

Table of Contents

Preface, Scientific Committee

Chapter 1: Additives and Admixtures

Nanoparticles in Concrete: Application in Fresh and Hardened State J. Němeček, R. Šulc, J. Němečková and J. Kruis	3
Efficiency of Crystalline Coating Measured by Contact Angle Method J. Pazderka, M. Purkrtová and C. Hecht	10
Influence of Plasticizers on Properties of Anhydrite Binder D. Gazdič, J. Mokrá and J. Hanáček	16
Influence of Guar Gum Derivatives on Hardened Properties of Aerial Lime-Based Mortars T. Žižlavský, M. Vyšvařil, P. Bayer and P. Rovnaníková	22
Influence of CNT Addition to the Frost Resistance of Concrete T. Jarolím, J. Brožovský, D. Sácha and N. Pizúrová	30

Chapter 2: Advanced Binder Systems

Effect of Ageing Period on Properties of Mechanically Activated Portland Cement K. Dvořák and M. Švéda	37
Retarding Action of Various Lead (II) Salts on Setting of Portland Cement M. Keppert	43
Synthetic Preparation and Properties of Ettringite M. Fridrichová, D. Gazdič, J. Mokrá and K. Dvořák	49
Electrical Properties of Steel Fibre Reinforced Alkali-Activated Slag Composite P. Rovnaník and I. Kusák	55
Influence of Ambient Temperature on Course of Cement Stone Solidification M. Fridrichová, D. Gazdič and K. Dvořák	61
Microstructure and Pore Systems Development of Ternary Gypsum-Based Mortars M. Doleželová, J. Krejsová, L. Scheinherrová, P. Svora and A. Vimmrová	67
Influence of Milling on some Chemical Properties and Reactivity of CFBC Fly Ash T. Váchal, R. Šulc, T. Janků and P. Svoboda	73

Chapter 3: Concrete in Severe Conditions

Influence of Biocorrosion on Concrete Properties I. Chromková and R. Čechmánek	83
Chloride Resistance of Nanoparticle Repaired Concrete Measured by Accelerated Tests R. Šulc, M. Himmel and J. Němeček	91
Influence of Supplementary Cementitious Materials on the Properties of Concrete for Secondary Protection Barrier in Radioactive Waste Repositories J. Kotátková, M. Čáchová, P. Bezdička, E. Vejmelková, P. Konvalinka, L. Zemanová and R. Černý	96
Mechanical and Fracture Characteristics of Refractory Concrete after the Action of Various Temperature Loading O. Holčapek	102
Mechanical and Basic Physical Properties of High-Strength Concrete Exposed to Elevated Temperatures L. Scheinherrová, M. Čáchová, M. Petříková, L. Fiala, E. Vejmelková, S. Grzeszczuk and R. Černý	108
The Influence of Different Fibres Ratio in the Cementitious Composite on Ballistic Resistance J. Fornůsek, M. Mára and R. Lovichová	114

The Influence of High Temperatures and Time on the Material and Mechanical Properties of Cement Binder with Fly Ash

O. Zobal and P. Paděvět

119

Porous Structure and Hygric Properties of Concrete for Radioactive Waste Repositories

M. Čáchová, J. Koťátková, M. Doleželová, E. Vejmelková, P. Konvalinka and R. Černý

127

The Effect of Temperature on the Fundamental Characteristics of Self-Compacting Non-Cement Refractory Castable

L. Nevřivová

132

Chapter 4: High Performance Concrete

Lightweight TRC Facade Panels with the LEDs

L. Laiblová, T. Vlach, M. Ženíšek, J. Řepka and P. Hájek

141

Dynamic Stability of Multi-Functional Composite Developed for Application in Permanent Way of Prague Underground

K. Kolář, J. Litoš, P. Reiterman and M. Petrytl

147

Prefabrication of the Thin-Walled U-Profile UHPFRC Footbridge

D. Čítek, J. Kolísko, P. Tej, T. Mandlík and S. Řeháček

152

Soft Insert for Support Modeling of Slightly Textile Reinforced Concrete

T. Vlach, L. Laiblová, M. Ženíšek, J. Řepka and P. Hájek

158

Aggregate Segregation of Ultra-High Performance Concrete

M. Zeníšek, T. Vlach and L. Laiblová

164

Chapter 5: Sustainable Concrete and Composites

Application of Granulated Cable Plastic Waste for Soil Stabilization

M. Lidmila, M. Jogl, W. Kubissa, R. Jaskulski and P. Reiterman

171

The Comparison of Properties of Fine Recycled Aggregate Concrete from Different Sources of Recycled Aggregate

T. Pavlů

176

Optimization of the Composition of the Binder Based on CFBC Fly Ash

P. Formáček and R. Šulc

184

The Properties of Fine Recycled Aggregate Concrete Containing Recycled Bricks from Construction and Demolition Waste

K. Fořtová and T. Pavlů

193

Usage of Recycled Concrete as Subsoil under Industrial Floor

K. Mikulica and R. Hela

199

The Behavior of FRA Concrete with High Replacement Ratio

M. Šefflová

204

Chapter 6: Other Special Concrete and Composites

Influence of Alkalinity and Ambient Temperature on Long-Term Properties of GFRP Reinforcement

F. Girgle, L. Bodnárová, O. Januš and V. Kostiha

213

Minimum-Weight Truss Reinforcement of a Composite Beam to Increase the Free-Vibrations Fundamental Eigenfrequency

M. Tyburec, J. Zeman, M. Lepš, M. Somr, T. Plachy, R. Poul and J. Novák

219

Utilization of Surface-Modified Polymer and Glass Micro-Fibers as Reinforcement in Cement Composites

J. Trejbal, Z. Prošek, J. Fládr and P. Tesárek

225

Utilization of Non-Traditional Fibers for Light Weight Concrete Production

J. Zach, M. Sedlmajer, J. Bubeník and V. Novák

231

Chapter 7: Experimental Methods and Measurement

Microscale Tests of Cement Paste Performed with FIB and Nanoindentation	
J. Němeček and J. Němeček	239
Evaluation of Fine Aggregate Surface and Fracture Surface by Confocal Microscope	
J. Krejsová, M. Doleželová and A. Vimmrová	245
Nanomechanical Performance of Interfacial Transition Zone in Fiber Reinforced Cement Matrix	
V. Zacharda, P. Štemberk and J. Němeček	251
Rheological Properties of Lime Mortars with Guar Gum Derivatives	
M. Vyšvařil, M. Hegrová and T. Žižlavský	257
Experimental Analysis of the Development of Compressive Strength, Modulus of Elasticity and Acoustic Emission Parameters of Alkali-Activated Composites	
D. Kocáb, L. Topolář, V. Bílek Jr., B. Kucharczyková, M. Hoduláková and R. Halamová	266
An Analysis of a Tuned Mass Damper under Dynamic Loads	
V. Sana, J. Litoš, Z. Řihová and M. Kočová	272
Quality Control of the Concrete of the Supporting Structure of Bridge Reg. No. 333-003 over the Elbe in Přelouč	
S. Řeháček, D. Čítek and J. Kolísko	278