

# CONCRETE STRUCTURES

ANNUAL TECHNICAL JOURNAL

Károly Péter Juhász

**EFFECTS OF POURING TECHNIQUE ON ORIENTATION OF STEEL AND SYNTHETIC MACROFIBRES IN FIBRE REINFORCED CONCRETE**

2

Ahmed Maher Seyam - Samir Shihada - Rita Nemes

**EFFECTS OF POLYPROPYLENE FIBERS ON ULTRA HIGH PERFORMANCE CONCRETE AT ELEVATED TEMPERATURE**

11

Andor Windisch, PhD

**STEEL STRESS PATTERNS BETWEEN TWO PRIMARY CRACKS IN CONCRETE**

DEDICATED TO THE MEMORY OF PROF. GALLUS REHM (1924-2020)

17

Suha Ismail Ahmed Ali - Éva Lublóy

**RADIATION SHIELDING STRUCTURES: CONCEPTS, BEHAVIOUR AND THE ROLE OF THE HEAVY-WEIGHT CONCRETE AS A SHIELDING MATERIAL - REVIEW**

24

Ali Abdulhasan Khalaf - Katalin Kopecskó

**PROPOSED SIMPLIFIED METHOD OF GEOPOLYMER CONCRETE MIX DESIGN**

31

**FIB BULLETINS 91, 92, 93, 94, 95, 96**

38



# 2020

Vol. 21





# FERROBETON

A CRH COMPANY

safe basis provided by concrete



[www.ferrobeton.hu](http://www.ferrobeton.hu)





 A-HÍD

CREATE THE **FUTURE**

A-Híd Zrt. | 1138 Budapest, Karikás Frigyes u. 20. | [www.ahid.hu](http://www.ahid.hu)





**BME, consortium leader**  
**SW Umweltechnik Mo. Kft.,**  
**ÉMI Nonprofit Kft. MC Bauchemie.**  
**CRH Mo. Kft.**



*National Competitiveness and Excellence Program, Subprogram B: National Program for Materials Science and Technology*  
**Hungarian Research Grant NVKP\_16-1-2016-0019**

**“Development of concrete products with improved resistance to chemical corrosion, fire or freeze-thaw”.**

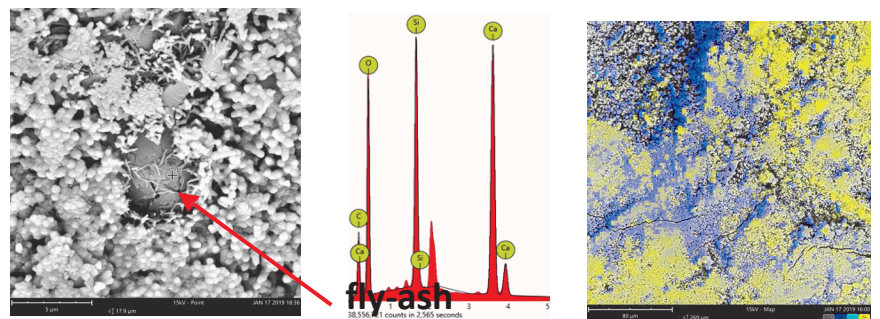
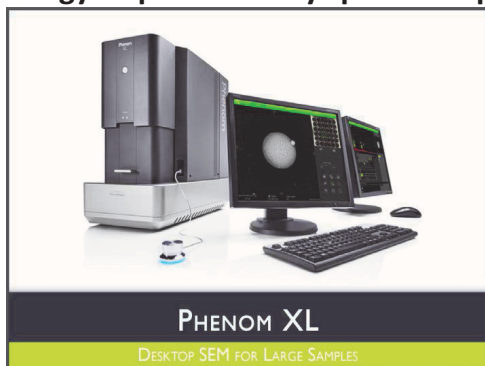
*Procurement of laboratory equipment within the framework of the tender entitled*

**Project supervisor: Prof. György L. Balázs**

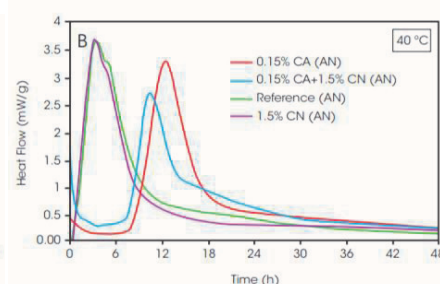
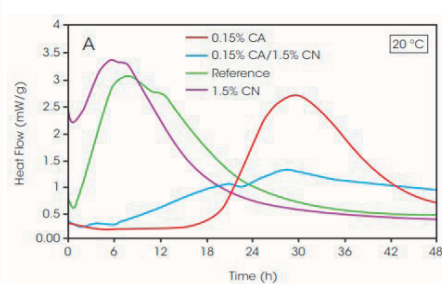
**Project sub-theme responsables: Dr. Éva Lublóy, Dr. Salem G. Nehme, Dr. Katalin Kopecskó**

**MATERIAL SCIENTIFIC STUDIES FROM NANO-LEVEL TO MACRO-LEVEL**

**1. PHENOM XL Scanning Electron Microscope (SEM) with elemental analysis of EDS (energy dispersive X-ray spectroscopy) for small and large (max. 100 mm x 100 mm) samples**



**2. TAM Air 3+3 channel microcalorimeter, with 125 ml ampoules, application range: from cement paste to concrete**



**3. Zetasizer Nano ZS – Measurement of Zeta potential with titrator (variable pH range) 3,8 nm – 100 μm, particle size distribution in range 0,3 nm – 10 μm**

