

# 1<sup>st</sup> Workshop on Fatigue of Plain and Fiber-Reinforced Concrete (online)

**Sep. 22-23, 2022**

Organizers: Rena C. Yu, Alfonso Fernández-Canteli, Ángel De La Rosa Velasco

The fatigue design of real structures can be rather complicated. On the one hand, the material characterization in the laboratory is cumbersome; on the other hand, the transferability of this material information to the design of real structures should be guaranteed.

We intend to organize a series of thematic seminars as the seed for a platform of knowledge exchange, experience sharing, and synergies among researchers interested in fatigue and fracture. In addition, this will lead to increased expectations through the creation of companies specialized in the subject and the promotion of commercial guidelines based on damage monitoring surveillance and prediction of life to reduce the risk of failure due to fatigue.

For this initial edition, we will first present some recent developments and findings to understand the fatigue behavior of plain and fiber-reinforced concrete. This includes the micro-structural consideration for the design of high-performance concrete, the design and characterization fiber-reinforced self-compacting concrete for applications in fatigue, the size effect, fatigue maturation. Next, we will encourage discussions on fatigue models which are mathematically sound and are capable of taking into account particular characteristics observed in the laboratory.

## Day 1 (Sep. 22, 2022)

9:15- 9:30 Opening

9:30-10:00 Size effect on fatigue of fiber-reinforced concrete

Gonzalo Ruiz, University of Castilla-La Mancha

10:00-10:30 Concrete maturation induced by fatigue loads

José J. Ortega, Polytechnic University of Madrid

10:30-11:00 Discussion

11:00-11:30 Micro-structural considerations for the design of high-performance concrete

José L. García Calvo, Eduardo Torroja Institute for Construction Sciences

11:30-12:00 Design and characterization of fiber-reinforced self-compacting

concrete

Ángel Castillo, Eduardo Torroja Institute for Construction Sciences

12:00-12:30 The use of computerized axial tomography in the study of fatigue in

concrete

Miguel Á. Vicente, University of Burgos

12:30-13:15 Discussion

## Day 2 (Sep. 23, 2022)

9:30-10:00 Fatigue model based on compatibility conditions

Alfonso Fernández-Canteli, University of Oviedo

10:00-10:30 Practical sessions on parameter estimation using MATLAB

Sergio Blasón, BAM, Berlin, Germany

10:30-11:00 Fatigue of concrete in the new Eurocode

Carlos Ríos, IDEAM

11:00-11:30 Flexural thermal fatigue in ultra-high-performance

fiber-reinforced concrete

Héctor Cifuentes, University of Seville

11:30-12:15 Discussion

12:15-12:30 Closure

Day 1:

<https://bit.ly/3t5CVjZ>



Day 2:

<https://bit.ly/3N5bxua>

