confinement.
Iqrar Hussain, M. Yaqub, Mina Mortazavi, M. Adeel Ehsan, M. Uzair

PROGRAM

1196 - Compressive Behavior of Circular Sawdust-Reinforced Ice-Filled Large Rupture Strain Fiber-Reinforced Polymer Tubular Short Columns
Yanlei Wang, Guipeng Chen, Baolin Wan

1491 - Shear Performance of BFRP Reinforced Geopolymer Concrete One-Way Slab
Jun-Qi Huang, Jian-Guo Dai

1092 - Structural Performances of Composite Pultruded GFRP Emergency Structures
Liborio Cavaleri, Marco Filippo Ferrotto and Antonino Valenza

09:00-10:30 Session 10A6 - Materials and products / Concrete-filled FRP tubular members
Session Chairs: Thiru Aravinthan, Ahmet Murat Türk

1171 - Optimising CFRP Recycling via Arrhenius-Type Kinetic Behaviour Analysis
Y. Wei, S. A. Hadigheh

1299 - Influence of Filler Properties on the Axial Behaviour of Pultruded FRP Tubes
Ali Umran Al-saadi, Thiru Aravinthan and Weena Lokuge

1406 - Experimental Study on the Mechanical Properties of a Novel Composite Anchorage System for CFRP Tendons
Kuihua Mei, Jianfeng Zhao, Yamin Sun, Haochen Li

1383 - Black Ink-Facilitated Dispersion of Multi-walled Carbon Nanotubes and Fabrication of MWCNT/Glass Fibre/Epoxy Hybrid Composites
Wan Dalina W A D, Nurul Hidayah I, Mariatti M

1378 - Influence of the Stacking Angle on the Strength and Stiffness Properties of Tiled Laminates for Civil Applications: A Dic Based Approach
Jordi Uyttersprot,, Wouter De Corte, and Wim Van Paepegem,

1477 - Influence Of Processing Conditions on the Mechanical Behavior of Mineral-Impregnated Carbon-Fiber (Mcf) Made With Geopolymer
Jitong Zhao, Marco Liebscher, Kai Schneider, Dominik Junger, Viktor Mechtcherine

10:30-10:45 Break

PROGRAM

10:45-12:00 Session 10B1 - Strengthening of concrete, steel, masonry and timber structures
Session Chairs: Akhrawat Lenwari, Erdem Canbay

1344 - Experimental Study on Flexural Behaviour of ECC-Concrete Composite Beams Strengthened with Carbon Fiber Sheet
Rong Tang, Yi Wang, Wenjie Ge, Weihua Yan

1352 - Prestressing Effects of Jacking-Cambered Wood Beams Reinforced with FRP Strips
Chaoyang Zhou, Wenhua Fan

1422 - Torsional Behavior of Reinforced Concrete Members Wrapped with CFRP Sheets
Akhrawat Lenwari, Siwakorn Soysak, and Chanachai Thongchom

1037 - Effect of FRP Bar Type on the Behaviour of Shear-strengthened Reinforced Concrete T-beams
Kagan Sogut, Samir Dirar, Marios Theofanous, Asaad Faramarzi

1046 - Deterioration in Nanomechanical Properties of Cement Paste-Epoxy Interphase under Hygrothermal Conditions
Jovan Tatar

10:45-11:45 Session 10B2 - Mini symposium - Strengthening of Steel Structures
Session Chairs: Elyas Ghafoori, QianQian Yu, Çağlar Göksu

1432 - Study On Buckling Behavior Of Prestressed Cfrp-Reinforced Steel Columns By Fem And Ann
Lili Hu,, Peng Feng, Yanran Meng, Jian Yang

1245 - Computational Investigation of Mode-I Fatigue Crack Growth in CFRP-Strengthened Steel Plates with a Cohesive Zone Model
Mana Mohajer, Massimiliano Bocciarelli, Pierluigi Colombi, Ardalan Hosseini, Alain Nussbaumer and Elyas Ghafoori

1030- CFRP Strengthening and Long-term Wireless Monitoring of an Old Roadway Steel Bridge: First Application in Australia
E. Ghafoori, A. Hosseini, R. Al-Mahaidi, X.L. Zhao, A. Al-Mosawe,, M. Motavalli

1202 - Development of a Strengthening System for Riveted/Bolted Steel Connections using Prestressed CFRP Rods
H. Heydarinouri, M. Motavalli and A. Nussbaumer, E. Ghafoori

PROGRAM

10:45-11:45 Session 10B3 - Seismic retrofit of structures (using fiber polymers)
Session Chairs: Marina Moretti, Oğuz Cem Çelik

1435 - Elasto-Plastic Behavior on Seismic Retrofitting for Circular Steel Bridge Pier by Externally Bonded Carbon Fiber Sheets
Kim Oliver U. Magtagñob, Visal Thay, Hitoshi Nakamura and Takahiro Matsui

1026 - Determination of a Large-Diameter Carbon Fiber Anchor Capacity
Al-Hakam Al-Doori, Raizal S.M. Rashid, Emrah Tasdemir, Rudolf Seracino

1093 - Retrofit of Damaged RC Columns Using CFRP Jackets
Marina L. Moretti, Evangelos Miliokas, Ioannis Paparizos

1495 - Seismic Performance of Substandard RC Columns Retrofitted with Sprayed GFRM
Nima Kian, Ugur Demir , Cem Demir , Muhammed Marasli , Alper Ilki

10:45-11:45 Session 10B4 - Bond and interfacial stresses
Session Chairs: İdris Bedirhanoğlu, Pınar İnci

1009 - Bond Behavior of Basalt Fiber-reinforced Polymer Bars Embedded in Concrete Under Monotensile and Cyclic Loads
Xia Liu „ Xin Wang, Kangyu Xie , Zhishen Wu and Feng Li

1396 - Generalized Method of Determining the Local Bond Slip Relationship of The Reinforcement Externally Bonded to Concrete
Miaochang Zhu, Tamon Ueda, Ji-Hua Zhu

1444 - Loss of Bond Action in FRP-Strengthened Structural Elements: Modeling
Todor Zhelyazov and Eythor Rafn Thorhallsson

1428 - Use of Distributed Optical Fibre to Monitor the Crack Propagation of an Adhesively Bonded Joint During an ENF Test.
Quentin Sourisseau, Emilie Lepretre, Sylvain Chataigner, Xavier Chapeleau , Luc Mouton, Stéphane Paboeuf

PROGRAM

10:45-11:45 Session 10B5 - Design issues/guidelines / Mini symposium - Advances and challenges in seismic strengthening of RC structures with fibre-reinforced composite materials (FRP, FRCM/TRM, FRCC)
Session Chairs: Marco Di Ludovico, Marta Del Zoppo Cem Haydaroğlu

1483 - Finite Element Modeling of Large Rupture Strain (LRS) FRP-Confined Concrete Columns
Mohsen Mohammadi, Yu-Lei Bai, and Jian-Guo Dai

1494 - A 3d Plasticity Model for Concrete and Its Application to Concrete Under Non-Uniform FRP Confinement
B.T. Zheng and J.G. Teng

1484 - Seismic Performance of Large Rupture Strain (LRS) FRP-Wrapped Circular RC Columns
Yu-Feng Zhang, Yu-Lei Bai, Peng-Xuan Sun, Jian-Guo Dai

1174 - Seismic Response Analysis Model for Full-Scale 10-Story RC Building of Shaking Table Tests (FY2015)
Jae-Do Kang and Koichi Kajiwara

10:45-11:30 Session 10B6 - Durability and long-term performance
Session Chairs: Milad Bazli, Şevket Özden

1384 - Durability of Sea Water Sea Sand Concrete Filled Filament Wounded FRP Tubes Under Seawater Condition
Milad Bazli , Xiao-Ling Zhao , R.K. Singh Raman,, Yu. Bai, Saad Al-Saadi

1487 - A Machine Learning Approach to Modelling the Bond Strength of Adhesively Bonded Joints Under Water Immersion Condition
Keyvan Aghabalaei Baghaei,, S. Ali Hadigheh

1207 - Enhancement of Mechanical Properties of FRP Composites with Silica Nanoparticles
Chang Su, Xin Wang, Zhishen Wu

11:00-12:00 Combined Ex-Com and AC meeting

12:00-12:15 Break

PROGRAM

12:15-12:35 **INVITED-THEME LECTURER - Yu Fei Wu - Shenzhen University, China**
Analytical Identification of Stress-Strain Relationship of Concrete in FRP Confined Columns
Session Chairs: Peng Feng, Mehmet Şentürk

12:35-12:50 **Break**

12:50-13:20 **KEYNOTE LECTURER - Libo Yan - Technical University of Braunschweig, Germany**
Plant-based Natural Fibre Reinforced Polymer Composites in Construction
Session Chairs: Kent Harries, Mehmet Şentürk

13:20-13:50 **KEYNOTE LECTURER - Kent Harries - University of Pittsburgh, USA**
Standard Material or Material Standard? Challenges and Opportunities in Codes and Standards Development
Session Chairs: Libo Yan, Mehmet Şentürk

13:50-14:50 **Closing Ceremony**

STRENGTH REIMAGINED

Advanced carbon fiber and composites for high-performance needs.

DowAksa, Turkey's only carbon fiber manufacturer, was formed in 2012, combining the strengths of two world-class companies, Dow, a global leader in providing materials science solutions, and Aksa, the number one producer of acrylic fibers. The 50:50 joint venture provides fully integrated solutions including product (from precursor to carbon fiber to resin), engineering, technology, and knowledge to carbon fiber and carbon fiber intermediates needs of industrial markets. Very strong and lightweight, carbon-fiber-based materials are used in a variety of applications where weight savings, emissions reduction, durability, and energy efficiency are key performance factors.

DowAksa

CARBONWRAP COMPOSITE SYSTEMS

Lightweight yet strong, corrosion-resistant and thermally compatible, carbon fiber materials can be applied over existing structures to significantly extend their lifetime while maintaining their design integrity. DowAksa CarbonWrap® technology is a cost-effective and innovative solution for restoring the world's infrastructure. CarbonWrap® Structural Strengthening Systems can be used in concrete, masonry, steel, and wood structures to increase their strength and ductility, and to make the structures last longer at a fraction of the cost and time of conventional materials and techniques.

INTENDED USE

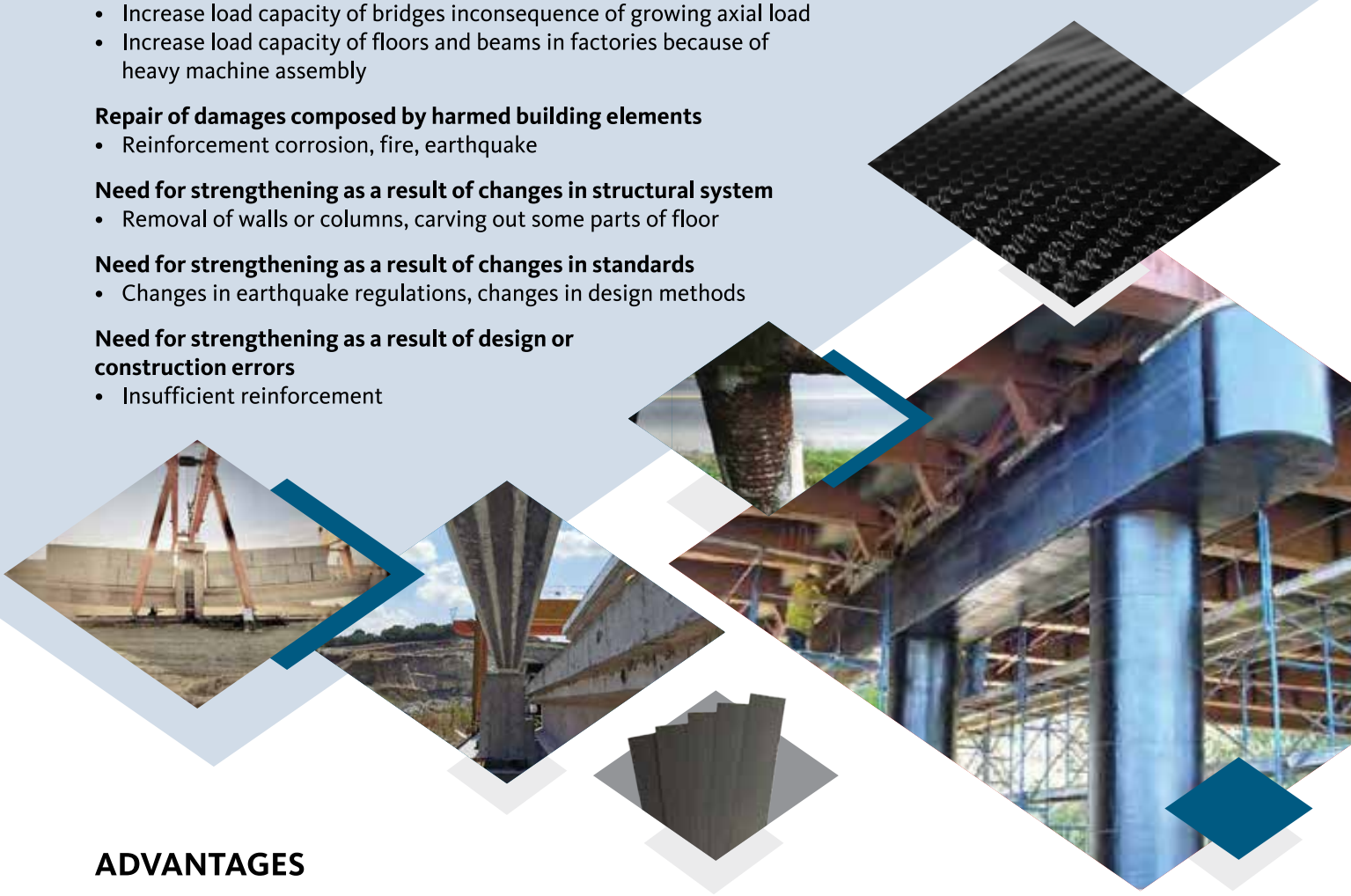
Need for strengthening as a result of increased load capacity
- Increase load capacity of bridges inconsequence of growing axial load
- Increase load capacity of floors and beams in factories because of heavy machine assembly

Repair of damages composed by harmed building elements
- Reinforcement corrosion, fire, earthquake

Need for strengthening as a result of changes in structural system
- Removal of walls or columns, carving out some parts of floor

Need for strengthening as a result of changes in standards
- Changes in earthquake regulations, changes in design methods

Need for strengthening as a result of design or construction errors
- Insufficient reinforcement



ADVANTAGES

- **Easier and faster** to apply comparing to conventional methods like steel or concrete jacketing
- **Doesn't add more weight** to structure due to being extremely light
- **No need for evacuation of facility** during reinforcement application. Applications can be made with partial arrangements while facility still operates
- **Structure's area of use doesn't** change. Area of use decreases with conventional methods
- **Anti-corrosive**
- Application does not require expensive heavy machinery or equipment

DowAksa Turkey
Miralay Şefik Bey Sk., Akhan No:15 34437
Gümüşsuyu/İstanbul, Turkey
Phone: +90 212 251 45 00

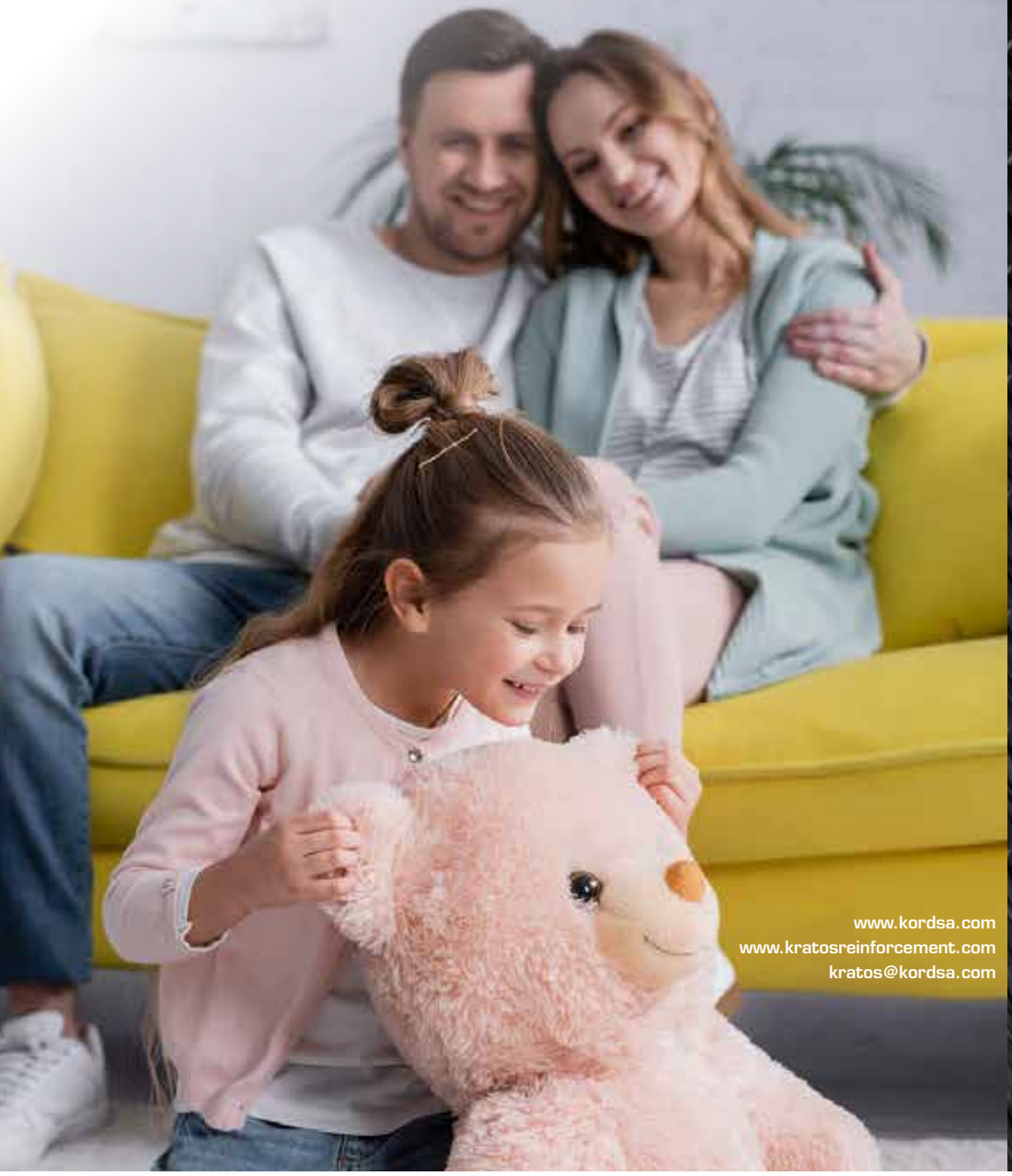
DowAksa Global Composites Center
Merkez Mah. Açelya 2 Caddesi No:3
Taşköprü-Çiftlikköy Yalova, Turkey
Phone: +90 226 353 25 45

www.dowaksa.com
info@dowaksa.com

KraTos™
STRUCTURAL
REINFORCEMENT

We increase durability and **add value to your projects** by reinforcing structures.

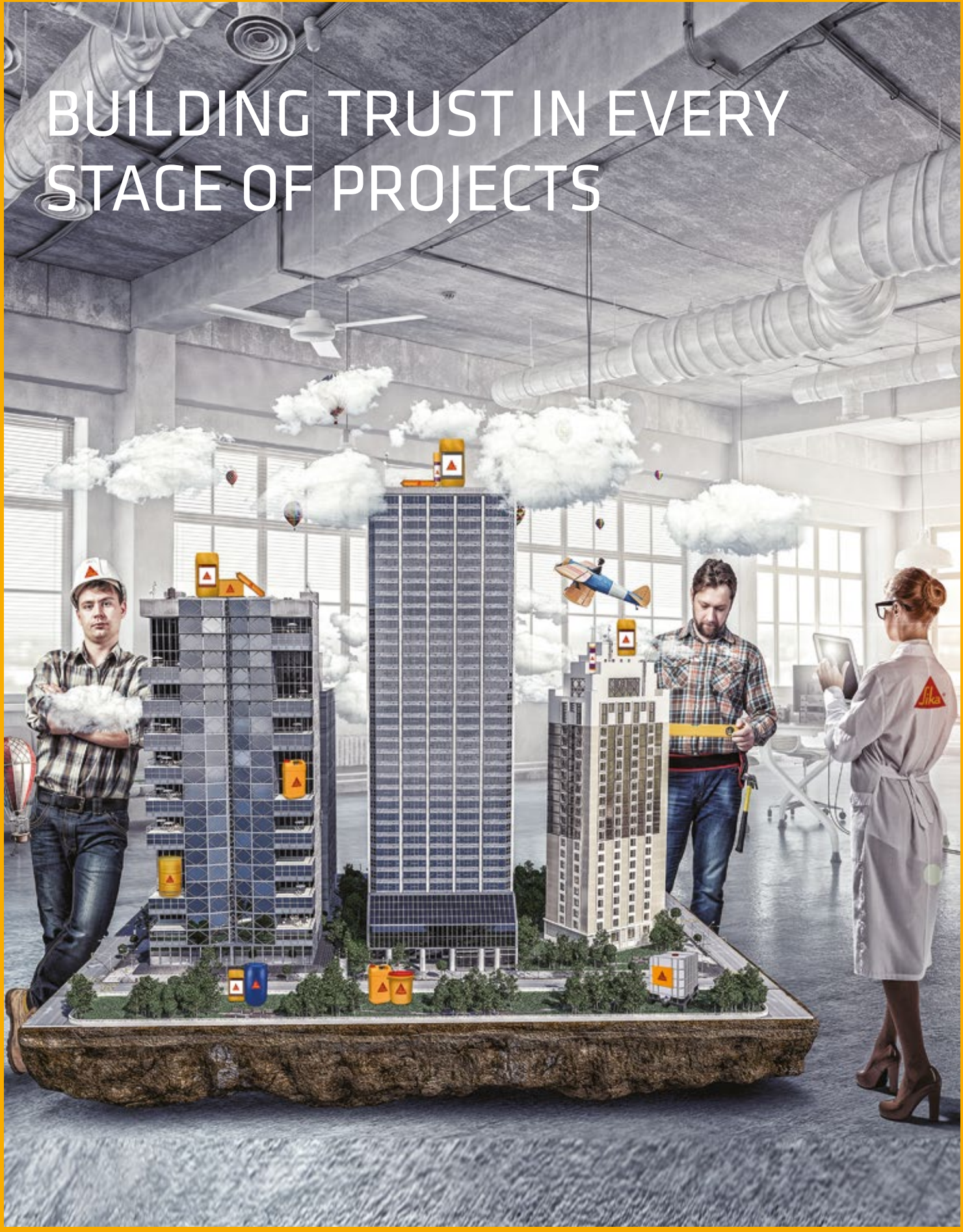
Kratos Structural Reinforcement products, which ensure the durability of structures by reinforcing them, add value to your projects by offering innovative and high-performance solutions.



www.kordsa.com
www.kratosreinforcement.com
kratos@kordsa.com

KORDSA

BUILDING TRUST IN EVERY STAGE OF PROJECTS



www.sika.com.tr

BUILDING TRUST