

Third International Workshop on FRP Bars for Concrete Structures
(IW-FRPCS3)

Workshop Theme: “Advances in concrete reinforcement”

Date: August 3-4th, 2021

Location: VIRTUAL (No cost registration)

Registration Day 1: <https://register.gotowebinar.com/register/423696121317046031>

Registration Day 2: <https://register.gotowebinar.com/register/6827269433670850831>



The banner features the title "THIRD INTERNATIONAL WORKSHOP ON FRP BARS FOR CONCRETE STRUCTURES" in large white letters on a blue background, with the theme "Advances in concrete reinforcement" and dates "August 3-4, 2021 A Virtual Event" below it. Below the banner is a collage of images and text boxes showcasing various infrastructure projects using FRP reinforcement, including: "Molecular Horizons Building (Australia)", "Bridge Bent Cap (USA)", "Composite Reinforcing Bars for Future Infrastructure", "Storm Channel Lining (Middle East)", "Secant Piles (USA)", "Fiber-Reinforced Polymer Reinforcement for Concrete Members", "Precast Deck Segments (Canada)", and "High Stays for the Highway". Logos for sponsors like NSERC CRNSG, University of Miami, and FDOT are visible at the bottom.

In conjunction with the 8th International Conference on Advanced Composite Materials in Bridges and Structures (ACMBS-VIII) (5 – 7 August 2021)

Organizers:

- **Chair: Brahim Benmokrane**, Professor of Civil Engineering and Tier-1 Canada Research Chair, and NSERC/Industry Research Chair, Director CRUSMAC, University of Sherbrooke, QC, CANADA
- **Co-Chair: Antonio Nanni**, Inaugural Senior Scholar Professor and Chair Dept. of Civil, Arch. & Environ. Engineering, University of Miami, FL, USA
- **Co-Chair: Steven Nolan**, Senior Structures Design Engineer, FDOT Structures Design Office, Tallahassee, FL, USA

Goal of Workshop: *Defining a path to broadly implement FRP bars for safe, economical, and resilient concrete structures. Non-corrosive FRP rebars are an effective alternative to steel-reinforced concrete, with a potential broad market of applications. This workshop is geared for stakeholders involved in concrete construction, including owners, manufactures, installers, distributors, engineers, architects, and provinces, state, and city/local officials. The workshop aims to define a path to more fully implement FRP bar for concrete structures.*

***** DETAILED AGENDA *****
FINAL PROGRAM

DAY 1 Tuesday, August 3rd - Regional Focus on FRP Rebar Use

Welcome Remarks: 8:00 - 8:15 am: Introduction of topics, panelists, and attendees.

Session 1: Owners Perspectives & Lessons Learned (8:15 - 10:00 am EDT)

(What do owners really want?)

RoundTable discussion with audience engagement, preceded by 5-minute introduction by panelists.

Moderator: Sam Fallaha (FDOT)

- i. Case Study Projects (*5-minute presentations*)
- ii. Implementation Policy and Results (*5-minute presentations*)

Panelists:

- Darren Evans (PEI Transportation and Infrastructure)
- Zachary Haber (FHWA)
- Tim Keller (ODOT)
- Martin Krall (MTO)
- Marc-Antoine Loranger (MTQ)
- Chynoweth, Matthew (MDOT)
- Carroll, Trey (NCDOT)

***** Break (15 mins) *****

Session 2: Contractors & Practitioners Perspective (10:15 – noon EDT)

(What do contractors really need?)

RoundTable discussion with audience engagement, preceded by 5-minute introduction by panelists.

Moderator: Steven Nolan (FDOT)

- i. Contractors - Case Study Project Experience & Risk Perception (*5-minute presentations*)
- ii. Design Consultants - Design Code Experience – The Good & the Bad? (*5-minute presentations*)

Panelists:

- Sybille Bayard (Conсор)
- Ananda Bergeron/Chris Gamache (Cardno)
- Harry Gleich (Metromont)
- Brett McMahon (Miller & Long)
- William O'Donnell (DeSimone)
- Robert Sqapi (Stephenson Engineering)
- Luis Vargas (BPA)

***** Break (2 hours) *****

Session 3: Standards & Specifications Perspective on the use of FRP Rebar (2:00-4:15pm EDT)

(Is there a path to harmonization?)

RoundTable discussion preceded with 5-minute introduction by panelists.

Moderator: Tony Nanni (UM)

Presentations (5 mins)

Americas

- CSA: [Brahim Benmokrane](#) (US)
- ACI: [Vicki Brown](#) (Widener)
- AASHTO T6/T10: [Will Potter](#) (FDOT)
- ASTM: [Bakis, Charles Bakis](#) (PSU)
- ICC-ES: [Mahmut Ekenel](#)
- USACE: [Robert Moser](#)

Europe

- [Emmanuel Ferrier](#) (for AFGC)

Asia & Middle East/Australia/NZ

- [Allan Manalo](#) (USQ)

***** Break (15 mins) *****

Panelists: *See names above*

End of Day 1 Discussion (4:15-5pm) Wrap update & Action Item identification.

DAY 2 Wednesday, August 4th – Advancement of FRP-RC

8.00 – 8.15 am: Welcome: Lessons learned from day one and short summary.

Session 4: Advancing FRP Rebar Manufacturing & Product Development to meet Market Needs (8:15-9:45am EDT)

(What is new, better, and scalable?)

RoundTable discussion with audience participation, preceded with 3-minute introduction by panelists.

Moderator: John Busel (ACMA)

Presentations (5 mins)

- Higher Performing Bent Bars: [Borna Hajimiragha](#) (B&B)
- Why should we consider epoxy: [Bhavesh Muni](#) (Olin)
- How can thermoplastics help: [Nicolas Valloir](#) (Arkema)
- What other fibers to consider: [Mike Levine](#) (MAFIC)
- Why not filament winding for closed stirrups: [Don Smith](#) (RAW)
- Ensuring QC and Scalability: [Bernard Drouin](#) (Pultrall)

Panelists: See names above

***** Break (15 mins) *****

Session 5: FRP Rebar Research Needs and Advancements (10:00-11:30am)

(Gaps in Research & Latest Advances)

RoundTable discussion preceded with 5-minute presentations by panelists.

Moderator: Brahim Benmokrane (US)

Presentations (5 mins)

- New ACI Center of Excellence and future collaboration opportunities: [David Lange](#) (ACI NEx)
- Endurance Limits – Creep Rupture & Fatigue: [Antonio Nanni](#) (UM) & [Brahim Benmokrane](#) (US)
- Shear Reinforcement Strain limits: [Abdeldjelil “DJ” Berlarbi](#) (UH)
- Flexural Resistance Factors: [Carol Shield](#) (UMN)
- Ductility/Deformability Index: [Ozzie Bayrak](#) (UT-Austin)
- Thermoplastic-rebar: [Tomaso D’Antino](#) (Polimi)
- Nano-Rebar: [Mahmoud RedaTaha](#) (UNM)
- NDT Inspection: [Reza Zoughi](#) (IASU)

Panelists: Speakers listed above

Discussion & Workshop Closure. (11:30-12:30pm)

- Whitepaper format and assignments **
- Discussion of Timing and Location for Next Workshop
- Closing Remarks

**** In addition to recording of the workshop webinar, scribes will be present at each session discussion to record issues of concern, agreement and needs raised by attendees for advancing the safe and economical deployment of FRP reinforced concrete. These notes will be summarized in preparation of a whitepaper similar to the [2nd IW-GFRPCS](#). The whitepaper is expected to be completed by October 31st for distribution to the attendees as a record of the workshop and voluntary action plan preceding the 4th International Workshop in 2023.**

Sponsors & Partners

- *University of Sherbrooke*
- *University of Miami*
- *Florida Department of Transportation*
- *The University of Sherbrooke Research Centre on FRP Composite Materials for Structures (CRUSMaC)*
- *Natural Science and Engineering Research Council (NSERC) of Canada*
- *NSF I/U CRC Center for Integration of Composites into Infrastructure (CICI)*

For more information, please do not hesitate to contact Professor Brahim Benmokrane

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