In cooperation with: BME Faculty of Civil Engineering
Department of Construction Materials and Technologies
Department of Structural Engineering
Department of Structural Mechanics
In cooperation with: BME Faculty of Architecture
Department of Mechanics, Materials and Structure
Közlekedéstudomány Egyesület (KTE):
Mérnöki Szerkezetek Szakosztállyal

Az ülés helye (PLACE): **BME Building K, 1st Floor, Room 95 Pécsi Eszter Conf. Room**
1111 Budapest, Műegyetem rkp. 3.

Az ülés kezdete (DATE): **1 (Thursday) October 2026, from 16.30 to 17.45**

INVITATION - MEGHÍVÓ

Experimental and Numerical Studies of Concrete Materials and Timber Hybrid Structures for Sustainable Construction

Short summary of presentation:

The presentation includes past and ongoing projects focusing on the virtual testing of advanced cementitious materials, additive manufacturing for structural applications, timber-concrete composite structures, and FRP strengthening. At the material level, the research team uses the state-of-the-art Lattice Discrete Particle Model (LDPM) to simulate mechanical responses under various loading conditions, as well as durability mechanisms. Following calibration and validation against experimental data, the model can be used to predict a wide range of loading scenarios and long-term behavior. The team also investigates 3D concrete printing materials and structures for applications in the construction sector, including housing, infrastructure, and marine structures. Through experimental studies and advanced modeling, the goal is to facilitate the practical implementation of automated construction methods and expand their range of applications. Furthermore, with the objective of promoting sustainable construction, ongoing projects involve testing timber-concrete composite structures using various connection methods, as well as strengthening structural members with FRP materials for reuse. Shear interface behavior and failure mechanisms are investigated through experimental campaigns and advanced numerical simulations incorporating different contact models.

Prof. Lin Wan-Wandner, KU Leuven – Short Curriculum vitae

Lin Wan-Wendner received her PhD from Northwestern University, USA, in 2015. Following postdoctoral appointments at Politecnico di Milano and BOKU Vienna until 2018, she worked at the construction company BESIX in Belgium until 2023 as a Senior Engineer and Project Manager. Since 2023, she has held a professorship in the Department of Civil Engineering at KU Leuven. Over the years, Prof. Wan-Wendner has developed extensive expertise in investigating the mechanical behavior of advanced concrete materials and hybrid structures. She is a committee member of ECCS TC11 WG6 (Steel-Timber Composite Structures) and ISO/TC 71/SC 9 (Steel-Concrete Composite and Hybrid Structures). With the goal of promoting sustainable construction, her research team, currently consisting of eight PhD researchers, is involved in multiple projects covering: (1) hybrid structures combining concrete, timber, steel, and FRP materials; (2) 3D concrete printing for structural applications; and (3) multiscale, multiphysics modeling of the mechanical and time-dependent behavior of concrete and composite structures. By adopting and developing advanced experimental and numerical methods, the team aims to promote innovative structural designs and construction techniques, while supporting engineering design through the accurate prediction of long-term material and structural behavior using both discrete- and continuum-based models.

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Budapest, 16. Sept. 2026 Prof. Balázs L. György, s.k., a ***fib*** MT elnöke, ***fib*** Hu President