

## research seminar

### Bond Behavior between Fiber Reinforced Cementitious Matrix (FRCM) Composites and Concrete: State of the Art and New Challenges

Fiber-reinforced composite materials are widely used for strengthening, repairing, and rehabilitation of reinforced concrete (RC) structural members, offering sustainable alternatives to new construction. Recently, cement-based mortars have been employed as a new type of binder that can replace organic matrices used in fiber-reinforced polymer (FRP) composites. Composite materials that employ cement-based mortars are usually referred to as fiber reinforced cementitious matrix (FRCM) composites. The use of inorganic matrices in FRCM composites can overcome some of the limitations related to the use of organic matrices in FRP composites, such as degradation due to UV exposure, poor performance at temperatures close to or above the matrix glass transition temperature, and lack of compatibility with the substrate.

The seminar will provide an overview of an ongoing investigation of the bond behavior of FRCM-concrete joints conducted in collaboration with Dr. Sneed at Missouri S&T. This pioneering work includes an extensive experimental campaign as well as analytical and numerical study. Dr. Carloni, an active member of two RILEM Committees on composites, will provide a state of the art on FRCM composites and discuss some of the unsolved issues related to this newly-developed type of composite.



#### **Dr. Christian Carloni**

*Associate Professor of Structural Mechanics*

**University of Bologna (Italy)**

**Friday  
August 28,  
2015**

**Time: 3:00 pm**

**Location:  
318 Butler-Carlton  
Hall**

#### **Biographical Sketch**

**Dr. CHRISTIAN CARLONI** is an Associate Professor of Structural Mechanics (Scienza delle Costruzioni) at the University of Bologna (Italy). Dr. Carloni returned to the University of Bologna after spending almost 7 years at the University of Hartford (CT, USA) where he was an Associate Professor in the Architecture Department and coordinator of the program's structures sequence. He has been a visiting faculty scholar at Missouri S&T in 2012 and 2015. Dr. Carloni is a structural engineer with research interests in fracture mechanics, masonry structures, and composite materials. He is the co-author of a book on Elasticity and Plasticity and of more than 70 articles on structural mechanics.