

Table of contents

Foreword	IX
ACM2009 committees	XI
Contributing institutions	XIII
<i>Advanced materials technology & processing</i>	
Controlling properties of concrete through nanotechnology <i>S.F. Shah</i>	3
Reducing the cracking potential of ultra-high performance concrete by using Super Absorbent Polymers (SAP) <i>L. Dudziak & V. Mechtcherine</i>	11
Mechanical effects of rice husk ash in ultra-high performance concretes: A matrix study <i>M.D. Stults, R. Ranade, V.C. Li & T.S. Rushing</i>	21
Smart dynamic concrete: New approach for the ready-mixed industry <i>R. Jaffer, R. Magarotto & J. Roncero</i>	29
Cracking properties of steel bar-reinforced expansive SHCC beams with chemical prestress <i>H. Takada, Y. Takahashi, Y. Yamada, Y. Asano & K. Rokugo</i>	35
Flexural creep behavior of SHCC beams with or without cracks <i>Y. Yamada, T. Hata, T. Ohata, K. Rokugo, T. Inaguma & S.-C. Lim</i>	43
<i>Mechanics of advanced cement-based materials</i>	
Size-effect in high performance concrete road pavement materials <i>E. Denneman, E.P. Kearsley & A.T. Visser</i>	53
Modified local bond stress—slip model for self-compacting concrete <i>P. Desnerck, G. De Schutter & L. Taerwe</i>	59
Pullout of microfibers from hardened cement paste <i>C. Rieger & J.G.M. van Mier</i>	67
Shear behavior of reinforced Engineered Cementitious Composites (ECC) beams <i>I. Paegle & G. Fischer</i>	75
Mechanical interaction of Engineered Cementitious Composite (ECC) reinforced with Fiber Reinforced Polymer (FRP) rebar in tensile loading <i>L.H. L��rsson, G. Fischer & J. J��nsson</i>	83
Comparing the behaviour of high strength fibre reinforced and conventional reinforced concrete beams <i>E.P. Kearsley & H.F. Mostert</i>	91

Structural mechanics and applications

Self-compacting lightweight aggregate concrete for composite slabs <i>A.-E. Bruedern, V. Mechtcherine, W. Kurz & F. Jurisch</i>	99
Influence of fibre type and content on properties of steel bar reinforced high-strength steel fibre reinforced concrete <i>K. Holschemacher & T. Mueller</i>	107
Influence of fibre content and concrete composition on properties of Self-Compacting Steel Fibre Reinforced Concrete <i>T. Mueller & K. Holschemacher</i>	117
Application of Textile-Reinforced Concrete (TRC) for structural strengthening and in prefabrication <i>M. Butler, M. Lieboldt & V. Mechtcherine</i>	127
Evaluation of mechanical behaviour of weathered textile concrete <i>S.W. Mumenya, M.G. Alexander & R.B. Tait</i>	137
Study on mechanical behavior of synthetic macrofiber reinforced concrete for tunneling application <i>A. Pineaud, J.-P. Bigas, B. Pellerin & A.P.J. Marais</i>	143
SHCC precast infill walls for seismic retrofitting <i>S.-W. Kim, S.-H. Nam, J.-H. Cha, E. Jeon & H.-D. Yun</i>	149
Improving infrastructure sustainability using nanoparticle engineered cementitious composites <i>M.D. Lepech</i>	155
Influence of pumping on the fresh properties of self-compacting concrete <i>D. Feys, G. De Schutter & R. Verhoeven</i>	165

Durability mechanics of advanced cement-based materials

Aspects of durability of strain hardening cement-based composites under imposed strain <i>F.H. Wittmann, T. Zhao, L. Tian, F. Wang & L. Wang</i>	173
Driving infrastructure sustainability with Strain Hardening Cementitious Composites (SHCC) <i>V.C. Li</i>	181
Modelling the influence of cracking on chloride ingress into Strain-Hardening Cement-based Composites (SHCC) <i>F. Altmann & V. Mechtcherine</i>	193
Physical and mechanical properties of Strain-Hardening Cement-based Composites (SHCC) after exposure to elevated temperatures <i>M.S. Magalhães, R.D. Toledo Filho & E.M.R. Fairbairn</i>	203
Determining the durability of SCC using the South African early-age Durability Index tests <i>B.G. Salvoldi, M.E. Gillmer & H. Beushausen</i>	209
Characterisation of crack distribution of Strain-Hardening Cement Composites (SHCC) under imposed strain <i>C.J. Adendorff, W.P. Boshoff & G.P.A.G. van Zijl</i>	215
Shrinkage of highly flowable cement paste reinforced with glass fiber <i>A. Sangtarashha, A. Shafieefar, N.A. Libre, M. Shekarchi & I. Mehdipour</i>	223

Early age cracking and capillary pressure controlled concrete curing <i>V. Slowik & M. Schmidt</i>	229
 <i>Computational modelling of advanced cement-based materials</i>	
Finite element fracture analysis of reinforced SHCC members <i>P. Kabele</i>	237
Derivation of a multi-scale model for Strain-Hardening Cement-based Composites (SHCC) under monotonic and cyclic tensile loading <i>P. Jun, V. Mechtcherine & P. Kabele</i>	245
Two-scale modeling of transport processes in heterogeneous materials <i>J. Sýkora</i>	255
Computational modelling of Strain-Hardening Cement Composites (SHCC) <i>G.P.A.G. van Zijl</i>	263
Numerical modelling of strain hardening fibre-reinforced composites <i>J. Vorel & W.P. Boshoff</i>	271
Some pertinent observation on the behaviour of high performance concrete-steel plate interface <i>S.K. Chakrabarti</i>	279
 <i>Specifications, design guidelines and standards</i>	
Enabling the effective use of High Performance Fibre Reinforced Concrete in infrastructure <i>E.P. Kearsley & H.F. Mostert</i>	287
Towards a reliability based development program for SHCC design procedures <i>J.S. Dymond & J.V. Retief</i>	297
A model for building a design tool for ductile fibre reinforced materials <i>E. Schlangen, H. Prabowo, M.G. Sierra-Beltran & Z. Qian</i>	307
Author index	313