PROGRAMME

fib Symposium 2019

CONCRETE

Innovations in Materials, Design and Structures

May 27-29, 2019
Kraków, Poland

fib CEB-FIP Polish Group

PK

fib SYMPOSIUM 2019
27-29 May 2019
Kraków, Poland

CONCRETE
INNOVATIONS IN MATERIALS, DESIGN AND STRUCTURES

PROGRAMME

fib CEB-FIP Polish Group

PK

COMMITTEES

ORGANIZING COMMITTEE

Wit Derkowski – Chairman of the OC

Piotr Gwoździewicz - vice-Chairman of the OC
David Fernández-Ordóñez – fib Secretary General
Sylwia Schoenowitz-Żuradzka – Secretary of the OC
Krzysztof Chudyba
Marek Pańtak
Łukasz Hojdys
Piotr Krajewski
Łukasz Ślaga
Rafał Walczak

ORGANIZER

Polish National Member Group of the *fib*

CO-ORGANIZERS

Andrzej Szarata – Dean of the Faculty of Civil Engineering, Cracow University of Technolog
Institute of Building Materials and Engineering Structures, Cracow University of Technology

HONORARY PATRONS

Jarosław Gowin – Minister of Science and Higher Education, Deputy Prime Minister
Witold Kozłowski – Marshal of the Malopolska Voivodship
Jacek Majchrowski – Mayor of the City of Krakow
Kazimierz Furtak – Chairman of the Committee on Civil Engineering and Hydroengineering of Polish Academy of Sciences
Zbigniew Kledyński – Chairman of the Polish Chamber of Civil Engineers
Tomasz Żuchowski – General Director for National Roads and Motorways
Jan Kazior – Rector of Cracow University of Technology

SPONSOR OF THE *fib* AAYE AWARD (Achievement Award for Young Engineers)

Małopolska District Chamber of Civil Engineers in Kraków

SCIENTIFIC COMMITTEE

Tor Ole Olsen (Norway) – Chairman of the SC

Andrzej Ajdukiewicz (Poland)
Erkan Akpinar (Turkey)
Riadh Al- Mahaidi (Australia)
György Balázs (Hungary)
Sisir Kumar Banerjee (India)
Nemkumar Banthia (Canada)
Oguzhan Bayrak (USA)
Hans-Dieter Beushausen (South Africa)
Agnieszka Bigaj -van Vliet (Netherlands)
Billy Boshoff (South Africa)
Laurent Boutillon (France)
Mikael Braestrup (Denmark)
Robby Caspeele (Belgium)
Vladimir Cervenka (Czech Republic)
Marta Choińska (France)
David Citek (Czech Repu blic)
Hugo Corres Peiretti (Spain)
Manfred Curbach (Germany)
Avraham Dancygier (Israel)
Albert De la Fuente (Spain)
Steve Denton (United Kingdom)
Frank Dehn (Germany)
Wit Derkowski (Poland)
Jean-François Destrebecq (France)
Gerrie Dieteren (Netherlands)
Ir ia Licia Oliva Doniak (Brazil)
Marco Di Prisco (Italy)
Rolf Eligehausen (Germany)
Vyacheslav R. Falikman (Russia)
Michael Fardis (Greece)
Peng Feng (China)
David Fernández-Ordóñez (Spain)
Oliver Fischer (Germany)
Stephen Foster (Australia)
Kazimierz Furtak (Poland)
Hans Rudolf Ganz (Switzerland)
Petr Hajek (Czech Republic)
Anna Halicka (Poland)
Josef Hegger (Germany)
Steinar Helland (Norway)
Sung-Gul Hong (South- Korea)
Dick Hordijk (Netherlands)
Jacek Hulimka (Poland)
Akio Kasuga (Japan)
Maria Kaszyńska (Poland)
Barbara Klemczak (Poland)
Johann Kollegger (Austria)
Renata Kotynia (Poland)
Xillin Lu (China)
Valter J. G. Lucio (Portugal)
Karin Lundgren (Sweden)
Stef Maas (Belgium)
Koichi Maekawa (Japan)
Giuseppe Mancini (Italy)
Peter Mark (Germany)
Tor Arne Martius -Hammer (Norway)
Stuart Matthews (United Kingdom)
Alberto Meda (Italy)
Marco Menegotto (Italy)
Boyan Mihaylov (Belgium)
Giorgio Monti (Italy)
Michel Moussard (France)
Harald Müller (Germany)
Aurelio Muttoni (Switzerland)
Krystyna Nagrodzka -Godycka (Poland)
Hikaru Nakamura (Japan)
Antonio Nanni (USA)
Piotr Noakowski (Germany)
Andrzej Nowak (USA)
Ilham Nurhuda (Indonesia)
Pedro de Oliveira Almeida (Brazil)
Alessandro Palermo (New Zealand)
Frank Papworth (Australia)
Brett Pielstick (USA)
Giovanni Plizz ari (Italy)
Marianna Polak (Canada)
Wojciech Radomski (Poland)
Koji Sakai (Japan)
Theo Salet (Netherlands)
Erik Schlangen (Netherlands)
Andrzej Seruga (Poland)
Takumi Shimomura (Japan)
Johan Silfwerbrand (Switzerland)
Jongsung Sim (South-Korea)
Andreas Sjaastad (Norway)
Alfred Strauss (Austria)
Piti Sukontasukkul (Thailand)
Luc Taerwe (Belgium)
José Torero (Australia)
Jean Michel Torrenti (France)
Thanasis Triantafillou (Greece)
Andrzej Ubysz (Poland)
Tamon Ueda (Japan)
Jan L. Vitek (Czech Republic)
Joost Walraven (Netherlands)
Andrzej Winnicki (Poland)
Zhishen Wu (Japan)
Sherif Yehia (United Arab Emirates)
Yong Yuan (China)

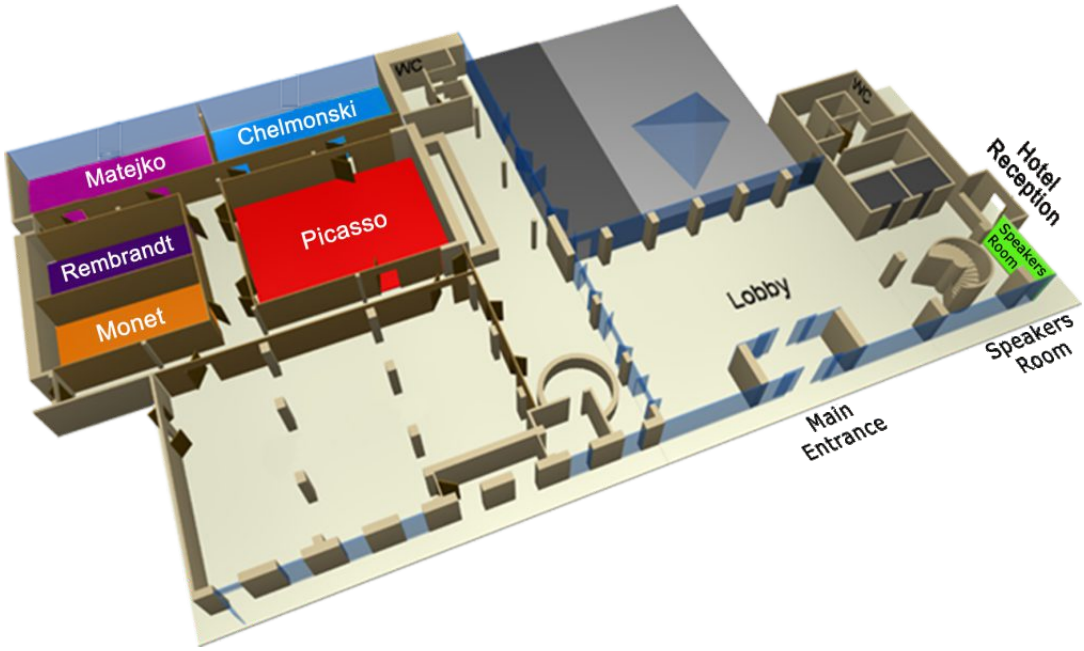
SYMPOSIUM VENUE

Best Western Premier Kraków Hotel

Opolska Street 14A, 31-323 Kraków, Poland

Session rooms

(Picasso, Monet, Rembrandt, Matejko, Chelmonski)



Hotel Venue to City Center

Kraków Taxi

Radio-Taxi Partner	+48 12 196 88
Mega Taxi	+48 12 196 25
EXPRES-ROTUNDA	+48 12 19 629
Radio Taxi Wawel	+48 12 9666 01 01
Barbakan Radio-Taxi	+48 12 196 61
Krak Radio-Taxi	+48 12 267 67 67

Public transportation

Bus stop – Różyckiego – Bus line 168 or 138 or 130
Bus to tram change – Krowodrza Górka stop
from bus line 168 or 138
to the tram line 3
Bus to tram change – Politechnika stop
from bus line 130
to the tram line 3
Tram stop – Teatr Słowackiego – Cracow Old Town

Gala Dinner Place

Gala Dinner Place
Stara Zajezdnia (Old Tram Depot)
Świętego Wawrzyńca St. 12

From tram stop Teatr Słowackiego to tram stop Św. Wawrzyńca

Tram line 3
Direction: Nowy Bierzanów P+R

or

Tram line 24
Direction: Kurdwanów P+R

Stara Zajezdnia

fib Symposium Associated Jazz Club - Jazz Club u Muniaka

Kraków is apparently the most brilliant place of Polish jazz. For those Participants of the fib Symposium 2019 who like spending evening in jazz atmosphere, the organizers recommend one of the leading Polish jazz clubs: Jazz Club u Muniaka, Floriańska St. 3, the *fib* Symposium Associated Jazz Club. Every night from 9:30PM - in this mostly crowded place - life music is presented by jazzers from young to the most known stars.

JAZZ CLUB U MUNIAKA

AGENDA OF THE *fib* SYMPOSIUM 2019

Sunday, 26/May/2019	
7:30pm - 9:30pm	**WR: Welcome Reception** Location: **The Jagiellonian University, Collegium Maius** Jagiellońska St. 15, 31-010 Kraków

Color legend

27 May 2019 (Monday) | 28 May 2019 (Tuesday) | 29 May 2019 (Wednesday)

Monday, 27/May/2019					
8:00am - 9:30am	**Registration 1**				
9:30am - 10:15am	**OPENING CEREMONY** Location: **Picasso** Chair: **Wit Derkowski**				
10:15am - 11:00am	**AAYE: The fib Achievement Award for Young Engineers** Location: **Picasso**				
11:00am - 11:30am	**COFFEE BREAK 1.1**				
11:30am - 12:15pm	**KEYNOTE LECTURE 1: Marco di Prisco: "CRITICAL INFRASTRUCTURES IN ITALY: STATE-OF-THE-ART, RATIONAL APPROACHES TO SELECT THE INTERVENTION PRIORITIES, CASE STUDIES"** Location: **Picasso** Chair: **Piotr Gwoździewicz**				
12:15pm - 1:15pm	**LUNCH 1**				
1:15pm - 2:45pm	**S27.A.1: Innovations in Design** Location: **Picasso** Chair: **Jan L. Vitek**	**S27.A.2: Sustainability** Location: **Monet** Chair: **Brett Pielstick**	**S27.A.3: Analysis and Design of Concrete Structures** Location: **Rembrandt** Chair: **Andrzej Ajdukiewicz**	**S27.A.4: Bridges** Location: **Matejko** Chair: **Ludger Lohaus**	**S27.A.5: Strengthening and Repair** Location: **Chelmonski** Chair: **Manfred Curbach**
2:45pm - 3:15pm	**COFFEE BREAK 1.2**				
3:15pm - 4:45pm	**S27.B.1: Innovations in Structures** Location: **Picasso** Chair: **Tor Ole Olsen**	**S27.B.2: Fiber Reinforced Concrete** Location: **Monet** Chair: **Avraham Naftali Dancygier**	**S27.B.3: Existing Concrete Structures** Location: **Rembrandt** Chair: **Stuart Matthews**	**S27.B.4: Shear and Torsion** Location: **Matejko** Chair: **Maria Anna Polak**	**S27.B.5: Strengthening and Repair** Location: **Chelmonski** Chair: **Aurelio Muttoni**
4:45pm - 5:15pm	**COFFEE BREAK 1.3**				
5:15pm - 6:45pm	**S27.C.1: Existing Concrete Structures** Location: **Picasso** Chair: **Boyan Mihaylov**	**S27.C.2: Fiber Reinforced Concrete** Location: **Monet** Chair: **Joost Walraven**	**S27.C.3: Analysis and Design of Concrete Structures** Location: **Rembrandt** Chair: **Rudolf Eligehausen**	**S27.C.4: Tunnels and Bridges** Location: **Matejko** Chair: **Marco di Prisco**	**S27.C.5: Strengthening and Repair** Location: **Chelmonski** Chair: **Łukasz Hojdys**

Tuesday, 28/May/2019

7:30am - 8:15am	**Registration 2**				
8:15am - 9:15am	**KEYNOTE LECTURE 2: Rudy Ricciotti: "SANS TITRE / UNTITLED"** Location: **Picasso** Chair: **Piotr Gwoździewicz**				
9:15am - 10:15am	**JUBILEE SESSION: 80th ANNIVERSARY OF PROFESSOR ANDRZEJ AJDUKIEWICZ** Location: **Picasso** Chair: **Piotr Gwoździewicz**				
10:15am - 11:15am	**COFFEE BREAK 2.1: STUDENT'S COMPETITION "MAKE CONCRETE ALIVE"**				
11:15am - 12:45pm	**S28.A.1: Innovations in Materials** Location: **Picasso** Chair: **Tamon UEDA**	**S28.A.2: Durability** Location: **Monet** Chair: **Akio Kasuga**	**S28.A.3: Analysis and Design of Concrete Structures** Location: **Rembrandt** Chair: **Norbert Randl**	**S28.A.4: Numerical Modelling** Location: **Matejko** Chair: **Luc R. Taerwe**	**S28.A.5: Fatigue and Cyclic Loads** Location: **Chelmonski** Chair: **Andrzej Nowak**
12:45pm - 1:45pm	**LUNCH 2**				
1:45pm - 3:15pm	**S28.B.1: UHPC** Location: **Picasso** Chair: **Beatrice Belletti**	**S28.B.2: Durability** Location: **Monet** Chair: **Lionel Linger**	**S28.B.3: Project Presentation** Location: **Rembrandt** Chair: **Koichi Maekawa**	**S28.B.4: Tunnels and Bridges** Location: **Matejko** Chair: **Albert de la Fuente**	**S28.B.5: Fatigue and Cyclic Loads** Location: **Chelmonski** Chair: **Peter Mark**
3:15pm - 3:45pm	**COFFEE BREAK 2.2**				
3:45pm - 5:45pm	**S28.C.1: Shear** Location: **Picasso** Chair: **Valter J. G. Lucio**	**S28.C.2: Durability** Location: **Monet** Chair: **Izabela Hager**	**S28.C.3: Materials** Location: **Rembrandt** Chair: **Sung-Gul Hong**	**S28.C.4: Numerical Modelling** Location: **Matejko** Chair: **Krystyna Nagrodzka-Godycka**	**S28.C.5: Dowels and Anchors** Location: **Chelmonski** Chair: **Piotr Krajewski**
7:30pm - 11:59pm	**GALA DINNER** Location: **Stara Zajednia (Old Tram Depot)** Świętego Wawrzyńca St. 12, 31-060 Kraków				

Wednesday, 29/May/2019					
7:30am - 8:30am	**Registration 3**				
8:30am - 9:15am	**KEYNOTE LECTURE 3: Renata Kotynia: "IS FRP REINFORCEMENT ALTERNATIVE TO STEEL IN FUTURE STRUCTURAL CONCRETE PERSPECTIVE?"** Location: **Picasso** Chair: **Piotr Gwoździewicz**				
9:15am - 10:00am	**KEYNOTE LECTURE 4: Mikael Braestrup: "CONCRETE PLASTICITY – A HISTORICAL PERSPECTIVE"** Location: **Picasso** Chair: **Piotr Gwoździewicz**				
10:00am - 11:00am	**COFFEE BREAK 3.1**				
11:00am - 12:30pm	**S29.A.1: Shear** Location: **Picasso** Chair: **Ana Lucia El Debs**	**S29.A.2: Prefabrication** Location: **Monet** Chair: **David Fernández-Ordóñez**	**S29.A.3: Project Presentation** Location: **Rembrandt** Chair: **Hugo Corres Peiretti**	**S29.A.4: FRP, SRP and Textiles** Location: **Matejko** Chair: **Vyacheslav R. Falikman**	**S29.A.5: Poster Presentations** Location: **Chelmonski** Chair: **Łukasz Krawczyk**
12:30pm - 1:30pm	**LUNCH 3**				
1:30pm - 3:00pm	**S29.B.1: Shear** Location: **Picasso** Chair: **Piotr Noakowski**	**S29.B.2: Prefabrication** Location: **Monet** Chair: **Bin Zhao**	**S29.B.3: Prestressed Concrete Structures** Location: **Rembrandt** Chair: **Renata Kotynia**	**S29.B.4: Analysis and Design of Concrete Structures** Location: **Matejko** Chair: **Michael Braestrup**	**S29.B.5: Monitoring and Maintenance** Location: **Chelmonski** Chair: **Steffen Marx**
3:00pm - 3:30pm	**COFFEE BREAK 3.2**				
3:30pm - 5:00pm	**S29.C.1: Materials** Location: **Picasso** Chair: **Gyorgy L. Balazs**	**S29.C.2: Bond Models** Location: **Monet** Chair: **Marta Choinska**	**S29.C.3: Prestressed Concrete Structures** Location: **Rembrandt** Chair: **Anna Halicka**	**S29.C.4: Analysis and Design of Concrete Structures** Location: **Matejko** Chair: **Takumi Shimomura**	**S29.C.5: Poster Presentations** Location: **Chelmonski** Chair: **Michał Gołdyn**
5:00pm - 5:45pm	**CLOSING CEREMONY: + Best Paper Award** Location: **Picasso** Chair: **Wit Derkowski**				

fib SYMPOSIUM 2019
27-29 May 2019
Kraków, Poland

CONCRETE
INNOVATIONS IN MATERIALS,
DESIGN AND STRUCTURES

SESSIONS DETAILS

Color legend

27 May 2019 (Monday)

28 May 2019 (Tuesday)

29 May 2019 (Wednesday)

27 May 2019 (Monday)

Session S27.A.1: Innovations in Design

Monday, 27/May/2019
1:15pm - 2:45pm

Session Chair: **Jan L. Vitek**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:15pm - 1:30pm	**APPLICATION OF A NEW RBSM ELEMENT INTO SIMULATION OF NONLINEAR BEHAVIOUR OF CONCRETE** **Saeid Mehrpay M., Tamon Ueda** Hokkaido University, Japan
1:30pm - 1:45pm	**UPPER AND LOWER BOUNDS OF CRACK WIDTH OF R.C. TIE - SIMPLIFIED METHOD** **Maurizio Taliano** Politecnico di Torino, Italy
1:45pm - 2:00pm	**ANALYTICAL AND NUMERICAL PREDICTIONS OF DOUBLE-SPAN BEAMS LOAD RESISTANCE WITH UNSYMMETRICAL SPAN LENGTH AND REINFORCEMENT DETAILING** **Namyo Salim Lim[1], Anh Tuan Pham[2], Kang Hai Tan[3]** [1]School of Civil and Environmental Engineering, Nanyang Technological University, Singapore; [2]Vietnam Institute of Building Science and Technology, Hanoi, Vietnam; [3]Faculty of School of Civil and Environmental Engineering, Nanyang Technological University, Singapore
2:00pm - 2:15pm	**FORCE TRANSFER AND STRESS DISTRIBUTION IN SHORT CANTILEVER DEEP BEAMS LOADED THROUGHOUT THE DEPTH WITH A VARIOUS REINFORCEMENT** **Anna Kopańska, Krystyna Nagrodzka-Godycka** Gdansk University of Technology, Poland
2:15pm - 2:30pm	**COMPARISONS OF DIFFERENT APPROACHES OF MODELLING PRESTRESS IN CONCRETE MEMBERS USING LS-DYNA AND ITS APPLICATIONS** **Muhannad Husain[1], Jun Yu[1], Jun Wu[2]** [1]Hohai University, Nanjing, China; [2]Shanghai University of Engineering Science, Shanghai, China
2:30pm - 2:45pm	**ON THE TORSIONAL RIGIDITY OF PRESTRESSED CONCRETE SEGMENT TOWERS WITH VERTICAL JOINTS** **Fabian Klein[1,2], Steffen Hartwig[1], Joachim Göhlmann[2], Steffen Marx[1]** [1]Institute of Concrete Construction, Leibniz University Hannover; [2]grbv Ingenieure im Bauwesen GmbH & Co.KG

Session S27.A.2: Sustainability

Monday, 27/May/2019
1:15pm - 2:45pm

Session Chair: **Brett Pielstick**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:15pm - 1:30pm	**MODEL CODE 2010 CREEP AND SHRINKAGE MODELS EXTENSION TO RECYCLED AGGREGATE CONCRETE** **Nikola Tošić[1], Albert de la Fuente[2], Snežana Marinković[1]** [1]University of Belgrade, Faculty of Civil Engineering, Serbia; [2]Universitat Politécnica de Catalunya, Department of Civil and Environmental Engineering, Spain
1:30pm - 1:45pm	**FAST CARBONATION OF RECYCLED CONCRETE AGGREGATES: THE FASTCARB PROJECT** **Jean Michel Torrenti** Ifsttar, France
1:45pm - 2:00pm	**ENVIRONMENTAL IMPACT OF CONCRETE STRUCTURES REINFORCED WITH GFRP BARS: A SIMPLIFIED STUDY ON COLUMNS** **Nadia Al-Ayish[1], Katarina Malaga[1], Muhammad Hadi[2], Neaz Sheikh[2], Kjartan Gudmundsson[3], Raid Karoumi[3]** [1]RISE Research Institutes of Sweden, Sweden; [2]University of Wollongong, Australia; [3]KTH Royal Institute of Technology, Sweden
2:00pm - 2:15pm	**USING THE GENTIC ALGORITHM FOR ENVIRONMENTAL OPTIMIZATION OF 3-SPAN REINFORCED CONCRETE BEAM** **Anna Halicka[1], Henryk Ciurej[2], Magdalena Gicala[2]** [1]Faculty of Civil Engineering and Architecture, Lublin University of Technology, Lublin, Poland; [2]Faculty of Mining and Geoengineering, AGH University of Science and Technology, Krakow, Poland
2:15pm - 2:30pm	**ALKALI-ACTIVATED BINDERS BASED ON FLY ASH AND GGBS** **Katalin Kopecskó[1], Mátyás Hajdú[2], György L. Balázs[3]** [1]Budapest Univ. of Techn. and Economics, Dept. of Eng. Geology and Geotechnics, Hungary; [2]ARC-S Engineering & Design Ltd., Hungary; [3]Budapest Univ. of Techn. and Economics, Dept. of Constr. Materials and Technologies, Hungary
2:30pm - 2:45pm	**SUSTAINABILITY AND LIFE CYCLE ANALYSIS DATA IN CONSTRUCTION MATERIALS CERTIFICATIONS – A CASE STUDY FROM THE STEEL INDUSTRY** **Lee Brankley[1], Ayhan Tugrul[1], Dave Knight[2], Jane Anderson[3], Ladin Camci[1]** [1]CARES, United Kingdom; [2]ONE Planet Limited, United Kingdom; [3]thinkstep Limited, United Kingdom

Session S27.A.3: Analysis and Design of Concrete Structures

Monday, 27/May/2019
1:15pm - 2:45pm

Session Chair: **Andrzej Ajdukiewicz**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:15pm - 1:30pm	**CRACK WIDTH PREDICTION ACCEPTED IN EN 13084 & CICIND** **Piotr Noakowski, Andreas Harling, Philipp Gleich** Exponent GmbH, Germany
1:30pm - 1:45pm	**ANCHORAGES WITH SUPPLEMENTARY REINFORCEMENT UNDER TENSION, SHEAR AND INTERACTION LOADS - EXPERIMENTAL DATABASE** **Akanshu Sharma[1], Rolf Eligehausen[1,2], Joerg Asmus[2], Jan Bujnak[3]** [1]University of Stuttgart, Germany; [2]IEA, Engineering office Eligehausen-Asmus-Hofmann, Stuttgart, Germany; [3]Peikko Group Corporation, Lahti, Finland
1:45pm - 2:00pm	**RELIABILITY OF DEEP BEAMS DESIGNED ACCORDING TO THE ACI 318-14 STRUT-AND-TIE METHOD** **Victor Aguilar-Vidal[1], Andrzej Nowak[2], Robert Barnes[2]** [1]Graduate Student of Civil Engineering, Auburn University, Auburn, AL, USA; [2]Faculty of Civil Engineering, Auburn University, Auburn, AL, USA
2:00pm - 2:15pm	**STRAIN FIELDS AND DAMAGE EVOLUTION IN CONCRETE DURING A PULLOUT TEST** **Orit Leibovich[2], David Z. Yankelevsky[1], Avraham N. Dancygier[1]** [1]National Building Research Institute, Faculty of Civil & Environmental Engineering, Technion - Israel Institute of Technology, Haifa, Israel; [2]Sami Shamoon College of Engineering, Ashdod, Israel
2:15pm - 2:30pm	**COMPARISON OF REAL AND THEORETICAL CREEP STRAINS OF LARGE CONCRETE SPECIMENS DURING CHANGING ENVIRONMENT CONDITIONS** **Dominik Suza[1], Johann Kollegger[1], Harald Müller[2]** [1]Vienna University of Technology, Austria; [2]Karlsruhe Institute of Technology, Germany
2:30pm - 2:45pm	**TIME-DEPENDENT DEVELOPMENT OF CRACK WIDTHS IN REINFORCED CONCRETE STRUCTURES** **Martin Empelmann, Jonas Cramer** TU Braunschweig, iBMB, Division of Concrete Construction, Germany

Session S27.A.4: Bridges

Monday, 27/May/2019
1:15pm - 2:45pm

Session Chair: **Ludger Lohaus**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:15pm - 1:45pm	**"THE CONCRETE ARCHITECTURE" OF RICCARDO MORANDI** **Alessandro Palermo** University of Canterbury, New Zealand
1:45pm - 2:00pm	**PRECAST SPANS WITH EXTENSIVE USE OF PRE-TENSIONING** **Mohamed Akraa[1], Georges Mauris[2], Jean-Charles Vollery[3]** [1]Systra, Paris, France; [2]Systra IBT, San Diego, California, United States; [3]Systra, Hong-Kong
2:00pm - 2:15pm	**BENDING PROPERTY OF FULL SIZE PC GIRDER USING AFRP RODS AS PRE—TENSION TENDON WHICH PASSED 28 YEARS AFTER CONSTRUCTION** **Yuji Nonami, Takashi Sanga, Taisuke Fujioka, Hiroshi Asai** SUMITOMO MITSUI CONSTRUCTION, Japan
2:15pm - 2:30pm	**MODERNIZATION OF BRIDGE ABUTMENTS IN INDIA** **Aditya Kumar Dinkar[1], Alok Panday[2]** [1]Irrigation Department, Uttarakhand, India; [2]Elegant Consulting Engineers, India
2:30pm - 2:45pm	**ENHANCING PERFORMANCE AND ELEGANCE OF BRIDGES IN HILLY REGION** **Alok Panday[1], Aditya Kumar Dinkar[2]** [1]Elegant Consulting Engineers, India; [2]Irrigation Department, Uttarakhand, India

Session S27.A.5: Strengthening and Repair

Monday, 27/May/2019
1:15pm - 2:45pm

Session Chair: **Manfred Curbach**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:15pm - 1:30pm	**BOND BETWEEN CONCRETE SUBSTRATES AND HIGH PERFORMANCE REPAIR LAYERS** **Cristina Zanotti[1], Norbert Randl[2], Martin Steiner[2], Parisa Setayesh Gar[1], Bardia Kabiri Far[1]** [1]University of British Columbia, Canada; [2]Carinthia University of Applied Sciences, Austria
1:30pm - 1:45pm	**APPLICATION OF UHPFRC DECK SLAB TO REPLACE DETERIORATED CONCRETE SLAB** **Seisuke Muragishi[1], Daisuke Hashizume[2], Hideyuki Suzuki[2], Kimio Saito[1], Masaru Fujishiro[1]** [1]Kajima Corporation, Japan; [2]Hanshin Expressway Company Limited, Japan
1:45pm - 2:00pm	**REPLACEMENT OF RC SLABS WITH HALF SECTIONS ON THE MICHITANIDAINI BRIDGE TO INCREASE DURABILITY** **Satoshi Yamamura[1], Takahiro Hisayuku[2], Yasuhiro Yamashita[2]** [1]P. S. Mitsubishi Construction Co.,Ltd, Japan; [2]West Nippon Expressway Company Limited, Chugoku branch office, Japan
2:00pm - 2:15pm	**RAPID REPAIR SYSTEM FOR CONCRETE PAVEMENTS: NUMERICAL INSIGHT IN THE TEMPERATURE AND TRUCK LOADS** **Maciej Kwapisz[1], Dominik Prammer[1], Alois Vorwagner[1], Tanja Tschernack[2]** [1]AIT, Austria; [2]Villaret Ingenieurgesellschaft mbH, Germany
2:15pm - 2:30pm	**REPLACEMENT REINFORCEMENT METHOD OF PC SLAB IN PC COMPOSITE GIRDER BRIDGE** **Toshihiko Nagatani[1], Takeharu Tajiri[2]** [1]Nippon Expressway Research Institute Company Limited, Japan; [2]Central Nippon Expressway Ltd.
2:30pm - 2:45pm	**RESEARCH ON THE EFFECT OF BIDIRECTIONAL ELECTROMIGRATION ON REHABILITATION FOR REINFORCED CONCRETE UNDER CHLORIDE ENVIRONMENT** **Jianbo Xiong[1,2], Xiang Fang[1,2], Zhihong Fan[1,2], Dongfang Zhang[1,2]** [1]CCCC Fourth Harbor Engineering Institute Co., Ltd., People's Republic of China; [2]Key Laboratory of Durability Technology for Harbor and Marine Structure Ministry of Communication

Session S27.B.1: Innovations in Structures

Monday, 27/May/2019:
3:15pm - 4:45pm

Session Chair: **Tor Ole Olsen**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:15pm - 3:30pm	**BUILDING BOX GIRDER BRIDGES USING THIN-WALLED PRE-FABRICATED ELEMENTS** **Stephan Fasching, Sebastian Maier, Johann Kollegger** TU Wien, Austria
3:30pm - 3:45pm	**QUASI-STATIC SEISMIC LOAD TESTING OF A 2/3 SCALE MULTI-JOINT PRECAST ROCKING BRIDGE COLUMN** **Royce Liu, Alessandro Palermo** University of Canterbury, New Zealand
3:45pm - 4:00pm	**EXPERIMENTAL AND NUMERICAL INVESTIGATIONS OF THE INFLUENCE OF PARTIAL INTERACTION ON THE BEHAVIOUR OF U-SHAPED CONCRETE STEEL BEAM** **Clémence Lepourry[1,2], Piseth Heng[1], Hugues Somja[1], Franck Palas[2]** [1]INSA Rennes, France; [2]Ingenova, Saint jacques de la lande
4:00pm - 4:15pm	**ULTRA-LIGHT HYBRID CONCRETE-STEEL BEAMS** **Georgios Gaganelis, Peter Mark** Ruhr-Universität Bochum, Germany
4:15pm - 4:30pm	**DEVELOPMENT OF HYBRID STRUCTURE ADDING POST-TENSIONED SEGMENT ON PRE-TENSIONED MEMBER** **Kimihiko Amaya[1], Koji Hamaoka[1], Satoshi Takaya[2], Takashi Yamamoto[2]** [1]NIPPON PS Co,Ltd., Japan; [2]Kyoto University, Japan
4:30pm - 4:45pm	**RESEARCH ON SEISMIC BEHAVIOUR OF FULL PRECAST CONCRETE WALLS ASSEMBLED BY NEW HORIZONTAL JOINTS** **Bin Zhao[1], Yan Wang[1], Xilin Lu[1], Chunxia Shi[2]** [1]State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University, Shanghai 200092, China; [2]2The Fifth Company of Shanghai Construction Group, Shanghai 200063, China

Session S27.B.2: Fiber Reinforced Concrete

Monday, 27/May/2019:
3:15pm - 4:45pm

Session Chair: **Avraham Naftali Dancygier**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:15pm - 3:30pm	**DESIGN RECOMMENDATIONS FOR FASTENERS FOR USE IN STEEL FIBER REINFORCED CONCRETE** **Mate Toth[1], Boglarka Bokor[2], Akanshu Sharma[2]** [1]IEA Engineering Office Eligehausen-Asmus-Hofmann, Germany; [2]University of Stuttgart, Institute of Construction Materials, Germany
3:30pm - 3:45pm	**TESTING OF FRC FOUNDATION SLAB UNDER ECCENTRIC LOAD** **Radim Cajka, Zuzana Marcalikova, Zdenka Neuwirthova, Petr Mynarcik** VSB - Technical University of Ostrava, Czech Republic
3:45pm - 4:00pm	**EXPERIMENTAL INVESTIGATION OF FRACTURE PROPERTIES OF CONCRETE WITH RECYCLED STEEL FIBERS RECOVERED FROM TIRE WASTE** **Samindi Samarakoon, Anette Vårvik, Birgitte Kilsen** University of Stavanger, Norway
4:00pm - 4:15pm	**THE INFLUENCE OF CONCRETE MATURITY ON THE PULL-OUT BEHAVIOUR OF STEEL FIBRES AT EARLY-AGES** **Andreas Kristian Kragh[1], Martin Eberholst Carlsen[1], Victor Marcos-Meson[1,2,3], Gregor Fischer[1], Alexander Michel[1]** [1]Department of Civil Engineering, Technical University of Denmark (DTU), Denmark; [2]COWI A/S, Denmark; [3]VIA Building, Energy & Environment, VIA University College, Denmark
4:15pm - 4:30pm	**VISUALIZATION OF THE FIBRE DISPERSION IN THE STEEL FIBRE REINFORCED CONCRETE USING X-RAY IMAGE** **Ramiz Ahmed Raju, Sopokhem Lim, Takumi Kageyama, Mitsuyoshi Akiyama** Civil and Environmental Engineering, Waseda University, Tokyo, Japan
4:30pm - 4:45pm	**HYBRID FIBER REINFORCED SELF-COMPACTING CONCRETE UNDER STATIC AND DYNAMIC LOADINGS** **Małgorzata Pajak[1], Jacek Janiszewski[2], Leopold Kruszka[2]** [1]Silesian University of Technology, Poland; [2]Military University of Technology, Poland

Session S27.B.3: Existing Concrete Structures

Monday, 27/May/2019:
3:15pm - 4:45pm

Session Chair: **Stuart Matthews**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:15pm - 3:30pm	**EVALUATION OF A 60-YEAR OLD REINFORCED CONCRETE BENT CAP EXHIBITING SHEAR DISTRESS** **Bernardo Perez, Jarrod Robert Zaborac, Oguzhan Bayrak, Trevor Daniel Hrynyk** The University of Texas at Austin, United States of America
3:30pm - 3:45pm	**NONLINEAR MODELLING OF NON-CONFORMING CONCRETE FRAMES REINFORCED WITH PLAIN BARS** **Maria Teresa De Risi, Paolo Ricci, Gerardo Mario Verderame, Gaetano Manfredi** University of Naples Federico II, Italy
3:45pm - 4:00pm	**PROBLEM OF CONDITION ASSESMENT OF PRECAST, POSTTENSIONED CONCRETE CRANE BEAMS IN AN EXTENDED PERIOD OF USE** **Wit Derkowski, Rafał Walczak** Cracow University of Technology, Poland
4:00pm - 4:15pm	**THE DIFFICULT INTRODUCTION OF PRESTRESSED CONCRETE IN SUB-SAHARA AFRICA: THE CONSTRUCTION OF THE CCC-BUILDING, 1950-1951.** **Robby Fivez** Ghent University, Faculty of Engineering and Architecture, Department of Architecture and Urban Planning
4:15pm - 4:30pm	**ASSESSMENT OF SUPPORTING STRUCTURES OF PIPELINES** **Attila Vardai, Botond Madaras** ÉMI-TÜV SÜD Ltd., Hungary
4:30pm - 4:45pm	**TOWARD CRACK-BASED ASSESSMENT OF REINFORCED CONCRETE INFRASTRUCTURE** **Jarrod Robert Zaborac, Apostolos Athanasiou, Salvatore Salamone, Oguzhan Bayrak, Trevor Daniel Hrynyk** University of Texas at Austin, United States of America

Session S27.B.4: Shear and Torsion

Monday, 27/May/2019:
3:15pm - 4:45pm

Session Chair: **Maria Anna Polak**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:15pm - 3:30pm	**DUCTILITY ASSESSMENT OF PILE CAPS WITH PUNCHING REINFORCEMENT** **Lucia Miguel-Tortola[1], Juan Sagaseta[2], Luis Pallarés[1], Pedro F Miguel[1]** [1]Universitat Politècnica de València, Spain; [2]University of Surrey, United Kingdom
3:30pm - 3:45pm	**INFLUENCE OF CONCRETE COVER THICKNESS AND BAR DIAMETER ON SHEAR STRENGTH OF GLASS FIBER REINFORCED POLYMER CONCRETE BEAMS WITHOUT STIRRUPS** **Monika Kaszubska, Renata Kotynia** Lodz University of Technology, Poland
3:45pm - 4:00pm	**STATIC AND SEISMIC BEHAVIOUR OF R/C FLAT SLABS WITH OPENINGS ADJACENT TO COLUMNS** **Massimo Lapi[1], Maurizio Orlando[1], Paolo Spinelli[1], Antonio Pinho Ramos[2]** [1]Università degli Studi di Firenze, Italy; [2]Universidade Nova de Lisboa, Portugal
4:00pm - 4:15pm	**POST-EARTHQUAKE STRENGTH AND DEFORMATION CAPACITY OF A FLAT SLAB SPECIMEN WITH SHEAR STUDS** **Brisid Isufi[1], Válter Lúcio[2], António Pinho Ramos[2]** [1]Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal; [2]CERIS, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal
4:15pm - 4:30pm	**EXPERIMENTAL STUDY ON STEEL FIBER REINFORCED CONCRETE BEAMS IN PURE TORSION** **Luca Facconi[1], Fausto Minelli[1], Giovanni Plizzari[1], Paola Ceresa[2]** [1]University of Brescia, Italy; [2]IUSS, Pavia, Italy
4:30pm - 4:45pm	**BASIS OF CALCULATION ON TORSION FOR REINFORCED CONCRETE STRUCTURES WITH NORMAL CRACKS** **Taliat Azizov[1], Nadzieja Jurkowska[2], Dmytro Kochkarev[3]** [1]Pavlo Tychyna Uman State Pedagogical University, Uman, Ukraine; [2]Tadeusz Kosciuszko Cracow University of Technology, Krakow, Poland; [3]National University of Water and Environmental Engineering, Rivne, Ukraine

Session S27.B.5: Strengthening and Repair

Monday, 27/May/2019:
3:15pm - 4:45pm

Session Chair: **Aurelio Muttoni**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:15pm - 3:30pm	**INVESTIGATION OF INFLUENCE OF STRENGTHENING TIMING OF SHIELD TUNNEL STRENGTHENED BY STEEL PLATE - UHPC COMPOSITE STRUCTURE** **Xian Liu, Zijie Jiang, Yong Yuan** Tongji University, People's Republic of China
3:30pm - 3:45pm	**INTERVENTION TO ALLOW INTEGRATION OF EXISTING STRUCTURES WITH NEW STRUCTURES IN FIB MC2020** **Tamon UEDA** Hokkaido University, Sapporo, Japan
3:45pm - 4:00pm	**RESPONSE BEHAVIOUR OF REINFORCED CONCRETE BEAMS STRENGTHENED IN SHEAR WITH FRP** **Nino Spinella[1], Piero Colajanni[2], Antonino Recupero[1]** [1]Università di Messina, Italy; [2]Università di Palermo, Italy
4:00pm - 4:15pm	**SHEAR STRENGTHENING OF REINFORCED CONCRETE STRUCTURES WITH CARBON REINFORCED CONCRETE** **Sebastian May[1], Alexander Schumann[1], Sarah Bergmann[2], Manfred Curbach[1], Josef Hegger[2]** [1]Technische Universität Dresden, Germany; [2]RWTH Aachen University; Germany
4:15pm - 4:30pm	**THREE-DIMENSIONAL NUMERICAL MODELING OF SHEAR-CRITICAL R/C BEAMS STRENGTHENED WITH SRG JACKETS** **Antonios A. Katsamakas[1], Vassilis K. Papanikolaou[1], Georgia E. Thermou[2]** [1]Aristotle University of Thessaloniki, Greece; [2]The University of Nottingham, UK
4:30pm - 4:45pm	**PARAMETRIC STUDY OF LOAD CARRYING CAPACITY OF REINFORCED CONCRETE BEAMS STRENGTHENED IN FLEXURE WITH PRESTRESSED CFRP STRIPS** **Przemysław Bodzak** Lodz University of Technology

Session S27.C.1: Existing Concrete Structures

Monday, 27/May/2019:
5:15pm - 6:45pm

Session Chair: **Boyan Mihaylov**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

5:15pm - 5:30pm	**METHODS FOR FATIGUE EVALUATION OF CONCRETE IN WIND TURBINES SUPPORT STRUCTURES** **Morten S. Andersen, Christian Ertel** DNV GL Energy – Renewable Certification
5:30pm - 5:45pm	**WILLY GEHLER'S CONTRIBUTION TO THE DEVELOPMENT OF PRECAST CONCRETE** **Oliver Steinbock[1], Uwe Fraunholz[2], Manfred Curbach[1]** [1]Institute of Concrete Structures, TU Dresden, Germany; [2]Institute of Philosophy, History of Literature, Science, and Technology, TU Berlin, Germany
5:45pm - 6:00pm	**NUMERICAL STUDY OF PROGRESSIVE COLLAPSE RESISTANCE OF MULTI-STORY RC PLANAR FRAME STRENGTHENED BY STEEL BRACES** **Jun Yu, Yi-Ping Gan, Li-Zhong Luo, Jun Liu** Hohai University, People's Republic of China
6:00pm - 6:15pm	**EXPERIMENTAL BEHAVIOUR OF REINFORCED CONCRETE TIE-RODS DAMAGED BY CORROSION** **Stefania Imperatore[1], Zila Rinaldi[2], Simone Spagnuolo[2]** [1]Univerisity Niccolò Cusano, Rome, Italy; [2]University of Rome Tor Vergata, Italy
6:15pm - 6:30pm	**INVESTIGATION ON STRUCTURAL BEHAVIOR OF EXISTING PRESTRESSED POST-TENSIONED CONCRETE BRIDGE SUPERSTRUCTURE** **Yasuhiko Sato[1], Wanakorn Prayoonwet[2], Yoshinobu Oshima[3]** [1]Waseda University, Japan; [2]Kasetsart University; [3]Public Work Research Institute
6:30pm - 6:45pm	**RENOVATION PLAN AND BUDGET OF A BUILDING PORTFOLIO – REAL AND MODELLED** **Arto Köliö[1], Jaakko Koskinen[2], Jani Heikari[3]** [1]Tampere University of Technology, Finland; [2]Renovatek Oy, Finland; [3]H & H Consulting Oy, Finland

Session S27.C.2: Fiber Reinforced Concrete

Monday, 27/May/2019:
5:15pm - 6:45pm

Session Chair: **Joost Walraven**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

5:15pm - 5:30pm	**STEEL FIBER REINFORCED HIGH STRENGTH CONCRETE ENCASED STEEL COLUMNS WITHOUT TRADITIONAL STEEL BARS** **Akshay Venkateshwaran, J Y Richard Liew** National University of Singapore, Singapore
5:30pm - 5:45pm	**TESTS ON THE APPLICATION OF HIGH STRENGTH SELF-COMPACTING FIBER REINFORCED CONCRETE IN FOUNDATION ELEMENTS** **Didier Droogné[1], Luc Taerwe[2], Joost Walraven[4], Bogdan Cotovanu[3]** [1]Ghent University, Belgium; [2]National RPGE Chair Professor, Tongji University, Shanghai, P.R. China; [3]Shell Global solutions International, Rijswijk, The Netherlands; [4]TU Delft
5:45pm - 6:00pm	**POSSIBLE CRACKING LOCALIZATION EFFECT ON REQUIRED MINIMUM CONVENTIONAL REINFORCEMENT RATIO IN RC BEAMS WITH STEEL FIBERS** **Yuri S Karinski, Avraham Naftali Dancygier** Technion - Israel Institute of Technology, Israel
6:00pm - 6:15pm	**DESIGN OF SFRC ACCORDING TO FIB MODEL CODE 2010 USING SIMPLIFIED DIVERSE EMBEDMENT MODEL (SDEM) AS A DESIGN INPUT** **Zeyad Khalil[1], Ahmed El-Shennawy[2]** [1]The German University in Cairo (GUC), Egypt; [2]University of Stuttgart, Germany
6:15pm - 6:30pm	**MEASURING AND NUMERICAL MODELING OF BEHAVIOUR OF FIBRE CONCRETE IN A DIRECT TENSILE TEST** **Marika Eik[1], Jari Puttonen[1], Karin Lundgren[2]** [1]Aalto University, School of Engineering, Finland; [2]Chalmers University of Technology, Structural Engineering, Sweden
6:30pm - 6:45pm	**CRACK WIDTHS IN STEEL FIBRE CONCRETE MEMBERS WITH CONVENTIONAL REINFORCEMENT** **Martin Empelmann, Vincent Oettel, Jonas Cramer** TU Braunschweig, iBMB, Division of Concrete Construction, Germany

Session S27.C.3: Analysis and Design of Concrete Structures

Monday, 27/May/2019:
5:15pm - 6:45pm

Session Chair: **Rudolf Eligehausen**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

5:15pm - 5:30pm	**SLAB AND PLATES (UN)EXPECTED NONLINEAR CAPACITY EXPLAINED** **Pim van der Aa, Ab van den Bos** DIANA FEA BV, Engineering, Delft, Netherlands
5:30pm - 5:45pm	**UTILIZATION OF BEHAVIOUR OF FOLDED PLATES IN EARTH RETAINING STRUCTURES** **Aditya Kumar Dinkar[1], Alok Panday[2]** [1]Irrigation Department, Uttarakhand, India; [2]Elegant Consulting Engineers, India
5:45pm - 6:00pm	**DEFECTS AND FAILURES OF CONCRETE STRUCTURES** **Jan L. Vitek** Metrostav a.s., Czech Republic
6:00pm - 6:15pm	**ANALYSIS OF CONCRETE BEAMS REINFORCED WITH STAINLESS STEEL** **Musab Rabi[1,2], Katherine Cashell[1], Shamass Rabee[3]** [1]Brunel University London, United Kingdom; [2]Jerash University, Jordan; [3]London South Bank University, United Kingdom
6:15pm - 6:30pm	**BEHAVIOR OF JOINTS IN LATTICE PLANK PROFILES WITH VOIDING ELEMENTS SUBJECTED TO BENDING** **Tom Molkens, Ann Van Gysel** Dept. of Civil Eng. – Technology Cluster Construction, Campus De Nayer, KU Leuven
6:30pm - 6:45pm	**SOME ASPECTS OF DYNAMIC PUNCHING SHEAR OF RC FLAT SLABS** **David Yankelevsky, Yuri Karinski, Dina Tsemakh, Alex Brodsky, Vladimir Feldgun** Technion - Israel Institute of Technology, Israel

Session S27.C.4: Tunnels and Bridges

Monday, 27/May/2019:
5:15pm - 6:45pm

Session Chair: **Marco di Prisco**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

5:15pm - 5:30pm	**ROTATIONAL STIFFNESS OF TUBULAR STEEL CONCRETE CONNECTION FOR ARCH BRIDGES** **Philippe Van Bogaert, Hans De Backer** Ghent University, Belgium
5:30pm - 5:45pm	**ANALYSIS OF DEFLECTION LINE IN THE BRIDGE SUPERSTRUCTURES CONSTRUCTED USING CANTILEVER CONCRETING METHOD** **Czesław Machelski[1], Bartosz Pisarek[2]** [1]Department of Bridge and Railway, Wroclaw University of Science and Technology; [2]HOCHTIEF Infrastructure GmbH, Deutschland Nord;
5:45pm - 6:00pm	**CONTINUOUS PREVENTIVE BRIDGE MAINTENANCE IN SWEDEN- FIELD EXPERIMENT ON THE EFFECT OF WASHING ON CONCRETE BRIDGES** **Louise Andersson[1], Johan Silfwerbrand[2], Anders Selander[3], Jan Trägårdh[1]** [1]RISE CBI Swedish Cement and Concrete Research Institute; [2]KTH Royal Institute of Technology; [3]Cementa AB, Heidelberg Cement Group
6:00pm - 6:15pm	**THE LONG RAIL AND ROAD TUNNELS OF TOMORROW** **Silvino Pompeu-Santos** SPS Consulting, Portugal
6:15pm - 6:30pm	**ANALYSIS OF VARYING SKEW ANGLE IN A SINGLE SPAN REINFORCED CONCRETE PLATE BRIDGES** **Kristine Djuve[1], Samindi Samarakoon[1], Håkon Emil Helland Sæstad[2]** [1]University of Stavanger, Norway; [2]Statens Vegvesen, Stavanger, Norway
6:30pm - 6:45pm	**ASSESSMENT OF INFRA STRUCTURES USING DIANA FEA** **Ab van den Bos, Chantal Frissen, Pim van der Aa** DIANA FEA BV, Engineering, Delft, Netherlands

Session S27.C.5: Strengthening and Repair

Monday, 27/May/2019:
5:15pm - 6:45pm

Session Chair: **Łukasz Hojdys**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

5:15pm - 5:30pm	**BEHAVIOR OF AXIALLY LOADED CONCRETE CYLINDER WRAPPED BY DUCTILE PEN FRP AND DURABILITY OF PEN FIBERS** **Donguk Choi[1], Batzaya Baasankhuu[1], Sangsu Ha[2]** [1]Hankyong National University, Republic of Korea (South Korea); [2]Gangnam University, Republic of Korea (South Korea)
5:30pm - 5:45pm	**SHEAR PERFORMANCE SIMULATION OF BOLT SIDE-PLATED RC BEAMS** **Zhenli Wu, Lingzhi Li, Zhoudao Lu** Tongji University, People's Republic of China
5:45pm - 6:00pm	**AXIAL BEHAVIOR OF RC MEMBERS REPAIRED AFTER FIRE EXPOSURE WITH FRP SHEETS** **Ugur Demir, Goktug Unal, Ugurcan Celik, Alper Ilki** Istanbul Technical University, Turkey
6:00pm - 6:15pm	**BRIDGE ASSET VALUATION** **Mi Geum Chorzepa, Brian Oyegbile** University of Georgia, United States of America
6:15pm - 6:30pm	**CONSTRUCTION OF REALISTIC NPP CONTAINMENT WALL MOCK-UP FOR CHALLENGING NDE METHODS** **Miguel Ferreira[1], Edgar Bohner[1], Ville Sjöblom[1], Fahim Al-Neshawy[2], Teemu Ojala[2]** [1]VTT Technical Research Centre of Finland, Finland; [2]Aalto University
6:30pm - 6:45pm	**FLEXURAL STRENGTHENING OF RC BEAMS WITH PASSIVE AND PRESTRESSED CFRP LAMINATES: EXPERIMENTAL STUDY** **Bartosz Piątek, Tomasz Siwowski** Rzeszow University of Technology, Poland

28 May 2019 (Tuesday)

Session S28.A.1: Innovations in Materials

Tuesday, 28/May/2019:
11:15am - 12:45pm

Session Chair: **Tamon Ueda**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:15am - 11:30am	**EVALUATION ON THE PERFORMANCE OF LIGHTWEIGHT CEMENTITIOUS COMPOSITE ENHANCED BY CARBON NANOFIBERS** **Su Wang, Kang Hai Tan** Nanyang Technological University, Singapore
11:30am - 11:45am	**CHEMICAL PRESTRESS OF CONCRETE WITH CARBON TEXTILE REINFORCEMENT: THEORETICAL AND ANALYTICAL APPROACHES** **Katarzyna Zdanowicz, Steffen Marx** Institute of Concrete Construction, Leibniz University Hannover, Germany
11:45am - 12:00pm	**DEVELOPMENT OF HIGH STRENGTH FIBER REINFORCED CONCRETE WITHOUT PORTLAND CEMENT** **Wataru Sasaki, Taku Matsuda, Ryuichiro Mine, Yousuke Onda** Sumitomo Mitsui Construction Co.,Ltd., Japan
12:00pm - 12:15pm	**INFLUENCE OF FINE RECYCLED CONCRETE AGGREGATES IN THE DESIGN AND PROPERTIES OF UHPC** **Nelson Silva, Louise Andersson** RISE CBI Betonginstitutet, Sweden
12:15pm - 12:30pm	**AN EXPERIMENTAL SET UP TO ASSESS THE EFFECTS OF CRACK SEALING ON THE CONCRETE-REINFORCEMENT BOND IN CHLORIDE ENVIRONMENTS** **Estefania Cuenca, Alessio Zaro, Liberato Ferrara** Politecnico di Milano, Italy
12:30pm - 12:45pm	**INFLUENCE OF ENVIRONMENTALLY FRIENDLY BASALT FIBRES ON EARLY-AGE STRENGTH OF SPRAYED CONCRETE** **Iveta Nováková[1,2], Eythor Thorhallsson[2], Olafur H. Wallevik[1,2]** [1]Construction Research and Development, Innovation Center of Iceland; [2]Structural Engineering Laboratory, SEL, Reykjavik University

Session S28.A.2: Durability

Tuesday, 28/May/2019:
11:15am - 12:45pm

Session Chair: **Akio Kasuga**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:15am - 11:30am	**FRENCH NATIONAL PROJECT "PERFDUB" ON PERFORMANCE-BASED APPROACH: INTEREST OF OLD STRUCTURES ANALYSIS FOR THE DEFINITION OF DURABILITY INDICATORS CRITERIA** **Michaël DIERKENS[1], Bruno GODART[2], Jonathan MAI-NHU[3], Anass EL FARISSI[4], Patrick ROUGEAU[3], Lionel LINGER[5], François CUSSIGH[6]** [1]Cerema, Lyon, France; [2]Paris-Est University, IFSTTAR, Marne La Vallée, France; [3]Cerib, Epernon, France; [4]LaSIE, UMR 7356 CNRS, Université de La Rochelle, France; [5]VINCI Construction Grands Projets, Rueil, France; [6]VINCI Construction France, Nanterre, France
11:30am - 11:45am	**IMPACT OF THE AGGREGATE SIZE AND OF THE CEMENT TYPE ON CONCRETE GAS PERMEABILITY MEASURED UNDER LOADING** **Marta CHOINSKA[1], Stéphanie BONNET[1], Hayder AL-KHAZRAJI[1,3], Aurélie FABIEN[1,2], Abdelhafid KHELIDJ[1]** [1]GeM UMR CNRS 6183, Nantes University, France; [2]ESITC Caen, 1 rue Pierre et Marie Curie, 14610 Épron, France; [3]Missan University, Engineering College, Iraq
11:45am - 12:00pm	**REDUCTION IN THE CHLORIDE DIFFUSION COEFFICIENT FOR BACTERIA-BASED SELF-HEALING CONCRETE** **Goli Nossoni[1], Yixiao Zhu[2], Daniel Hussey[3]** [1]University of New Haven, United States of America; [2]University of New Haven, United States of America; [3]Manhattan College, United States of America
12:00pm - 12:15pm	**ALKALI-SILICA REACTION IN FINNISH SWIMMING POOLS** **Jukka Lahdensivu[1], Pirkko Kekäläinen[2]** [1]Ramboll Finland Oy, Finland; [2]Tampere University;
12:15pm - 12:30pm	**PROPERTIES OF MORTARS MADE WITH WASTE GLASS AS FINE AGGREGATE – A SOUTH AFRICAN STUDY** **Palesa Mokoni, Stephen Ekolu, Harry Quainoo** University of Johannesburg, South Africa
12:30pm - 12:45pm	**DURABILITY DESIGN OF UNDERGROUND CONCRETE STRUCTURES - MODELLING CHLORIDE PERMEATION THROUGH CONCRETE SECTION** **Paul Christopher Sandeford** GHD Pty Ltd, Australia

Session S28.A.3: Analysis and Design of Concrete Structures

Tuesday, 28/May/2019:
11:15am - 12:45pm

Session Chair: **Norbert Randl**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:15am - 11:30am	**DYNAMIC TESTS OF GRANDSTANDS IN HUNGARY** **Attila Vardai, Botond Madaras** ÉMI-TÜV SÜD Ltd., Hungary
11:30am - 11:45am	**EXPERIMENTAL STUDY ON SEISMIC BEHAVIOUR OF REINFORCED CONCRETE COLUMNS USING SPOT-WELDED SHEAR REINFORCEMENT UNITS** **Hiroto Takatsu** TAKENAKA Research and Development Institute, Japan
11:45am - 12:00pm	**STRUCTURAL PERFORMANCE OF STUDS USED AS PUNCHING SHEAR REINFORCEMENT** **Jan Bujnak** Peikko Group, Finland
12:00pm - 12:15pm	**GROUPS OF REINFORCING BAR ANCHORAGES – A COMPARISON OF THE CAPACITY IF CALCUATED AS END ANCHORAGE AND ADHESIVE ANCHOR** **Christoph Mahrenholtz[1], Rolf Eligehausen[2]** [1]JORDAHL GmbH; [2]Department of Civil and Environmental Engineering, University of Stuttgart
12:15pm - 12:30pm	**VARIANT DESIGN OF THE CONCRETE FRAME STRUCTURES (WEIGHT-STRENGTH ANALYSIS)** **Valerii Shmukler[1], Bogdan Demchyna[2], Leonid Vozniuk[2], Olena Petrova[1], Petro Reznik[1], Valerii Nikulin[3]** [1]O.M.Beketov National University of Urban Economy in Kharkiv, Ukraine; [2]Lviv Polytechnic National University, Lviv, Ukraine; [3]ALC "ZHILSTROJ- 2", Kharkiv, Ukraine
12:30pm - 12:45pm	**ANCHOR CHANNELS UNDER 3D-LOAD INTERACTION - NEW APPROACHES TO LOAD DISTRIBUTIONS AND DESIGN** **Dustin Konertz[1], Georg Kocur[2], Felix Clauß[1], Frank Häusler[2], Peter Mark[1]** [1]Ruhr University Bochum, Institute of Concrete Structures, Bochum, Germany; [2]HALFEN GmbH, Research-Development-Engineering, Anchoring Systems, Langenfeld, Germany

Session S28.A.4: Numerical Modelling

Tuesday, 28/May/2019:
11:15am - 12:45pm

Session Chair: **Luc R. Taerwe**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:15am - 11:30am	**GLOBAL MODELLING OF RC STRUCTURES: GLRC_HEGIS NONLINEAR CYCLIC MODEL FOR RC WALLS AND SLABS** **Miquel Huguet, Silvano Erlicher, Philippe Bisch** EGIS, France
11:30am - 11:45am	**NON-LINEAR FINITE ELEMENT ANALYSIS OF REINFORCED CONCRETE MEMBERS UNDER TORSION** **Tuan-Anh Nguyen[1,2], Quang-Huy Nguyen[1], Hugues Somja[1]** [1]Structural Engineering Research Group - INSA de Rennes, France; [2]Section of Structural Engineering - University of Transport and Communication, Vietnam
11:45am - 12:00pm	**DESIGN AND ANALYSIS OF REINFORCED CONCRETE DEEP BEAMS USING NLFEA** **Pim van der Aa, Ab van den Bos** DIANA FEA BV, Engineering, Delft, Netherlands
12:00pm - 12:15pm	**CORROSION EFFECTS IN PRESTRESSED CONCRETE BEAMS: EXPERIMENTAL TEST AND NON-LINEAR FINITE ELEMENT ANALYSIS** **Luis Saucedo Mora[2], Carmen Andrade[2], Beatrice Belletti[1], Francesca Vecchi[1], Stefano Zambonini[1], Jesus Rodriguez Santiago[3], Javier Sanchez Montero[2]** [1]University of Parma, Italy; [2]Institute Eduardo Torroja of Construction Sciences, Spain; [3]Polytechnic University of Madrid, Spain
12:15pm - 12:30pm	**FINITE ELEMENT ANALYSIS OF PUNCHING SHEAR OF RC SLABS: A HYBRID APPROACH FOR MODEL CALIBRATION** **Lorenzo Secci[1], Emanuele Teoni[1], Massimo Lapi[1], Maurizio Orlando[1], Antonio Ramos[2]** [1]Università degli Studi di Firenze, Italy; [2]CERIS, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal
12:30pm - 12:45pm	**DEVELOPMENT OF A TIMBER-PRECAST UHPFRC CONNECTION** **Milan Holý[1,2], Petr Tej[2], Lukáš Vráblík[1]** [1]Faculty of Civil Engineering, CTU Prague, Czech Republic; [2]Klokner Institute, CTU Prague, Czech Republic

Session S28.A.5: Fatigue and Cyclic Loads

Tuesday, 28/May/2019:
11:15am - 12:45pm

Session Chair: **Andrzej Nowak**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:15am - 11:30am	**HEAT GENERATION DURING FATIGUE TESTS ON CONCRETE SPECIMEN** **Matthias Bode, Steffen Marx** Institute of Concrete Construction, Leibniz University Hannover
11:30am - 11:45am	**TEMPERATURE AND HUMIDITY INDUCED DAMAGE PROCESSES IN CONCRETE DUE TO PURE COMPRESSIVE FATIGUE LOADING** **Martin Markert, Veit Birtel, Harald Garrecht** Materials Testing Institute, Germany
11:45am - 12:00pm	**INFLUENCE OF WATER-INDUCED DAMAGE MECHANISMS ON THE FATIGUE DETERIORATION OF HIGH-STRENGTH CONCRETE** **Christoph Tomann, Ludger Lohaus, Fadi Aldakheel, Peter Wriggers** Leibniz Universität Hanover, Germany
12:00pm - 12:15pm	**EXPERIMENTAL INVESTIGATION OF LOAD-INDUCED TEMPERATURE DEVELOPMENT IN UHPC SUBJECTED TO CYCLIC LOADING** **Melchior Deutscher[1], Ngoc Linh Tran[2], Silke Scheerer[1]** [1]TU Dresden, Faculty of Civil Engineering, Institut of Concrete Structures, Germany; [2]TU Darmstadt, Institut of Concrete Structures, Germany
12:15pm - 12:30pm	**FATIGUE DAMAGE OF HIGH-STRENGTH CONCRETE WITH BASALT AGGREGATE** **Tim Scheiden[1], Nadja Oneschkow[1], Stefan Löhnert[2], Rohan Patel[2]** [1]Institute of Building Materials Science, Leibniz University Hannover, Germany; [2]Institute of Mechanics and Shell Structures, Technische Universität Dresden, Germany
12:30pm - 12:45pm	**DIFFERENCES BETWEEN THE FATIGUE BEHAVIOUR OF HIGH-STRENGTH GROUT AND HIGH-STRENGTH CONCRETE** **Corinne Otto, Ludger Lohaus, Nadja Oneschkow** Leibniz Universität Hannover, Institute of Building Materials Science, Germany

Session S28.B.1: UHPC

Tuesday, 28/May/2019:
1:45pm - 3:15pm

Session Chair: **Beatrice Belletti**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:45pm - 2:00pm	**LOAD BEARING CAPACITY TESTS OF THIN WALLED STRUCTURES MADE FROM UHPFRC** **David Citek, Martin Krystov, Adam Citek, Jiri Kolisko** Klokner Institute, CTU in Prague, Czech Republic
2:00pm - 2:15am	**INFLUENCE OF FIBRE CONTENT VARIATION ON THE MECHANICAL PROPERTIES OF ULTRA-HIGH DUCTILE CEMENTITIOUS COMPOSITES** **Yichao Wang, Jiangtao Yu** College of Civil Engineering, Tongji University, Shanghai, P.R. China
2:15pm - 2:30pm	**DESIGN OF WAFFLE-SHAPED UHPFRC DECK SLAB FOR HIGHWAY BRIDGE** **Kimio Saito[1], Akiko Tabata[2], Yasumasa Soga[2], Masaru Fujishiro[1], Seisuke Muragishi[1]** [1]Kajima Corporation, Japan; [2]Hanshin Expressway Company Limited, Japan
2:30pm - 2:45pm	**FRACTURE MECHANICS APPROACH FOR ULTRA-HIGH PERFORMANCE CONCRETE STRUCTURAL ELEMENTS** **Sung-Gul Hong[1], Ji-Hyung Lee[1], Changbin Joh[2]** [1]Seoul National University, Korea, Republic of (South Korea); [2]KICT
2:45pm - 3:00pm	**EXPERIMENTAL AND NUMERICAL INVESTIGATIONS OF THE FATIGUE BEHAVIOR OF ULTRA-HIGH PERFORMANCE CONCRETE** **Sebastian Rybczynski[1,2], Gunnar Schaan[1,3], Maksym Dosta[2], Martin Ritter[3], Frank Schmidt-Döhl[1]** [1]Hamburg University of Technology, Institute of Materials, Physics and Chemistry of Buildings; [2]Hamburg University of Technology, Institute of Solids Process Engineering and Particle Technology; [3]Hamburg University of Technology, Electron Microscopy Unit
3:00pm - 3:15pm	**MECHANICAL PROPERTIES OF GLASS AND CARBON TEXTILE REINFORCED UHPC** **Tamás Mészöly, Sandra Ofner, Norbert Randl** Carinthia University of Applied Sciences, Austria

Session S28.B.2: Durability

Tuesday, 28/May/2019:
1:45pm - 3:15pm

Session Chair: **Lionel Linger**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:45pm - 2:00pm	**INFLUENCE OF CONCRETE PROPERTIES ON THE RESISTANCE AGAINST ABRASIVE IMPACT** **Frank Spörel** Federal Waterways Engineering and Research Institute, Germany
2:00pm - 2:15pm	**EFFECT OF NATURAL POZZOLANS ON THE DURABILITY PROPERTIES OF MORTARS AGAINST ACCELERATED CARBONATION AND CHLORIDE ATTACK** **Ali Akbar Ramezanianpour[1], Maziar Kazemian[1], Saeed Sedighi[1], Farnaz Bahmanzadeh[1], Radesh Amiri[1], Amir Mohammad Ramezanianpour[2]** [1]Amirkabir university of technology, Iran, Islamic Republic of; [2]The University of Tehran
2:15pm - 2:30pm	**THE INFLUENCE OF CARBONATION ON HYDROPHOBIC LAYERS IN CONCRETES WITH DIFFERENT BINDERS** **Melanie Groh, Jeanette Orlowsky** TU Dortmund University, Germany
2:30pm - 2:45pm	**EFFECT OF ARTIFICIAL POZZOLANS ON THE DURABILITY PROPERTIES OF MORTARS AGAINST ACCELERATED CARBONATION AND CHLORIDE ATTACK** **Ali Akbar Ramezanianpour[1], Saeed Sedighi[1], Maziar Kazemian[1], Farnaz Bahmanzadeh[1], Radesh Amiri[1], Amir Mohammad Ramezanianpour[2]** [1]Amirkabir university of technology, Iran, Islamic Republic of; [2]The University of Tehran
2:45pm - 3:00pm	**BULK HYDROPHOBIC CIVIL ENGINEERING CONCRETE FOR NORDIC CONDITIONS – FREEZE THAW ACTION** **Patrick Francis Rogers[1], Johan Silfwerbrand[2], Annika Gram[1], Anders Selander[3]** [1]RISE CBI, Research Institutes of Sweden AB, Drottning Kristinas väg 26, Stockholm, Sweden; [2]The Royal Institute of Technology (KTH), Department of Civil and Architectural Engineering, Brinellvägen 23, Stockholm, Sweden; [3]Cementa AB, Sweden, part of the HeidelbergCement Group
3:00pm - 3:15pm	**CORROSION BEHAVIOUR OF STEEL BAR TREATED WITH REALKALIZATION AND INHIBITOR** **Ji Zhang, Peng Zhu, Wenjun Qu** Tongji University, People's Republic of China

Session S28.B.3: Project Presentation

Tuesday, 28/May/2019:
1:45pm - 3:15pm

Session Chair: **Koichi Maekawa**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:45pm - 2:00pm	**NEO TANKS** **Alessandro Pasquale Fantilli[1], Giulio Gallo[2]** [1]Politecnico di Torino, Italy; [2]Gallo Consulting
2:00pm - 2:15pm	**THE PROBLEM OF IMPROVING THE METHODS FOR ESTIMATION THE BEARING CAPACITY OF PRECAST CONCRETE BEAMS BY SLOPING SECTIONS ON THE EXAMPLE OF THE RECONSTRUCTION OF THE BRIDGE IN VINNYTSIA** **Oleksandr Voitsekhivskyi[1], Denis Baida[1], Andriy Romanenko[2]** [1]Vinnytsia Natoinal Technical University, Ukraine; [2]LLC Gervin
2:15pm - 2:30pm	**NEW ACCELERATED TEST METHOD FOR DETERMINATION OF CHLORIDE THRESHOLD VALUES FOR CORROSION INITIATION IN REINFORCED CONCRETE** **Søren Lundsted Poulsen, Henrik Erndahl Sørensen** Danish Technological Institute, Denmark
2:30pm - 2:45pm	**PERFORMANCE BASED SPECIFICATIONS FOR GEOPOLYMER CONCRETE IN CHLORIDE ENVIRONMENTS** **Arnaud Castel[1], Amin Noushini[2]** [1]UNSW Sydney, Australia; [2]ROCLA Sydney, Australia
2:45pm - 3:00pm	**BEHAVIOUR OF HIGH STRENGTH PASTE PREPARED WITH METAKAOLIN AT ELEVATED TEMPERATURE** **Nabil Abdelmelek, Eva Eszter Lublóy** Budapest University of Technology and Economics, Budapest, Hungary

Session S28.B.4: Tunnels and Bridges

Tuesday, 28/May/2019:
1:45pm - 3:15pm

Session Chair: **Albert de la Fuente**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:45pm - 2:00pm	**RESEARCH ON THE IFC-BASED DATA EXCHANGE METHOD OF BIM INFORMATION FOR PRECAST CONCRETE SEGMENT** **Qingsong Fu, Xuefei Shi** Tongji University, Shanghai. China
2:00pm - 2:15pm	**INVESTIGATION OF THE ROTATIONAL STIFFNESS OF LONGITUDINAL JOINTS IN QUASI-RECTANGULAR SEGMENTAL TUNNEL LININGS** **Weixi Zhang[1], Xian Liu[2], Wouter De Corte[1], Luc Taerwe[1,2]** [1]Ghent University, Belgium; [2]Tongji University, China
2:15pm - 2:30pm	**APPROACHES TO MODELLING CARBONATION INDUCED CORROSION OF STEEL FIBRES IN PRECAST CONCRETE ROAD TUNNEL LINING** **Paul Christopher Sandeford** GHD Pty Ltd, Australia
2:30pm - 2:45pm	**ASSESSMENT OF THE BEARING CAPACITY REDUCTION OF FRC ELEMENTS SUBJECTED TO FIRE** **Jean M. Carpio[1], Ramoel Serafini[2], Dimas Rambo[2], Albert de la Fuente[1], Antonio Domigues de Figueiredo[2]** [1]Universitat Politècnica de Catalunya, Barcelona, Spain; [2]Universidade de São Paulo, São Paulo, Brazil
2:45pm - 3:00pm	**APPLICATION OF ARTIFICIAL NEURAL NETWORK IN PREDICTING MAXIMUM THERMAL CRACK WIDTH OF RC ABUTMENTS USING ACTUAL CONSTRUCTION DATA** **Mehboob Rasul[1], Akira Hosoda[2]** [1]PhD Student, Graduate School of Urban Innovation, Yokohama National University, Japan; [2]Professor, Graduate School of Urban Innovation, Yokohama National University, Japan
3:00pm - 3:15pm	**THERMAL EFFECTS IN THE CONCRETE BOX GIRDER DURING CONSTRUCTION STAGE** **Czesław Machelski[1], Mariusz Pustelnik[2]** [1]Faculty of Civil Engineering, Wrocław University of Science and Technology, Wrocław, Poland; [2]Pracownia Projektowa MOSTOPOL Sp. z o.o., Poland

Session S28.B.5: Fatigue and Cyclic Loads

Tuesday, 28/May/2019:
1:45pm - 3:15pm

Session Chair: **Peter Mark**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:45pm - 2:00pm	**INVESTIGATION OF LOCALIZED DAMAGE INDICATORS OF A CARBON SHORT-FIBRE REINFORCED HIGH PERFORMANCE CONCRETE UNDER DYNAMIC AND FLEXURAL LOAD** **Philipp Lauff[1], Manuel Raith[2], Christian Große[2], Matthias Rutzen[3], Dirk Volkmer[3], Lisa Reischmann[4], Ursula Weiß[4], Malte Peter[4], Oliver Fischer[1]** [1]Chair of Concrete and Masonry Structures, Technical University Munich, Germany; [2]Chair of Non-destructive Testing, Technical University Munich, Germany; [3]Chair of Solid State and Materials Chemistry, University of Augsburg, Germany; [4]Research Unit Applied Analysis, University of Augsburg, Germany
2:00pm - 2:15pm	**PULL – OUT TESTS OF CARBON AND HIGH-STRENGTH STEEL MICROFIBERS IN A CEMENT-BASED MATRIX** **Niklas Schäfer, Rolf Breitenbücher** Ruhr-University Bochum, Germany
2:15pm - 2:30pm	**FATIGUE BEHAVIOUR OF FASTENINGS UNDER COMBINED STATIC AND DYNAMIC LOADING** **Thilo Froehlich, Dieter Lotze** Materials Testing Institute University of Stuttgart, Germany
2:30pm - 2:45pm	**FATIGUE BEHAVIOUR OF FRP BARS ENCASED IN CONCRETE** **Ondrej Janus, František Girgle, Vojtech Kostiha, Petr Stepanek, Mohamad Mansour** Brno University of Technology, Czech Republic
2:45pm - 3:00pm	**THREE-DIMENSIONAL FINITE ELEMENT ANALYSIS OF THE CYCLIC RESPONSE OF RC COLUMNS** **Ghassan Fawaz, Juan Murcia-Delso** University of Texas at Austin, United States of America
3:00pm - 3:15pm	**DEGRADATION PROCESSES OF UHPFRC UNDER CYCLIC TENSILE LOADING** **Jan-Paul Lanwer[1], Vincent Oettel[1], Martin Empelmann[1], Svenja Höper[2], Ursula Kowalsky[2], Dieter Dinkler[2]** [1]TU Braunschweig, iBMB, Division of Concrete Construction; [2]TU Braunschweig, Institute of Structural Analysis

Session S28.C.1: Shear

Tuesday, 28/May/2019:
3:45pm - 5:45pm

Session Chair: **Valter J. G. Lucio**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:45pm - 4:00pm	**MEASURING AND MODELLING SHEAR CRACK WIDTHS AND SLIPS IN A SHEAR TEST OF A MEMBER WITH STIRRUPS** **Jack Poldon[1], Evan Bentz[2], Neil Hoult[1]** [1]Queens University, Canada; [2]University of Toronto, Canada
4:00pm - 4:15pm	**SHEAR IN CONTINUOUS SLAB SEGMENTS WITHOUT SHEAR REINFORCEMENT UNDER DISTRIBUTED LOADS** **Viviane Felizitas Adam[1], Martin Classen[1,2], Matthias Hillebrand[1], Josef Hegger[1]** [1]RWTH Aachen University, Germany; [2]Magnel Laboratory, Ghent University, Ghent, Belgium
4:15pm - 4:30pm	**EXPERIMENTAL STUDY OF CONCRETE COMPOSITE BEAMS SUBJECTED TO SHEAR** **Lisbel Rueda García, José Luis Bonet Senach, Pedro Francisco Miguel Sosa** Polytechnic University of Valencia, Spain
4:30pm - 4:45pm	**HOW CAN BE OBTAINED THE PLASTIC SHEAR FAILURE OF THE RC ELEMENTS?** **Vitalii P. Mitrofanov[1], Natali M. Pinchuk[2], Pavel B. Mitrofanov[2]** [1]Center for Advanced Design Methods of Concrete Structures; [2]Poltava National Technical University
4:45pm - 5:00pm	**AN ANALYTICAL STUDY ON EFFECTS OF LOADING HISTORY TO SHEAR BEHAVIOR OF RC BEAMS UNDER CYCLIC LOADING** **Kyoko Takeda, Yasuhiko Sato** Waseda University, Japan
5:00pm - 5:15pm	**SHEAR STRENGTH OF POINT LOADED NON-SLENDER MEMBERS** **Elif Daniş, Almıla Uzel** Yeditepe University, Turkey
5:15pm - 5:30pm	**SURROGATE MODELING IN STOCHASTIC ANALYSIS OF CONCRETE GIRDERS FAILING IN SHEAR** **Lukas Novak, Drahomir Novak** **Brno University of Technology, Czech** Republic
5:30pm - 5:45pm	**FATIGUE OF SHEAR REINFORCEMENT IN PRESTRESSED CONCRETE I- AND T-BEAMS UNDER CYCLIC LOADING** **Matthias Hillebrand[1], Viviane Adam[1], Martin Classen[1,2], Josef Hegger[1]** [1]RWTH Aachen University, Germany; [2]Magnel Laboratory, Ghent University, Ghent, Belgium

Session S28.C.2: Durability

Tuesday, 28/May/2019:
3:45pm - 5:45pm

Session Chair: **Izabela Hager**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:45pm - 4:00pm	**FRENCH NATIONAL PROJECT "PERFDUB" ON PERFORMANCE-BASED APPROACH: MAPPING OF DURABILITY INDICATORS RESULTS ON EXTENDED CONCRETE COMPOSITIONS** **Jonathan Mai-Nhu[1], Patrick Rougeau[1], Olivier Collin[2], Emmanuel Roziere[3], François Cussigh[4], Benoit Thauvin[5], Philippe Turcry[6], Michael Dierkens[7], Damien Rogat[8]** [1]CERIB, France; [2]LafargeHolcim, France; [3]GeM-Centrale Nantes, France; [4]Vinci Construction France, France; [5]CEREMA, Saint-Brieuc, France; [6]LaSIE, UMR 7356 CNRS, Université de La Rochelle, France; [7]CEREMA, Lyon, France; [8]Sigma Béton, L'Isle d'Abeau, France
4:00pm - 4:15pm	**DETERMINING A GLOBAL RESISTANCE FACTOR FOR SIMPLY SUPPORTED FIRE EXPOSED RC SLABS** **Thomas Thienpont, Ruben Van Coile, Wouter De Corte, Robby Caspeele** Department of Structural Engineering, Ghent University, Ghent, Belgium
4:15pm - 4:30pm	**INFLUENCES OF CURRENT DENSITY ON THE SPATIAL STEEL CORROSION AND RELIABILITY OF CORROSION-AFFECTED RC BEAMS** **Sopokhem Lim, Mingyang Zhang, Mitsuyoshi Akiyama** Waseda University, Japan
4:30pm - 4:45pm	**CHECKING OF STRUCTURAL SYSTEM ROBUSTNESS BASED ON PSEUDO-STATIC FULL PROBABILISTIC APPROACH** **Viktar Tur[1,2], Andrei Tur[1], Stanislav Derechennik[1]** [1]Brest State Technical University, Belarus; [2]Bialystok University of Technology, Poland
4:45pm - 5:00pm	**BASIC STUDY ON REACTION PRODUCTS IN ASR WITH RAMAN SPECTROSCOPY** **Yohei Hamura[1], Heng Lee[2], Naoshi Ueda[3], Taito Miura[4], Leon Black[5], Satoshi Takaya[2]** [1]Shimadzu Techno-Reaserch Inc., Japan; [2]Kyoto University; [3]Kansai University; [4]Nagoya University; [5]University of Leeds
5:00pm - 5:15pm	**COMPOSITION AND STRUCTURE OF LAYERED RUST OF REINFORCEMENT FORMED IN CONCRETE STRUCTURES** **Ryosuke Saito[1], Satoshi Takaya[2], Yohei Hamura[3]** [1]Shimizu Co., Ltd., Japan; [2]Kyoto Univ., Japan; [3]Shimadzu Techno-Research, Inc
5:15pm - 5:30pm	**PILOT COMPARISON OF SAFETY FORMATS FOR RELIABILITY ASSESSMENT OF RC STRUCTURES** **Miroslav Sykora[1], Jan Cervenka[2], Vladimir Cervenka[2], Jan MIcoch[1], Drahomir Novak[3], Lukas Novak[3]** [1]Czech Technical University in Prague, Klokner Institute, Czech Republic; [2]Cervenka Consulting, Prague, Czech Republic; [3]Brno University of Technology, Faculty of Civil Engineering, Czech Republic
5:30pm - 5:45pm	**CONSIDERATION OF ENVIRONMENTAL IMPACT FOR PERFORMANCE-BASED DURABILITY DESIGN OF CONCRETE STRUCTURES EXPOSED TO CHLORIDES** **Amir Rahimi** Federal Waterways Engineering and Research Institute, Germany

Session S28.C.3: Materials

Tuesday, 28/May/2019:
3:45pm - 5:45pm

Session Chair: **Sung-Gul Hong**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:45pm - 4:00pm	**BASALT FRP PRODUCTION – MARKET ANALYSIS AND A STATE-OF-THE-ART REPORT** **Andre Schmidt[2], Raphael Kampmann[1], Srichand Telikapalli[1], Alvaro Ruiz Emparanza[3], Francisco De Caso[3]** [1]FAMU-FSU College of Engineering, United States of America; [2]Fachschule Muenster, Germany; [3]University of Miami, United States of America
4:00pm - 4:15pm	**ULTRA THIN HIGH-PERFORMANCE POLYMER MODIFIED CEMENT LAMINATES** **KONSTANTINOS ZAVLIARIS** CONCRETAN LLC, Greece
4:15pm - 4:30pm	**CONCRETE MIX DESIGN USING MACHINE LEARNING** **Patryk Ziolkowski, Maciej Niedostatkiewicz** Gdansk University of Technology, Poland
4:30pm - 4:45pm	**TESTING OF 10-WIRE STRAND FOR THE CRACK RESISTANCE AND BOND STRENGTH** **Lev Markovich Zaretsky, Rinat Kamilevich Ismagilov** Armasteel Llc, Russian Federation
4:45pm - 5:00pm	**INVESTIGATION OF MOISTURE EXCHANGE AND SHRINKAGE OF CONCRETE WITH DIFFERENT WATER-CEMENT RATIO** **Marek Vinkler[1], Jan L. Vítek[1,2]** [1]Faculty of Civil Engineering CTU in Prague, Czech Republic; [2]Metrostav, a.s., Czech Republic
5:00pm - 5:15pm	**REACTIVE POWDER CONCRETE USING LOW WATER DEMAND BINDERS** **Vyacheslav R. Falikman, Vsevolod Yu. Sorokin** Structural Concrete Association
5:15pm - 5:30pm	**SHEAR TRANSFER MECHANISM IN ENGINEERED CEMENTITIOUS COMPOSITES SUBJECTED TO PUSH-OFF LOADS** **Pei-Zhi Zhao[1,2], Shao-Bo Kang[1,2]** [1]Key Laboratory of New Technology for Construction of Cities in Mountain Area (Chongqing University); [2]School of Civil Engineering, Chongqing University
5:30pm - 5:45pm	**ALKALI ACTIVATED SLAG PASTE AND MORTAR: MECHANICAL PROPERTIES AND CHLORIDE DIFFUSION** **Mohsen Jafari Nadoushan[1], Ali Akbar Ramezanianpour[2]** [1]Department of Civil & Environmental Engineering, Amirkabir University of Technology; [2]Concrete Technology and Durability Research Center, Department of Civil & Environmental Engineering, Amirkabir University of Technology

Session S28.C.4: Numerical Modelling

Tuesday, 28/May/2019:
3:45pm - 5:45pm

Session Chair: **Krystyna Nagrodzka-Godycka**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:45pm - 4:00pm	**VALIDATION OF BEAMS FOR MC2020 USING DIANA FEA** **Ab van den Bos, Pim van der Aa** DIANA FEA BV, Engineering, Delft, Netherlands
4:00pm - 4:15pm	**SIMULATING NON AXIS SYMMETRICAL PUNCHING FAILURE OF RC SLABS USING A LUMPED ELEMENT APPROACH** **Andri Setiawan, Robert Vollum, Lorenzo Macorini** Imperial College London, United Kingdom
4:15pm - 4:30pm	**MODELLING AND PARAMETRIC STUDY OF STEEL FIBER REINFORCED HIGH STRENGTH CONCRETE COMPOSITE SHEAR WALLS** **Xilin Lu[1], Ying Zhang[1,2], Hongmei Zhang[1]** [1]State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University, Shanghai 200092, China; [2]College of Civil Engineering, Shandong Jianzhu University, Shandong Province 250101, China
4:30pm - 4:45pm	**DESCRIPTION AND ANALYSES OF PULL-OUT BEHAVIOUR OF HOOKED STEEL FIBRES EMBEDDED IN HIGH PERFORMANCE CONCRETE USING PHASE-FIELD MODELLING** **Gregor Gebuhr[1], Mangesh Pise[2], Mohammed Sarhil[2], Steffen Anders[1], Dominik Brands[2], Jörg Schröder[2]** [1]Lehrstuhl Werkstoffe im Bauwesen, Bergische Universität Wuppertal, Germany; [2]Institut für Mechanik, Fakultät für Ingenieurwissenschaften, Universität Duisburg-Essen, Germany
4:45pm - 5:00pm	**FIBRE OPTICS FOR MEASURING THE LOAD TRANSMISSION OF ANCHOR CHANNELS INTO CONCRETE** **Georg Kocur[1], Dustin Konertz[2], Felix Clauß[2], Peter Mark[2], Frank Häusler[1]** [1]HALFEN GmbH, Research-Development-Engineering, Anchoring Systems, Langenfeld, Germany; [2]Ruhr-Universität Bochum, Institute of Concrete Structures, Bochum, German
5:00pm - 5:15pm	**EXPERIMENTAL AND NUMERICAL INVESTIGATION ON THE BEHAVIOUR OF THE JOINT BETWEEN UCSB AND CONCRETE FILLED STEEL SQUARE COLUMN** **Clémence Lepourry[1,2], Piseth Heng[1], Hugues Somja[1], Franck Palas[2]** [1]INSA Rennes, France; [2]Ingenova, Saint jacques de la lande
5:15pm - 5:30pm	**NUMERICAL VALIDATION OF A DOWEL ACTION TRIPLE-BLOCK TEST SET-UP** **Isabella Giorgia Colombo, Matteo Colombo, Katherina Flores Ferreira, Paolo Martinelli, Marco di Prisco** Politecnico di Milano, Italy
5:30pm - 5:45pm	**NUMERICAL MODELLING OF CONCRETE REINFORCED WITH FIBERS COMING FROM END-OF-LIFE TIRES** **Małgorzata Pajak, Małgorzata Krystek** Silesian University of Technology, Poland

Session S28.C.5: Dowels and Anchors

Tuesday, 28/May/2019:
3:45pm - 5:45pm

Session Chair: **Piotr Krajewski**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:45pm - 4:00pm	**BEHAVIOUR OF THIN PUZZLE SHAPED COMPOSITE DOWELS IN MULTI LAYER WALL ELEMENTS** **Fabian Penkert, Matthias Pahn** Technische Universität Kaiserslautern, Germany
4:00pm - 4:15pm	**USEFUL SHEAR TESTS FOR COMPOSITE REBARS AND DOWELS** **André Weber** Schoeck Bauteile GmbH, Germany
4:15pm - 4:30pm	**FRP SHEAR DOWELS AS ALTERNATIVE REINFORCEMENT OF CONCRETE-TO-CONCRETE INTERFACE** **Đorđe Čairović, Martin Zlámal, Jakub Venclovský, František Girgle, Pavel Šulák, Petr Štěpánek** Brno University of Technology, Faculty of Civil Engineering, Czech Republic
4:30pm - 4:45pm	**TENSILE TESTS OF ANCHOR PLATES WITH HEADED ANCHORS** **Jan Bujnak, Jakub Mecar** Peikko Group, Finland
4:45pm - 5:00pm	**ANCHOR DISPLACEMENT BEHAVIOUR DURING SIMULTANEOUS LOAD AND CRACK CYCLING** **Philipp Mahrenholtz[1], Rolf Eligehausen[2]** [1]Stanley Black & Decker, Dewalt Anchors, Frankfurt, Germany, formerly Dep. of Civil and Environmental Engineering, University of Stuttgart, Germany; [2]Department of Civil and Environmental Engineering, University of Stuttgart, Germany
5:00pm - 5:15pm	**TENSILE TESTS OF SHORT HEADED ANCHOR BARS** **Jan Bujnak[1], Frantisek Bahleda[2], Matus Farbak[2]** [1]Peikko Group, Finland; [2]University of Zilina, Slovakia
5:15pm - 5:30pm	**MODELING BAR SLIP AND PULLOUT CAPACITY OF STRAIGHT ANCHORAGES** Juan Murcia-Delso University of Texas at Austin, United States of America
5:30pm - 5:45pm	**ANALYSIS OF STATIC WORK OF GRC CONCRETE CLADDING PANELS FIXED ON PIN ANCHORS** **Ryszard Skiba, Aleksander Byrdy** Cracow University of Technology, Poland

29 May 2019 (Wednesday)

Session S29.A.1: Shear

Wednesday, 29/May/2019:
11:00am - 12:30pm

Session Chair: **Ana Lucia El Debs**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:00am - 11:15am	**SHEAR TEST ON CONTINUOUS REINFORCED CONCRETE BEAMS WITH IMPOSED PLASTIC ROTATION** **Andrea Monserrat López, Pedro Francisco Miguel Sosa, José Luis Bonet Senach** Universitat Politècnica de València, Spain
11:15am - 11:30am	**MODELLING THE ULTIMATE SHEAR BEHAVIOUR OF DEEP BEAMS WITH WEB OPENINGS** **Jian Liu, Boyan Mihaylov** University of Liege, Belgium
11:30am - 11:45am	**ASSESSMENT OF SHEAR STRENGTH OF DEEP RC BEAMS AND BEAMS WITH SHORT SHEAR SPAN WITHOUT TRANSVERSE REINFORCEMENT.** **Jens-Christian Kragh-Poulsen[1], Mogens Peter Nielsen[2], Per Goltermann[2]** [1]COWI A/S, Denmark; [2]Technical University of Denmark, Department of Civil Engineering, Denmark
11:45am - 12:00pm	**KINEMATICS-BASED APPROACH FOR COMPLETE SHEAR BEHAVIOUR OF DEEP FRC BEAMS** **Boyan Mihaylov[1], Jian Liu[1], Karolina Tvrznikova[2]** [1]University of Liege, Belgium; [2]Doka GmbH, Austria
12:00pm - 12:15pm	**AN ANALYSIS OF THE SHEAR TRANSFER ACTIONS IN RC SHORT SPAN BEAMS USING CRACK KINEMATICS RECORDED VIA DIC** **Marcus Vinicius Filiagi Pastore, Robert Lars Vollum** Imperial College London, United Kingdom
12:15pm - 12:30pm	**SHEAR STRENGTH ENHANCEMENT OF RC BEAMS LOADED IN THE TENSION FACE.** **Abobakr Elwakeel, Robert Vollum** Imperial College London, United Kingdom

Session S29.A.2: Prefabrication

Wednesday, 29/May/2019:
11:00am - 12:30pm

Session Chair: **David Fernández-Ordóñez**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:00am - 11:15am	**EXPERIMENTAL INVESTIGATION OF KEYED SHEAR JOINTS SUBJECTED TO A COMBINATION OF COMPRESSION AND SHEAR LOADS** **Jesper Harrild Sørensen, Linh Cao Hoang, Peter Noe Poulsen, Morten Andersen Herfelt** Technical University of Denmark, Denmark
11:15am - 11:30am	**EXPERIMENTAL INVESTIGATION OF THE TORSIONAL BEARING BEHAVIOR OF SEGMENT TOWERS** **Steffen Hartwig, Steffen Marx** Leibniz Universität Hannover, Germany
11:30am - 11:45am	**GROUTED SEGMENT JOINTS FOR STRUCTURES MADE OF ULTRA-HIGH PERFORMANCE CONCRETE** **Marcel Wichert, Henrik Matz, Martin Empelmann** iBMB, Division of Concrete Construction, TU Braunschweig, Germany
11:45am - 12:00pm	**A NEW ALTERNATIVE FOR TRANSFER OF COMPRESSIVE STRESSES IN PRECAST CONCRETE CONNECTIONS** **Mounir Khalil El Debs** University of Sao Paulo, Brazil
12:00pm - 12:15pm	**EXPERIMENTAL INVESTIGATION ON STRUCTURAL BEHAVIOR OF A STACKED REINFORCED-CONCRETE ARCH** **Jiao-Long Zhang[1], Ji-Bin Zhao[1], Xian Liu[1,2], Shou-Chao Jiang[1,3], Zhen-Hua Yang[1], Hua-Cong Jiang[1]** [1]College of Civil Engineering, Tongji University, Shanghai, China; [2]Key Laboratory of Performance Evolution and Control for Engineering Structures, Ministry of Education, Tongji University, Shanghai, China; [3]State Key Laboratory for Disaster Reduction in Civil Engineering, Tongji University, Shanghai, China
12:15pm - 12:30pm	**STUDY ON SEISMIC PERFORMANCE OF SELF-CENTERING PRECAST CONCRETE FRAMES WITH HYSTERETIC DAMPER** **Yadong Li[1], Fangfang Geng[2], Youliang Ding[1]** [1]College of Civil Engineering, Southeast University, Nanjing, China; [2]School of Architecture Engineering, Nanjing Institute of Technology, Nanjing, China

Session S29.A.3: Project Presentation

Wednesday, 29/May/2019:
11:00am - 12:30pm

Session Chair: **Hugo Corres Peiretti**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:00am - 11:15am	**KARLA TOWER - A NEW TALL BUILDING FOR SWEDEN** **Karl Micallef, Dmitri Jajich, Stuart Marsh** Skidmore, Owings and Merrill (Europe) LLP, United Kingdom
11:15am - 11:30am	**REHABILITATION OF THE BUILDING COMPLEX TRINITY IN BRATISLAVA, SLOVAKIA** **Milos Zich[1], Jan Novacek[1], Vladimir Paulicka[2], Martin Benko[3]** [1]Strasky, Husty and Partners, Czech Republic; [2]PRO TP 06, Slovakia; [3]Metrostav Slovakia
11:30am - 11:45am	**UHPC-BRIDGE: DESIGN AND BUILT OF A LIGHTWEIGHT AND SLENDER FOOTBRIDGE ACCORDING TO NEW DAFSTB-GUIDELINE** **Hermann Weiher, Diego Lozano, Steffen Lindner** matrics engineering GmbH, Germany
11:45am - 12:00pm	**WARSAW HUB - USE OF HIGH STRENGTH REINFORCEMENT IN HIGH RISE BUILDINGS** **Florian Hogger[1], Dawid Rewers[2]** [1]Stahlwerk Annahuette, Max Aicher GmbH & Co. KG, Germany; [2]ATM Sp. z o.o., ul. Dr Olgi Lilien 7, Poland
12:00pm - 12:15pm	**CONSTRUCTION OF THE WASHIMI BRIDGE** **Masamichi Yoshino[1], Akira Morohashi[1], Masaru Imashioya[2]** [1]Sumitomo Mitsui Construction Co., Ltd., Japan; [2]Central Nippon Expressway Co., Ltd., Japan
12:15pm - 12:30pm	**CIRCULAR BRIDGE AT REEVESLUIS KAMPEN, THE NETHERLANDS.** **Sonja Fennis[1], Gert Visser[2], Evert van Vliet[3]** [1]Rijkswaterstaat, the Netherlands; [2]Volker Infra; [3]Spanbeton

Session S29.A.4: FRP, SRP and Textiles

Wednesday, 29/May/2019:
11:00am - 12:30pm

Session Chair: **Vyacheslav R. Falikman**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:00am - 11:15am	**NEW PERSPECTIVES FOR DESIGN OF LIGHTWEIGHT STRUCTURES BY USING TEXTILE REINFORCED CONCRETE** **Patrick Valeri, Miguel Fernández Ruiz, Aurelio Muttoni** Ecole Polytechnique Fédérale de Lausanne, Switzerland
11:15am - 11:30am	**THE EFFECT OF THE FREE SPECIMEN LENGTH ON THE TENSILE STRENGTH OF BASALT FRP REBARS** **Raphael Kampmann[1], Andre Schmidt[2], Srichand Telikapalli[1], Alvaro Ruiz Emparanza[3]** [1]FAMU-FSU College of Engineering, United States of America; [2]Fachhochschule Muenster, Germany; [3]University of Miami, United States of America
11:30am - 11:45am	**EFFECT OF CURING TEMPERATURE ON BOND OF GFRP BARS IN CONCRETE** **Colin van Niejenhuis[1], Maria Anna Polak[1], Carolyn Hansson[2]** [1]Department of Civil and Environmental Engineering, University of Waterloo, Waterloo, Canada; [2]Department of Mechanical and Mechatronics Engineering, University of Waterloo, Waterloo, Canada
11:45am - 12:00pm	**BOND ANALYSIS OF GFRP AND STEEL REINFORCEMENT TO CONCRETE** **Damian Szczech, Renata Kotynia** Lodz University of Technology, Poland
12:00pm - 12:15pm	**INVESTIGATIONS ON THE BOND BEHAVIOUR OF TEXTILES WITH VARIOUS COATINGS IN TRC** **Markus Beßling, Jeanette Orlowsky** TU Dortmund University, Germany
12:15pm - 12:30pm	**SPLITTING FAILURE MODE IN TEXTILE REINFORCED CONCRETE** **Philipp Preinstorfer, Johann Kollegger** TU Wien, Austria

Session S29.A.5: Poster Presentations

Wednesday, 29/May/2019:
11:00am - 12:30pm

Session Chair: **Łukasz Krawczyk**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

11:00am - 11:06am	**EXPERIMENTAL TESTS AND NUMERICAL STUDY OF RC BEAMS STRENGTHENED WITH EXTERNAL TENDONS** **Szymon Seręga[1], Dariusz Henryk Faustmann[2]** [1]Cracow University of Technology; [2]non-associated, Poland
11:06am - 11:12am	**EXPERIENCE OF FULL-SCALE EXPERIMENTAL INVESTIGATION OF FLAT GIRDERLESS SLAB WITH LOCAL REINFORCING** **Igor Vladyslavovich Shekhovtsov, Alexey Vladimirovich Bondarenko, Vladyslav Igorevich Shekhovtsov, Svetlana Viktorovna Petrash** Odessa State Academy of Civil Engineering and Architecture, Ukraine
11:12am - 11:18am	**PREDICTION OF ULTIMATE CAPACITY OF FRP REINFORCED CONCRETE COMPRESSION MEMBERS** **Maria Włodarczyk, Dominika Trofimczuk** Warsaw University of Technology, Poland
11:18am - 11:24am	**VERY LOW CARBONATION DEPTH FOUND UNDER ORDINARY CEMENT RENDER AT TWO OLD CONCRETE BRIDGES IN SLOVAKIA** **Peter Paulík[1], Ivan Janotka[2], Michal Bačuvčík[2], Katarína Gajdošová[1]** [1]Faculty of Civil Engineering, Slovak University of Technology, Bratislava, Slovakia; [2]Testing and Research Institute, Bratislava, Slovakia
11:24pm - 11:30pm	**CORRELATION BETWEEN 4-POINT BENDING TEST AND MONTEVIDEO TEST FOR THE CHARACTERIZATION OF FRC** **Valentina Cornelius, Daniel Hasard, Mariano Neme, Miguel Pedrón, Santiago Riveiro, Iliana Rodríguez, Luis Segura-Castillo** Universidad de la República, Uruguay
11:30am - 11:36am	**A MODEL OF THE MOMENT-CURVATURE RELATIONSHIP FOR REINFORCED CONCRETE BEAMS STRENGTHENED UNDER LOAD** **Jacek Korentz** University of Zielona Góra, Poland
11:36am - 11:42am	**EVOLUTION OF APPARENT COEFFICIENT OF THERMAL EXPANSION OF EARLY-AGE CONCRETE CONTAINING HIGH VOLUMES OF GGBFS IN THE BINDER** **Di Qiao, Akiko Ogawa, Masaro Kojima, Daijiro Tsuji** Takenaka Research&Development Institute, Takenaka Corporation, Japan

11:42am - 11:48am	**EXAMPLES OF DEFECTS OF PRE-TENSIONED CONCRETE ROOF BEAMS IN POLAND** **Jacek Hulimka, Rafal Krzywon** **Silesian University of Technology, Poland**
11:48am - 11:54am	**PROPERTIES OF CONCRETE OBTAINED FROM RC BUILDING CONSTRUCTED IN 1967** **Hideo Araki** Hiroshima Institute of Technology, Japan
11:54am - 12:00pm	**MODELLING THE COUPLED TRANSPORT CARBONATION-CHLORIDE IN CONCRETE BY MUTLTISCALE APPROACH** **Mohamad ACHOUR[1], Ouali AMIRI[1], François BIGNONNET[1], Emmanuel ROZIERE[2]** [1]University of Nantes, France; [2]Centrale Nantes, France
12:00pm - 12:06pm	**RHEOLOGICAL BEHAVIOUR OF EARTHEN COMPOSITES MEASURED BY SQUEEZE FLOW** **Philippe Poullain** Université de Nantes, France
12:06pm - 12:12pm	**QUALITY CONTROL OF SCC DURING PRECAST OF STEEL-SHELL CONCRETE IMMERSED TUBE USED IN SHENZHONG LINK** **Shengnian Wang[1,2], Huang Lv[2,3], Jianbo Xiong[1,2], Zhihong Fan[1,2], Junjie Zeng[1,2]** [1]CCCC Fourth Harbor Engineering Institute Co., Ltd., PRC; [2]Key Laboratory of Harbor and Marine Structure Durability Technology, Ministry of Communications, PRC; [3]CCCC Fourth Harbor Engineering Co., Ltd., PRC
12:18pm - 12:18pm	**PILOT INVESTIGATION INTO CRACK BRIDGING BEHAVIOUR OF DIFFERENT TYPES OF HIGH PERFORMANCE MICROFIBRES UNDER REVERSED TENSION-COMPRESSION LOADING** **Majid Ranjbarian, Viktor Mechtcherine** Dresden University of Technology, Germany
12:18pm - 12:24pm	**SHEAR CAPACITY OF STEEL FIBRE REINFORCED CONCRETE BEAMS** **Belkis Filian Abad[1], Eva O.L. Lantsoght[1], Yuguang Yang[2]** [1]Politecnico, Universidad San Francisco de Quito, Quito, Ecuador; [2]Concrete Structures, Delft University of Technology, Delft, The Netherlands

Session S29.B.1: Shear

Wednesday, 29/May/2019:
1:30pm - 3:00pm

Session Chair: **Piotr Noakowski**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:30pm - 1:45pm	**FINITE ELEMENT ANALYSIS OF SHEAR BEHAVIOUR OF CONCRETE SLABS PARTIALLY SUPPORTED ON WALLS** **Graeme J Milligan, Maria Anna Polak** University of Waterloo, Canada
1:45pm - 2:00am	**SHEAR ENHANCEMENT IN RC BEAMS WITH CONCOMITANT LOADS NEAR AND FAR FROM SUPPORTS** **Marcus Vinicius Filiagi Pastore, Robert Lars Vollum** Imperial College London, United Kingdom
2:00pm - 2:15pm	**PUNCHING STRENGTH OF FLAT SLABS WITH SHEAR REINFORCEMENT: EXPERIMENTAL INVESTIGATIONS WITH VARYING SHEAR REINFORCEMENT RATIOS** **Philipp Schmidt, Dominik Kueres, Sven Bosbach, Josef Hegger** RWTH Aachen University, Institute of Structural Concrete, Germany
2:15pm - 2:30pm	**COMPARISON BETWEEN TEST RESULTS AND PREDICTED LOAD CAPACITY OF VERY SHORT CORBELS** **Łukasz Krawczyk, Tadeusz Urban** Lodz University of Technology, Poland
2:30pm - 2:45pm	**THE CONCEPT FOR DETERMINING PUNCHING SHEAR CAPACITY OF LWAC SLABS WITHOUT SHEAR REINFORCEMENT** **Łukasz Sowa, Michał Gołdyn, Łukasz Krawczyk, Tadeusz Urban** Lodz University of Technology, Poland
2:45pm - 3:00pm	**SHEAR BEHAVIOUR OF UHPC BEAMS – EFFECT OF FIBRES AND STIRRUPS** **Tamás Mészöly, Norbert Randl** Carinthia University of Applied Sciences, Austria

Session S29.B.2: Prefabrication

Wednesday, 29/May/2019:
1:30pm - 3:00pm

Session Chair: **Bin Zhao**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:30pm - 1:45pm	**HEAT TREATMENT AND SHRINKAGE STEERING OF PRECAST THIN WALLED CONCRETE TUBES** **Jasmin Tkocz, Peter Mark** Ruhr University Bochum, Germany
1:45pm - 2:00am	**THE INFLUENCE OF TOLERANCES ON THE LOAD BEARING CAPACITY OF LOOPED WIRE ROPE CONNECTIONS** **Henrik Broener Joergensen** University of Southern Denmark, Denmark
2:00pm - 2:15pm	**ORTHOGONAL ARRANGEMENT OF EFFECTIVE LATTICE PUNCHING SHEAR REINFORCEMENT** **Johannes Furche[1], Philipp Schmidt[2]** [1]Filigran Trägersysteme GmbH & Co. KG, Germany; [2]RWTH Aachen University, IMB, Germany
2:15pm - 2:30pm	**CONTRASTIVE ANALYSIS ON SEISMIC PERFORMANCE BETWEEN CAST-IN-SITU AND PRECAST RC FRAME STRUCTURE** **Xin Li, Bin Zhao, Xilin Lu** Tongji University, People's Republic of China
2:30pm - 2:45pm	**TEST OF HIGH-RISE WALL COMPOSED OF PREFABRICATED RC PANELS UNDER FIRE LOADING** **Duc Toan Pham, Nicolas Pinoteau, Benoît-Louis Marie-Jeanne, Pierre Pimienta, Romain Mège** Université Paris-Est, Centre Scientifique et Technique du Bâtiment (CSTB), France
2:45pm - 3:00pm	**MODELING OF PRECAST COLUMNS WITH INNOVATIVE MULTI-SPIRAL REINFORCEMENT** **Petr Havlásek, Milan Jirásek, Zdeněk Bittnar** Department of Mechanics, Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

Session S29.B.3: Prestressed Concrete Structures

Wednesday, 29/May/2019:
1:30pm - 3:00pm

Session Chair: **Renata Kotynia**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:30pm - 1:45pm	**DYNAMIC RESISTANCE AND RATIONAL DESIGN OF RAILWAY PRESTRESSED CONCRETE SLEEPERS** **Sakdirat Kaewunruen[1], Dan Li[1], Alex Remennikov[2], Tetsuya Ishida[3]** [1]University of Birmingham, United Kingdom; [2]University of Wollongong, Australia; [3]University of Tokyo, Japan
1:45pm - 2:00am	**SECOND-ORDER ANALYSIS OF PRESTRESSED CONCRETE COLUMNS** **Jukka Haavisto, Olli Kerokoski, Anssi Laaksonen** Tampere University of Technology, Tampere Finland
2:00pm - 2:15pm	**PRELIMINARY RESULTS OF FLEXURAL TESTS ON CORRODED PRESTRESSED CONCRETE BEAMS** **Antonino Recupero, Nino Spinella** Università di Messina, Italy
2:15pm - 2:30pm	**EVALUATION TESTS FOR NEW APPLYING OF PRE−GROUTED TENDONS USING STEEL BAR FOR THE PRESTRESSING OF CONCRETE** **Noboru Ueda, Katsushito Oshima, Yoshihiko Toda, Yoshiyuki Matsubara** Sumitomo (SEI) Steel Wire Corp., Japan
2:30pm - 2:45pm	**END ZONE DESIGN FOR PRETENSIONED BEAMS TO PN-EN 1992-1-1:2008, MODEL CODE 2010 AND ACI 318-14** **Vadzim Parkhats, Jan Kubica** Silesian University of Technology, Poland
2:45pm - 3:00pm	**EFFICIENCY OF THE CONFINEMENT REINFORCEMENT IN ANCHORAGE ZONES OF POST-TENSIONING TENDONS** **Carla Marchão[1], Válter Lúcio[2], Hans Rudolf Ganz[3]** [1]Faculty of Sciences and Technology - Universidade NOVA de Lisboa, Portugal; [2]CERIS, Faculty of Sciences and Technology, Universidade NOVA de Lisboa, Caparica, Portugal; [3]Ganz Consulting, Switzerland

Session S29.B.4: Analysis and Design of Concrete Structures

Wednesday, 29/May/2019:
1:30pm - 3:00pm

Session Chair: **Michael Braestrup**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:30pm - 1:45pm	**FATIGUE FLEXURAL STIFFNESS ANALYSIS OF HYBRID REINFORCED CONCRETE BEAMS** **Peng Zhu, Jiajing Xu, Wenjun Qu** Department of Civil Engineering, Tongji University, People's Republic of China
1:45pm - 2:00am	**EVALUATION OF THE IN SERVICE BEHAVIOR OF STEEL-CONCRETE COMPOSITE SLABS** **Lucas Antonio Morais Oliveira, Ana Lucia El Debs** Sao Paulo University, Brazil
2:00pm - 2:15pm	**DEFORMATION LIMIT ANALYSIS OF STEEL REINFORCED CONCRETE COUPLING BEAMS** **Huanjun Jiang, Yinghui Li** Tongji University, People's Republic of China
2:15pm - 2:30pm	**FRENCH PROJECT "PERFDUB" ON PERFORMANCE-BASED APPROACH: FROM ROUND-ROBIN TESTS TO NEW TEST PROCEDURES FOR DURABILITY INDICATORS AND ACCELERATED CARBONATION** **Philippe Turcry[1], Jonathan Mai-Nhu[2], Emmanuel Roziere[3], Benoit Thauvin[4], François Cussigh[5]** [1]LaSIE, University of La Rochelle, France; [2]CERIB, France; [3]GeM, Ecole Centrale Nantes, France; [4]CEREMA, France; [5]VINCI Construction France, France
2:30pm - 2:45pm	**BEHAVIOR OF CONCENTRICALLY LOADED REINFORCED CONCRETE COLUMNS UNDER DESIGN FIRE** **Hitesh Lakhani[1], Hrvoje Vučko[2], Joško Ožbolt[1], Alen Harapin[2]** [1]Institute of Construction Materials, University of Stuttgart, Germany; [2]University of Split, Faculty of Civil Engineering, Architecture and Geodesy, Croatia

Session S29.B.5: Monitoring and Maintenance

Wednesday, 29/May/2019:
1:30pm - 3:00pm

Session Chair: **Steffen Marx**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

1:30pm - 1:45pm	**DECISION-MAKING ABOUT AND MANAGEMENT OF STRUCTURES - STATUS QUO AND OUTLOOK** **Florian Zimmert, Thomas Braml** Universität der Bundeswehr München, Germany
1:45pm - 2:00am	**DIGITALISATION OF THE QUALITY CONTROL OF CONCRETE MANUFACTURING AND CONSTRUCTION** **Edgar Bohner, Tapio Vehmas, Arto Laikari, Matti Okkonen, Markku Kiviniemi, Pertti Lahdenperä, Miguel Ferreira** VTT Technical Research Centre of Finland Ltd, Finland
2:00pm - 2:15pm	**STUDY ON INSPECTION METHOD OF STAY CABLES FOR CABLE-SUPPORTED BRIDGES** **Hideaki Sakai** Central Nippon Expressway Company Limited, Japan
2:15pm - 2:30pm	**VERIFICATION OF BRIDGE MONITORING SYSTEM USING FBG OPTICAL FIBER SENSORS ON EXISTING PRESTRESSED CONCRETE BRIDGE** **Kazukiyo Tamaki[1], Kaori Yuasa[1], Hidenori Morikawa[2], Osamu Takemoto[3]** [1]Sumitomo Mitsui Construction Co., Ltd., Japan; [2]Kobe university; [3]Hyogo Prefectural Government, Japan
2:30pm - 2:45pm	**DEVELOPMENT AND APPLICATION OF THE MEASURING METHOD FOR PC-TENSIONING FORCE BY OPTICAL FIBER** **Kazumasa Okubo[1], Michio Imai[1], Naoki Sogabe[1], Shinichi Yamanobe[1], Masashi Oikawa[2], Shinji Nakaue[2], Kazuyoshi Chikiri[3], Toshiyuki Kobayashi[3], Junichiro Niwa[4]** [1]Technical Research Institute / Kajima Corporation, Japan; [2]PC Technical Department / Sumitomo (SEI) Steel Wire Corp.; [3]Production Headquarters / Hien Electric Industries LTD.; [4]Department of Civil and Environmental Engineering / Tokyo Institute of Technlogy, Japan
2:45pm - 3:00pm	**EVALUATION OF CALBE-STAYED BRIDGES UTILIZING TENSION MEASUREMENT BY THE HIGHLY ADVANCED VIBRATION METHOD** **Masafumi Hattori, Kiyohisa Ono** Central Nippon Expressway Company Limited, Japan

Session S29.C.1: Materials

Wednesday, 29/May/2019:
3:30pm - 5:00pm

Session Chair: **Gyorgy L. Balazs**

Location: **Picasso**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:30pm - 3:45pm	**BENCHMARK STRUCTURES FOR 3D CONCRETE PRINTING** **F.A. Bester, M. van den Heever, P.J. Kruger, S. Zeranka, G.P.A.G. van Zijl** Division for Structural Engineering and Civil Engineering Informatics Stellenbosch University South Africa
3:45pm - 4:00am	**INFLUENCE OF STEEL FIBRES ON SHEAR STRENGTH OF CONCRETE AT ROOM AND ELEVATED TEMPERATURES** **Naser Shehada Alimrani, Gyorgy L. Balázs** Budapest University of Technology and Economics, Hungary
4:00pm - 4:15pm	**CONCRETE-FRC BOND IN MODE-I: A CRACK GROWTH RESISTANCE ANALYSIS** **Bardia Kabiri Far, Cristina Zanotti** University of British Columbia, Canada
4:15pm - 4:30pm	**CHARACTERIZATION OF FOAMCRETES WITH RECYCLED FILLERS** **Philippe Fonollosa, Florian Couchy, Christian Cremona** Bouygues Travaux Publics, France
4:30pm - 4:45pm	**COMPRESSIVE STRESS STRAIN BEHAVIOR OF A FLY ASH-BASED GEOPOLYMER CONCRETE MADE WITHOUT THE USE OF WATER GLASS FOR ALKALI ACTIVATION** **Atsushi Shibayama[1,2], Michio Kikuchi[1]** [1]Civil Engineering Research Laboratory, Central Research Institute of Electric Power Industry, Japan; [2]Department of Architecture and Architectural Engineering, Kyoto University, Japan
4:45pm - 5:00pm	**SHEAR STRENGTH OF LIGHTWEIGHT CONCRETE SLABS REINFORCED WITH GFRP BARS: EXPERIMENTAL STUDY** **Agnieszka Wiater, Tomasz Siwowski** Rzeszow University of Technology, Poland

Session S29.C.2: Bond Models

Wednesday, 29/May/2019:
3:30pm - 5:00pm

Session Chair: **Marta Choinska**

Location: **Monet**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:30pm - 3:45pm	**DEVELOPMENT OF A NOVEL BOND TEST SET-UP FOR CONCRETE WITH TRANSVERSE REINFORCEMENT** **Michele Win Tai Mak, Janet M. Lees** Department of Engineering, University of Cambridge
3:45pm - 4:00am	**MODELLING BOND WITHIN ELASTO-PLASTIC STRESS FIELDS (EPSF) MODELS** **Miguel Ferreira[1], João Almeida[2], Miguel Lourenço[3]** [1]PhD Student, CERIS, University of Lisbon, Lisbon, Portugal; [2]CERIS, Instituto Superior Técnico, University of Lisbon, Lisbon, Portugal; [3]JSJ Consulting, Lisbon, Portugal
4:00pm - 4:15pm	**RELIABILITY OF THE BOND STRENGTH OF RECYCLED COARSE AGGREGATE CONCRETE** **João Pacheco[1], Jorge de Brito[1], Carlos Chastre[2], Luís Evangelista[3]** [1]CERIS-ICIST, IST, University of Lisbon, Portugal; [2]CERIS-ICIST, Department of Civil Engineering, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal; [3]CERIS-ICIST, Department of Civil Engineering, Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal
4:15pm - 4:30pm	**SIMULATION OF DEGRADATION OF BOND STRESS AND SLIP RELATIONSHIP WITH CORROSION INDUCED CRACK** **Hikaru Nakamura, Yizhou Yang, Yoshihito Yamamoto, Taito Miura** Nagoya University, Japan
4:30pm - 4:45pm	**PREDICTION OF BOND–SLIP BEHAVIOUR OF EMBEDDED STEEL REINFORCEMENT THROUGH CONTROL FIELD EQUATIONS** **Su Wang, Kang Hai Tan** Nanyang Technological University, Singapore
4:45pm - 5:00pm	**EXPERIMENTAL STUDIES ON THE INTERFACE BETWEEN CONCRETE AND CEMENT-ASPHALT MORTAR** **Sisi Zhang, Boso Schmidt, Steffen Marx** Leibniz University Hannover, Germany

Session S29.C.3: Prestressed Concrete Structures

Wednesday, 29/May/2019:
3:30pm - 5:00pm

Session Chair: **Anna Halicka**

Location: **Rembrandt**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:30pm - 3:45pm	**FEATURES OF BEHAVIOUR UNDER LOADING OF CHEMICALLY PRESTRESSED MEMBERS REINFORCED WITH DIFFERENT TYPES OF FRP BARS** **Volha Semianiuk, Viktar Tur, Siarhei Semianiuk** Brest State Technical University, Belarus
3:45pm - 4:00am	**THE INFLUENCE OF THE PRESTRESSING FORCE ON THE BEHAVIOUR OF THE SECTIONS PRESTRESSED WITH STEEL AND COMPOSITE TENDONS** **Tomasz Waśniewski** Lodz University of Technology, Poland
4:00pm - 4:15pm	**CONFORMITY ASSESSMENT MODEL FOR THE SUPPLY AND INSTALLATION OF POST-TENSIONING SYSTEMS** **Lee Brankley, Ayhan Tugrul, Lyn Morgan, Ladin Camci, Ian Davis** CARES, United Kingdom
4:15pm - 4:30pm	**CONCRETE FLOORS IN BUILDINGS POST-TENSIONED WITH UNBONDED TENDONS. HISTORY, DESIGN RECOMMENDATIONS, REALIZATIONS, POSSIBILTY OF IMPROVEMENT** **Rafał Szydłowski, Barbara Łabuzek, Małgorzata Rodacka** Cracow University of Technology, Poland
4:30pm - 4:45pm	**MONOTONIC AND CYCLIC PULL-OUT TESTS OF POST INSTALLED PRESTRESSING STRANDS WITH ANCHORAGES BY BONDING** **Helisa Muhaj[1], Nuno Lage[2], Carla Marchão[3], Válter Lúcio[4], Rita Gião[5]** [1]PhD Student, Civil Engineering Department, Faculty of Sciences and Technology, Universidade NOVA de Lisboa, Portugal; [2]MSc, Civil Engineering Department, Faculty of Sciences and Technology, Universidade NOVA de Lisboa, Portugal; [3]Civil Engineering Department, Faculty of Sciences and Technology, Universidade NOVA de Lisboa, Portugal; [4]CERIS, Civil Engineering Department, Faculty of Sciences and Technology, Universidade NOVA de Lisboa, Portugal; [5]CERIS, Civil Engineering Department, Lisbon Superior Engineering Institute, Polytechnic Institute of Lisbon, Portugal
4:45pm - 5:00pm	**STRAINS AND STRESSES IN THE END ZONE OF PRE-TENSIONED CONCRETE BEAMS** **Rafal Krzywon[1], Jacek Hulimka[1], Wojciech Mazur[1], Czarnota Konrad[2], Vadzim Parkhats[1], Przemysław Kaprzyk[2]** [1]Silesian University of Technology, Poland; [2]Consolis Poland, Poland

Session S29.C.4: Analysis and Design of Concrete Structures

Wednesday, 29/May/2019:
3:30pm - 5:00pm

Session Chair: **Takumi Shimomura**

Location: **Matejko**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:30pm - 3:45pm	**INFLUENCE OF GRAVITY LOAD IN RC BEAMS CRITICAL ZONES SUBJECTED TO CYCLIC LOADING** **Ana Rita Giao[1], Válter Lúcio[2], Carlos Chastre[2]** [1]ISEL/IPL - Lisbon Superior Engineering Institute, Polytechnic Institute of Lisbon, Portugal; [2]FCT/UNL- Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Portugal
3:45pm - 4:00am	**ON THE EXTENSION OF WALRAVEN'S AGGREGATE INTERLOCK MODEL BASED ON LASER SCANNED CRACK SURFACE** **Stamatia Presvyri[1], Yuguang Yang[1], Max Hendriks[1,2], Jeanette Visser[3], Dick Hordijk[1]** [1]Faculty of Civil Engineering, Delft University of Technology, Delft, the Netherlands; [2]Department of Structural Engineering, Norwegian University of Science and Technology, Trondheim, Norway; [3]TNO, the Netherlands
4:00pm - 4:15pm	**EXPERIMETNAL TESTS OF LINTEL HYBRID BEAMS** **Krystyna Nagrodzka-Godycka, Maciej Tomasz Solarczyk, Marek Wesołowski** Gdańsk University of Technology
4:15pm - 4:30pm	**NEWLY DESIGNED STRUCTURAL SOLUTIONS FOR THE "SLIM FLOOR" COMPOSITE SYSTEM** **Paweł Marek Lewiński[1], Jerzy Derysz[2], Sławomir Dudziak[1], Przemysław Więch[1]** [1]Building Research Institute (ITB), Poland; [2]Pfeifer Steel Production Poland, Krępice near Wroclaw, Poland
4:30pm - 4:45pm	**FLEXURE BEHAVIOR OF RC MEMBERS WITH 700MPA HIGH-STRENGTH STEELS** **Joo-Hyung Lee, Jae-Yeol Cho** Seoul National University, Korea, Republic of (South Korea)
4:45pm - 5:00pm	**EXTENDED INVESTIGATIONS ON CONSTRAINT FORCES CAUSED BY IMPOSED DEFORMATIONS** **Johannes Berger, Julian Konzilia, Juergen Feix** University of Innsbruck, Austria

Session S29.C.5: Poster Presentations

Wednesday, 29/May/2019:
3:30pm - 5:00pm

Session Chair: **Michał Gołdyn**

Location: **Chelmonski**
Best Western Premier Kraków Hotel
Opolska 14a, 31-323 Kraków, Poland

3:30pm - 3:36pm	**CALCULATION OF REINFORCED CONCRETE MEMBERS STRENGTH BY NEW CONCEPT** **Andrii Pavlikov[1], Dmytro Kochkarev[2], Olha Harkava[1]** [1]Poltava National Technical Yuri Kondratyuk University, Ukraine; [2]National University of Water and Environmental Engineering, Ukraine
3:36pm - 3:42am	**MONITORING AND METHODS OF ENSURING THE SAFETY OF LONG-SPAN POST-TENSIONED SLABS** **Rafał Szydłowski, Barbara Łabuzek** Cracow University of Technology, Poland
3:42pm - 3:48pm	**RECOVERY OF UNHYDRATED CEMENT IN CONSTRUCTION WASTE. PHASE I: ESTIMATION OF QUANTITIES** **Daniele Kulisch, Amnon Katz** Faculty of Civil and Environmental Engineering, National Building Research Institute, Technion – Israel Institute of Technology, Israel
3:48pm - 3:54pm	**EXPERIMENTAL RESEARCH ON MECHANICAL PROPERTIES OF BIOCHAR-ADDED CEMENTITIOUS MORTARS** **Beatrice Belletti[1], Patrizia Bernardi[1], Alessio Malcevschi[2], Alice Sirico[1]** [1]Department of Engineering and Architecture, University of Parma, Parma, Italy; [2]Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Parma, Italy
3:54pm - 4:00pm	**INFLUENCE OF QUANTITY AND QUALITY OF FILLER ON TECHNOLOGICAL DAMAGE OF REINFORCED CONCRETE BEAMS** **Viktor Malakhov, Sergey Vykydanets, Natalya Pushkar** Odessa State Academy of Civil Engineering and Architecture, Ukraine
4:00pm - 4:06pm	**OPTIMAL REINFORCEMENT DESIGN FOR THE 2.5 M-DEEP CONCRETE SLAB FOUNDATION OF THE LA SAGRERA STATION (BARCELONA) CONSIDERING TEMPERATURE AND DRYING SHRINKAGE** **Jean M. Carpio, Albert de la Fuente** Universitat Politècnica de Catalunya, Spain
4:06pm - 4:12pm	**EXPERIMENTAL INVESTIGATION ON ALTERNATE LOAD PATH MECHANISMS IN DOUBLE-SPAN BEAMS WITH UNSYMMETRICAL SPAN LENGTH AND REINFORCEMENT DETAILING** **Namyo Salim Lim[1], Anh Tuan Pham[2], Kang Hai Tan[3]** [1]School of Civil and Environmental Engineering, Nanyang Technological University, Singapore; [2]Vietnam Institute of Building Science and Technology, Hanoi, Vietnam; [3]Faculty of School of Civil and Environmental Engineering, Nanyang Technological University, Singapore

4:12pm - 4:18pm	**EARTH BUILDINGS WITH LOCAL MATERIALS: ASSESSING THE VARIABILITY OF PROPERTIES** **Mircea Barnaure[1], Philippe Poullain[2], Stéphanie Bonnet[2]** [1]Faculty of Civil Engineering, Technical University of Civil Engineering of Bucharest, Romania, Blv. Lacul Tei 122 - 124, 020396, Bucharest, Romania; [2]UBL, Université de Nantes, GeM, Institut de Recherche en Génie civil et Mécanique – CNRS UMR 6183, 52 rue Michel Ange, BP 420, 44606 Saint-Nazaire cedex, France
4:18pm - 4:24pm	**APPLICATION OF A NEW NATURAL CARBONATION PREDICTION (NCP) MODEL TO EVALUATION OF DURABILITY DESIGN FACTORS - STRENGTH, COVER, AND CEMENT TYPE** **Stephen Ekolu** University of Johannesburg, South Africa
4:24pm - 4:30pm	**DESIGN AND IN-SITU BEHAVIOUR OF ADDITIONAL DROP PANELS** **Jan Novacek[1,2], Milos Zich[2]** [1]Strasky, Husty and Partners, Czech Republic; [2]Brno University of Technology, Czech Republic
4:30pm - 4:36pm	**EXPERIMENTAL STUDY ON THE FLEXURAL STRENGTHENING OF REINFORCED CONCRETE STRUCTURES WITH CARBON REINFORCED CONCRETE** **Alexander Schumann, Sebastian May, Manfred Curbach** Technische Universität Dresden, Germany
4:36pm - 4:42pm	**PROBABILISTIC ANALYSIS OF PRECAST CONCRETE ELEMENT** **Miroslav Sramek, Josef Novak** CTU in Prague, Faculty of Civil Engineering, Czech Republic
4:42pm - 4:48pm	**QUALITY CONTROL OF REINFORCED CONCRETE JOINT BETWEEN PRECAST PC SLABS IN A RENEWAL PROJECT OF A ROAD BRIDGE** **Osamu Sanada[1], Yasuto Takahashi[1], Hidekazu Yoshimatsu[2], Manabu Kitagawa[2]** [1]Central Nippon Expressway Company Limited, Japan; [2]Kawada Construction Company Limited, Japan
4:48pm - 4:54pm	**TORSION TEST SETUP TO INVESTIGATE AGGREGATE INTERLOCK AND MIXED MODE FRACTURE OF MONOLITHIC AND 3D-PRINTED CONCRETE** **Martin Classen[1,2], Viviane Adam[1], Matthias Hillebrand[1]** [1]Institute of Structural Concrete, RWTH Aachen University, Germany; [2]Magnel Laboratory, University Ghent, Belgium

fib SYMPOSIUM 2019
27-29 May 2019
Kraków, Poland

CONCRETE
INNOVATIONS IN MATERIALS,
DESIGN AND STRUCTURES

SPONSORS

SPONSORS

DIAMOND SPONSOR

BASF
We create chemistry

MASTER® BUILDERS SOLUTIONS

BASF's Construction Chemicals division offers advanced chemical solutions under the global umbrella brand Master Builders Solutions for the construction, maintenance, repair and renovation of structures. The brand is built on more than 100 years of experience in the construction industry.

The Construction Chemicals division's approximately 7,000 employees form a global community of building experts. We leverage global BASF technologies and our in-depth knowledge of local building needs to develop innovations that help make our customers more successful and drive sustainable construction.

The division operates production sites and sales offices in more than 60 countries and achieved sales of about €2.5 billion in 2018.

CORUNDUM SPONSOR

doka

Doka is a world leader in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector. With more than 160 sales and logistics facilities in over 70 countries, Doka has a high-performing distribution network. It ensures that equipment and technical support are provided swiftly and professionally. Doka is an Umdasch Group company with a workforce of more than 6,700 employees worldwide.

The highest quality formwork with a characteristic yellow-blue logo has been present in Poland since 1993. Doka Poland currently has 5 branches: in Warsaw, Wrocław, Siemianowice Śląskie, Gdańsk and Bydgoszcz employs almost 250 employees.

TOPAZ SPONSOR

CONSOLIS
POLSKA

Consolis Polska is a part of the Consolis Group - the leading precast concrete solution provider in Europe.

Consolis Polska provides smart, sustainable precast concrete structures for the building sectors.

Consolis Polska provides concrete building elements and solutions across the country. Our expertise spans from project management and design to production and assembly. We collaborate with architects, engineers, property developers, construction companies and their subcontractors to provide solutions for all major construction market segments - residential and non-residential.

From high-rise apartments to individual family houses, public buildings, production halls, warehouses, sports complexes and more…

Our product offer includes prestressed hollowcore floors – HC slabs, TT- slabs, facades, walls, roofing elements, beams, columns, flooring and stairs, but we can also provide custom-made specific elements.

Consolis has a solution for today's and tomorrow's construction needs.

Diamond Sponsor

BASF
We create chemistry

MASTER® BUILDERS SOLUTIONS

Co-organizers

Dean of the Faculty
of Civil Engineering of
Cracow Univeristy of Technology

Institute of Building Materials
and Engineering Structures of
Cracow University of Technology

Honorary Patrons

Ministry of Science
and Higher Education
Republic of Poland

PAN KILiW

MAŁOPOLSKA

Kraków

POLSKA IZBA INŻYNIERÓW BUDOWNICTWA

GDDKiA

PK