Table of Contents

Preface and Committee

Chapter 1: Concrete and Cement Composites in Severe Conditions

An Experimental Study on the Self-Consolidating Concrete (SCC) under Hot Weather and	
Hauling Time S. Al Martini and M. Al Khatib	3
The Effect of Elevated Temperatures and Nuclear Radiation on the Properties of Biological Shielding Concrete J. Kot'átková, J. Zatloukal, P. Reiterman, J. Patera, Z. Hlaváč and P. Brabec	8
The Time Factor Effects of the Drilling Cement Pastes on its Working Characteristics by	Ü
Increasing Temperature M. Krizma, M. Kišac and D. Svoboda	17
Resistance of Refractory Cement Composite to Cyclic Temperature Loading O. Holčapek	23
Differences in the Mechanical Properties of Lightweight Refractory Cementitious Composites Reinforced by Various Types of Fibers M. Jogl, J. Koťátková and P. Reiterman	29
Determination of Properties of Concrete Floor after a Fire and Renovation K. Mikulica, R. Hela and Á. Dufka	33
Possible Types of Degradation of Concrete in the Power Industry Z. Říhová and J. Zatloukal	39
Experimental Verification of Behavior of Glass and Carbon Fibers in Alkali Environment F. Girgle, L. Bodnárová, A. Kučerová, P. Janák and J. Prokeš	43
Effect of Very Early Prestressing on Ultimate Geometry of Precast Concrete Element L. Černosta and P. Štemberk	49
Multi-Functional High-Performance Cement Based Composite Z. Bažantová, K. Kolář, P. Konvalinka and J. Litoš	53
Enhancing Engineered Cementitious Composite by External and Internal Hydrophobization V. Hrbek, V. Petráňová and J. Němeček	57
Chapter 2: Additives and Admixtures	
Comparative Investigations of some Properties of Lightweight Cement Concretes Containing Siliceous Fly Ash W. Kubissa	67
Characteristic Properties of the Fly Ash from Coal Combustion J. Polacek, R. Šulc and P. Formáček	75
Frost Resistance of Concrete Screed with the Fly Ash Addition O. Zobal, O. Holčapek and P. Reiterman	80
Rheological Characteristics of Alkali Activated Fly-Ash Concrete Mixtures T. Váchal, R. Šulc and P. Svoboda	86
Hygric Properties of HPC with Natural Pozzolana J. Koťátková, M. Čáchová, D. Koňáková and E. Vejmelková	93
Dosage of Silica Fume in High Performance Concrete M. Ženíšek, T. Vlach and L. Laiblová	98
Comparison of the Effects of Different Pozzolana on the Properties of Self-Compacting Concrete	
E. Vejmelková, J. Koťátková, M. Čáchová and D. Koňáková	103
Concrete with Crystalline Admixture for Ventilated Tunnel against Moisture J. Pazderka	108

Influence of Microwave Treatment on Properties of Concrete with Non-Cyclic Alkanes R. Jaskulski	114	
Porosity of the Ternary Gypsum-Based Binders with Different Types of Pozzolan M. Doleželová and A. Vimmrová	122	
Increasing the Efficiency of Asphalt by Introducing Additives Containing Polyphosphoric Acid	120	
V.V. Yadykina and C. Pashkova	128	
Properties of Cement Paste with Incorporated Sodium Silicate J. Pokorný, M. Záleská, M. Pavlíková, P. Rovnaníková and Z. Pavlík	133	
Changes of the Properties of Cement Paste with Fly Ash Exposed to the High Temperature R. Lovichová, P. Padevět and J. Fornůsek	138	
Resistance of Concrete with Metakaolin Addition to Acid Environment P. Reiterman and J. Tomek	144	
Influence of the Heating and Cooling Rate on Thermal Performance of Cement-Lime		
Plaster with PCM Admixture J. Fořt, A. Trník and Z. Pavlík	150	
Chapter 3: Experimental Methods of Assessment and Measurements of Basic Properties		
Finite Element Simulation of Hydration Heat Using Fuzzy Logic Model of Hydration J. Mádlová, P. Štemberk and A. Kohoutková	157	
Determination of Thermal Conductivity on Lightweight Concretes		
L. Bodnárová, J. Hroudová, J. Zach and K. Sovová	163	
Using 2D Digital Image Analysis to Locate Position of Micro Fibers in Cross-Sections of Fiber-Reinforced Concrete		
J. Trejbal, L. Kopecký, J. Fládr, P. Tesárek, V. Nežerka and Z. Prošek	169	
Plastic Shrinkage of Concrete – Measurement and Method for its Reducing S. Šťastník, J. Novacek and A. Hubáček	175	
Evaluation of the Modulus of Elasticity of Different Types of Concrete Compared with		
Eurocode 2 K. Křížová and R. Hela	181	
Basic Physical and Mechanical Properties of Composites Based on Three Different Cements	101	
M. Čáchová, E. Vejmelková, K. Šestáková, P. Reiterman, M. Keppert, D. Koňáková and R. Černý	186	
Impact of Grinding Technology on Final Properties of Portland Cement K. Dvořák, D. Dolak and I. Hájková	191	
Inelastic Material Models for Numerical Analysis of Unreinforced Compressed Masonry		
Columns A. Maroušková	197	
The Effect of Surface Treatments of Textile Reinforcement on Mechanical Parameters of HPC Facade Elements	197	
T. Vlach, L. Laiblová, M. Ženíšek, A. Chira, A. Kumar and P. Hájek	203	
Comparison of Compressive Strength and Young's Modulus of Cement Samples with Different Types of Aggregate		
J. Topič, A. Osvald, V. Nežerka, Z. Prošek, M. Lidmila, J. Valentin and P. Tesárek	207	
Relation between Parameters of Plasters Measured by Non-Destructive and Destructive Methods		
M. Kočová and J. Zatloukal	211	
Chapter 4: Sustainable Concrete and Composite Materials		
Sustainability Considerations of Concrete Mixes Incorporating Slag as Partial Replacement of Cement in Concrete in the UAE		
A. Al-Shaibani and R. Sabouni	217	
Recycled Concrete in Weak Acidic Environments M. Joseph, L. Boehme, C. Cornelly, I. Anseeuw, W. Declercq and L. Vandenwalle	224	

High Performance Concrete with SCM and Recycled Aggregate W. Kubissa, R. Jaskulski, A. Koper and M. Supera	233
Influence of Moisture Content on the Thermal Properties of Concrete Containing Agricultural Waster Materials	2.41
D. Koňáková, M. Čáchová and E. Vejmelková	241
Tests of Selected Properties of Aggregates on Ceramic Wastes A. Koper	246
A Study on the Application of Artificial Neural Networks on Green Self Consolidating Concrete (SCC) under Hot Weather	
M. Al Khatib and S. Al Martini	254
Behavior of Concrete Containing of Fine Recycled Aggregate M. Šefflová, T. Pavlů and V. Hujer	260
Determining Concrete Composition on Recycled Aggregates A. Koper, M. Koper and W. Kubissa	266
Energy Saving Additives «RAA WAC» for Production of Warm Asphalt Concrete V.V. Yadykina, A.M. Gridchin, A. Trautvain and V. Kholopov	273
The Use of Recycled Concrete in Asphalt Composites A. Konvalinka and P. Svoboda	278
Timber-Concrete Composite Structures with Semi-Rigid Connections P. Kuklík, A. Kuklíková and A. Gregorová	282
Influence of Recycled Concrete Composition on its Elastic Stiffness Z. Prošek, A. Osvald, J. Topič, J. Valentin, J. Trejbal and P. Tesárek	288
The Properties of Fine-Aggregate Concrete with Recycled Cement Powder T. Pavlů, M. Šefflová and V. Hujer	292