

10th International Conference
FIBRE CONCRETE 2019

FRC, TRC, UHPC

French Institute, Prague, Czech Republic

Štěpánská 35, Prague 1

Organized by CTU in Prague, Faculty of Civil Engineering,
Department of Concrete and Masonry Structures

Tuesday - September 17, 2019

14:00 19:00 **Registration**
18:30 20:30 **Welcome Drink**

Wednesday - September 18, 2019

8:30 17:00 **Registration**
8:30 9:00 **Arrangement of poster session + Oral presentation setup**
9:00 9:05 **Conference opening**
9:05 9:15 **Honoring of Prof. Křístek**

Keynote Lectures

Alena Kohoutková, Jan L. Víték

9:15 9:55 **1** Dependence of Fracture Size Effect and Projectile Penetration on Fiber Content of FRC
Z P Bažant
9:55 10:35 **2** Innovation of infrastructure created by fiber - innovative applications in Japan
A Hosoda

10:35 11:00 Coffee Break

Session 1

Zdeněk P. Bažant, Vladimír Křístek

11:00 11:30 **3** Czech Specifications for UHPC
M Kalný
11:30 11:45 **4** Fibre Reinforced Concrete with Recycled Concrete Aggregate – Inverse Design Approach
I Broukalová, K Šeps, J Fládr and J Vodička
11:45 12:00 **5** Analytical model for rigid (steel) and flexible (synthetic) fibre mixing in concrete
K P Juhász
12:00 12:15 **6** Appraisal of MC2010 shear resistance approaches coupled with a residual flexural strength prediction model
T D S Valente, J A O Barros, B N Moraes-Neto and Y H Moussa
12:15 12:30 **7** Determination shear cracking patterns of fibre reinforced concrete
M G Alberti, A Picazo, A Enfedaque and J C Gálvez

12:30 13:30 Lunch

Session 2

Peter JM Bartoš, Iva Broukalová

13:30 13:45 **8** Nonlinear modeling of SFRC beam using multilinear softening function obtained by inverse analysis
C A Benedetty, L H Oliveira, L C Almeida and L M Trautwein
13:45 14:00 **9** Numerical validation of a simplified inverse analysis method to characterize the tensile properties in strain-softening UHPFRC
E J Mezquida-Alcaraz, J Navarro-Gregori and P Serna Ros
14:00 14:15 **10** Simulation of mixed-mode fracture (I-II) on PFRC specimens with various fibre proportions using an embedded cohesive crack model
F Suárez, J C Galvez, A Enfedaque and M G Alberti
14:15 14:30 **11** Material parameters for computer analysis of fibre reinforced concrete structures
R Pukl, D Lehký, M Lipowczan and D Novák
14:30 14:45 **12** Application of the design code for steel fibre reinforced concrete into finite element software
L Dlouhý and S Pouillon
14:45 15:00 **13** Utilisation of date palm fibres in cement based composites: A feasibility Study
W A Labib

15:00 15:45 Coffee Break + Poster Session

Session 3

Akira Hosoda, Petr Štemberk

- 15:45 16:00 **14** Advanced design methodologies for steel fibre reinforced concrete and new methodology of real time quality control
A Hoekstra
- 16:00 16:15 **15** New UHPFRC Bridges in the Czech Republic
J Marek, J Kolisko, P Tej, D Čítek, J Komanec, M Kalný and L Vráblík
- 16:15 16:30 **16** Development of bridge precast beams from high performance concrete at EUROVIA CS.
M Sýkora, P Jedlinský, J Komanec and V Kvasnička
- 16:30 16:45 **17** Possibility of using SFR-SCC for the production of the LILW disposal container
J Šušteršič, R Ercegovič, F Sinur, B Duhovnik, A Šajna and T Török Resnik
- 16:45 17:00 **18** Steel microfibres in fly ash geopolymer for multifunctional conductive composites
C Mizerová, I Kusák, P Rovnaník and P Bayer
- 17:00 17:15 **19** Properties of cement-lime render containing perlite as lightweight aggregate
J Pokorný, M Pavlíková and Z Pavlík
- 17:15 17:30 **20** Improved methodology for determining tensile strength of fibre reinforced concrete
V Křístek, J Vodička, L Musil and H Hanzlová

19:00 22:00

Conference Dinner

Thursday - September 19, 2019

8:00 12:00 **Registration**

Session 4

Marek Foglar, Radek Štefan

- 8:30 8:45 **21** Comparison of two UHPFRC premixes blast resistance with the commonly used concrete based on the failure mode prediction
O Janota and M Foglar
- 8:45 9:00 **22** The impact of various types of steel fibres on the strength parameters and blast resistance of high – performance concrete
P Bibora, M Drdlová, V Prachař and O Sviták
- 9:00 9:15 **23** Material properties of various fibre reinforced concrete exposed to elevated temperature
K Hornikova and M Foglar
- 9:15 9:30 **24** Influence of internal composition of fiber reinforced cement composites on resistance to near field blast
J Zima and M Foglar
- 9:30 9:45 **25** Experimental micromechanical analysis of heated ultra-high-performance bre-reinforced concrete
J D Rios, P Ariza and H Cifuentes
- 9:45 10:00 **26** Modeling the damping effect for structures in reinforced concrete frames
T O Florin, P Mirela

10:00 10:30

Coffee Break

Session 5

Juan Navarro-Gregori, Yuliia Khmurovska

- 10:30 10:45 **27** A testing method for studying the serviceability behavior of reinforced UHPFRC tensile ties
M Khorami, J Navarro-Gregori, P Serna and M A Navarro-Laguarda
- 10:45 11:00 **28** Experimental analysis of crack development of an UHPC wall element under shear loading
V Příbramský, M Kopálová and L Dlouhý
- 11:00 11:15 **29** Analysis of interfacial interaction in UHPFRC-strengthened reinforced concrete beams
C Zanuy, Gonzalo S D Ulzurrun and I M Díaz
- 11:15 11:30 **30** Macro Synthetic Fibre Reinforced Concrete: Influence of the Matrix Mix Design on Interfacial Bond Behavior
C Del Prete, N Buratti, S Manzi and C Mazzotti
- 11:30 11:45 **31** Numerical modelling of failure on brick masonry strengthened with FRCM overlays
J A P P Almeida, E B Pereira and J A O Barros
- 11:45 12:00 **32** Behaviour of recycled aggregates RC columns strengthened with CFRP under uniaxial compressive loadings
A R Khan and S Fareed
- 12:00 **Closing Ceremony**

Friday - September 20, 2019

9:30

Technical Tour - National Museum

Poster session

- 1 Experimental verification of functionality of fibre-reinforced concrete submersible piers
J Buchlák, J Matějka, P Ryjáček, P Bílý, J Procházka, J Pollert and J Fabel
- 2 Blast resistance of multi-layered concrete slabs
J Fládr, R Chylík, K Šeps, J Štoller and T Trtík
- 3 Study of boundary conditions for design of new types of fibre concrete energy dissipators in hydraulic structures
P Fošumpaur, T Kašpar, M Králík and M Zúkal
- 4 Air-entrainment as an alternative to polypropylene fibers and its effect on the compressive strength of concrete at high temperature
J Holan, J Novák and R Štefan
- 5 Utilization of recycled plastic for plastic-based concrete
A Horáková and J Novák
- 6 Bio-active concrete tile
M Husarčíková, P Štemberk, M Petřík and M Frantová
- 7 Mechanisms behind radiation-induced deterioration of concrete
Y Khmurovska and P Štemberk
- 8 Mechanical properties of concrete with small fibre for numerical modelling
Z Marcalikova, L Prochazka, M Pesata, V Bilek and R Cajka
- 9 Underground ventilated wall based on TRC blocks
J Pazderka, M Nývlt and H Žáková
- 10 FRC Origami Bridge Model
M Salák and M Frantová
- 11 An investigation of the compatibility of different approaches to self-healing concrete: The superabsorbent polymers and microbially induced calcite precipitation
H Schreiberová, J Fládr, T Trtík, R Chylík and P Bílý
- 12 Visualization and analysis of concrete specimens damage after fire and blast experiments
R Štefan and M Foglar
- 13 Methods of lighting of concrete structures for high-speed camera measurement
T Trtík, R Chylík, J Fládr, J Štoller and I Broukalová
- 14 Influence of concrete additives on cement paste shrinkage
M Vích, J Fládr and I Broukalová
- 15 Evaluation of the size effect of waste tyre rubber particles on properties of lightweight rubber concrete
M Záleská, M Pavlíková, D Čítek and Z Pavlík
- 16 Fire temperature influence on the textile reinforced concrete with non-woven polypropylene fabric
J Žák and P Štemberk
- 17 Using of TRC for research of crack evolution and the effect of autogenous healing
H Žáková and J Žák