

***3rd Advances in Cement-based Materials:
Characterization, Processing, Modeling and Sensing
Austin, TX, June 10-12, 2012***

Preliminary Program

Sunday, June 10, 2012

Registration

Noon - 7 pm **Location: TBD**

Tutorial: Novel Experimental and Computational Tools

1:30 pm – 3:15 pm **Location: TBD**

Moderator: TBD

1:30 pm – 1:35 pm Welcome

1:35 pm – 2:25 pm Title: TBD (Topic: Linking novel experimental data to microstructure and properties)
Jeffrey Chen, Lafarge Centre de Recherchei, France

2:25 pm – 3:15 pm Title: TBD (Topic: Vertical scanning interferometry)
Andreas Luttge, Rice University, USA

3:15 pm – 3:45 pm **Coffee Break**

3:45 pm – 4:35 pm Title: TBD (Topic: Computational modeling of C-S-H)
Rouzbeh Shahsavari, Rice University, USA

Poster Session and Opening Reception

5:00 pm – 7:00 pm **Location: TBD**

Cements Division Executive Meeting

8:00 pm – 9:00 pm **Location: TBD**

Monday, June 11, 2012

Registration

7:30 am – 6:00 pm

Location: TBD

Hydration Kinetics and Materials Characterization

8:30 am – 10:00 am

Location: TBD

Moderator: TBD

Modeling the effect of calcium sulfates on C₃S hydration: implications for the origin of the optimum sulfate
Luca Valentini, Jeffrey Bullard, Gilberto Artioli

The filler effect: the influence of filler volume and surface area on cementitious reaction rates
Tandre Oey, Aditya Kumar, Narayanan Neithalath, Jeffrey Bullard, Gaurav Sant

Three-dimensional microstructural analysis of ultra-high performance concretes using neutron imaging
Fei Ren, Hassina Bilheux, Sophie Voisin, Jy-An Wang, Michael Lance, Beverly DiPaolo

Modeling and simulation of the cement hydration with different water to cementitious ratio
Yang Park, Jon Belkowitz, Frank Fisher, Christopher Samy

Evaluation of nanomechanical properties: an energy-based approach
Kaushal Jha, Nakin Suksawang, Arvind Agarwal

Broadband dielectric study of early-age concrete mortar containing internal curing materials
Joshua Ojo, Nan Guo, Benjamin Mohr

Coffee Break

10:00 am – 10:45 am

Location: TBD

Degradation of Cementitious Materials

10:45 am – 12:15 pm

Location: TBD

Moderator: TBD

Nanostructure of high-temperature cured oilwell cements
Jeffrey Thomas, Andrew Allen, Simone Musso, Simon James

Nanoscale pore structure analysis of mortars undergoing delayed ettringite formation
Daniel Keaton, Benjamin Mohr

Chemo-mechanical behavior of carbon nanofiber/cement composites exposed to aggressive environments
Lesa Brown, Florence Sanchez

A combined approach of determining physical and chemical ASR parameters and finite element modeling to predict ASR expansive stress in a pure phase system
Kai-Wei Liu, Anol Mukhopadhyay, Zach Grasley

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Life cycle of chromium obtaining the industrial wastes co-incineration process in the cement plant
Suthatip Sinyoung, Puangrat Kajitvichyanukul

Lunch

12:15 pm – 2:00 pm

Cohesion, Hybrids, and Composites

2:00 pm – 3:30 pm

Location: TBD

Moderator: TBD

Behavior of confined water in porous C-S-H

Patrick Bonnaud, Benoit Coasne, Roland Pellenq, Krystyn van Vliet

Mechanisms of hydrogen bonding between organic polymers and disordered material: case of poly(vinyl) alcohol and calcium-silicate-hydrate

Rouzbeh Shahsavari

Exposing the mysterious nature of concrete viscoelasticity

Zachary Grasley, Xiaodan Li, Edward Garboczi, Jeffrey Bullard

Interaction of aminopropyltri-ethoxysilane and amorphous nano-sio₂ particles in the matrix of cement-based materials

Hossein Reshadi Nejad, Reza Hosseinpourpia, Arash Pajum

Producing and testing cement paste reinforced with carbon nanofibers

Ardavan Yazdanbakhsh, Zachary Grasley

A new cement-rubber composite material with unique mechanical properties

Simone Musso, Agathe Robisson, Jeffrey J. Thomas, Franz-Josef Ulm

Cements Division Business Meeting

3:30 pm – 4:30 pm

Location: TBD

Della Roy Lecture, Sponsored by Elsevier

4:30 pm – 5:30 pm

Location: TBD

Moderator: TBD

Title: TBD

Edward Garboczi, National Institute of Standards and Technology, USA

Della Roy Reception, Sponsored by Elsevier

5:30 pm – 6:30 pm

Location: TBD

Tuesday, June 12, 2012

SCMs: Reactivity and Activation

8:30 am – 10:15 am Location: TBD

Moderator: TBD

Composite portland cements with fly ash, metakaolin, ground granulated blast furnace slag and geothermal silica waste additions

Cyndy A. Iñiguez-Sanchez, Lauren Gomez-Zamorano, Barbara Lothenbach

Study of the simultaneous effect of size and type of glass cullet, and curing temperature on the rate of glass reactivity

Mohammadreza Mirzahosseini, Kyle Riding

Microstructure of cementitious cast stone immobilizing the hanford secondary waste

Chul-Woo Chung, Ashutosh Goel, Nancy Washton, Laura Turo, Joseph Ryan

Preparatory treatments to clay mineral blends for use in concrete systems

Sarah Taylor-Lange, Kyle Riding, Maria Juenger

Mechanical properties and microstructure of clay-based materials prepared with modified yellow river silts

Lei Zhang, Jiu-jun Yang, Jun-Xia Liu, Ai-Hua Zhou

Allowing higher cement replacement by class C fly ashes: a new method

Denise Silva, Josephine Cheung, Lawrence Roberts

Cementitious characteristics of a chemically activated cupola slag

Rosario Jasso-Teran, Jose M Almanza Robles, J Ivan Escalante-Garcia

Coffee Break

10:15 am – 11:00 am

Location: TBD

Alternative Binders Based on Calcium Sulfoaluminates and Calcium Carbonates

11:00 am – 12: 15 am

Location: TBD

Moderator: TBD

The gypsum effect on CSA cement hydration

Diana Londoño, Ariel Berrio, Jorge Iván Tobón

Porosimetric study of calcium sulfoaluminate cements and its relation to freeze-thaw durability

Kyle DeBruyn

Cementitious reaction via calcium carbonate polymorphic transformation

Irvin Chen, Patricia Lee, Miguel Fernandez

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Biom mineralization in cement-based materials
Zeynep Basaran, Raissa Ferron

Characterization of biominerals and its effect in improving flexural strength of concrete
Bin Zhang, Paramita Mondal, Wen-Tso Liu

Lunch

12:15 pm – 1:45 pm

Geopolymers

1:45 pm – 3:30 pm

Location: TBD

Moderator: TBD

Impact of mix compositions on geopolymer synthesis
Xiao Xiao Gao, Sylve Rossignol, Philippe Michaud, Emmanuel Joussein

Structure of metakaolin geopolymer with calcium hydroxide using XRD and MAS-NMR
Eric Kim, Leslie Struble, Jennifer Rapp

Correlation between physicochemical and mechanical properties to investigate geopolymer formation
Elodie Prud'homme, Alexandre Autef, Fabrice Grouny, Philippe Michaud, Emmanuel Joussein, Fazia Fouchal, Sylvie Rossignol

Co-fired fly ash as a precursor for geopolymer production
Christopher Shearer, John Provis, Susan Bernal, Kimberly Kurtis

Bulk composition and microstructure dependence of effective thermal conductivity of porous inorganic polymer materials
Elie Kamseu, Benoit Nait-Ali

Mitigation of early age shrinkage in alkali activated slags through internal curing
Aaron Sakulich, Dale Bentz

Compressive strength empirical formulation on curing temperature and time of rapid-set high-strength geopolymer for highway repair and rehabilitation
Sotya Astutiningsih

Coffee Break

3:30 pm – 4:00 pm

Panel Discussion on Future of SCMs & Alternative Cements

4:00 pm – 5:00 pm

Location: TBD

Panelists: TBD

THANK YOU FOR ATTENDING!

List of posters

Correlation between the composition and the morphology of pulp fibers and their internal curing capacity

Passarin Jongvisuttisun, Georgia Institute of Technology, United States

Kimberly Kurtis, Georgia Institute of Technology, United States

From wheat straw and rice straw to supplementary cementitious materials

Feraidon Ataie, Kansas State University, United States

Kyle Riding, Kansas State University, United States

Maria Juenger, University of Texas at Austin, United States

The effect of microorganism on compressive strength of mortar

Jun Cheol Lee, School of Architecture and Civil Engineering, Kyungpook National University, Korea

Chang Joon Lee, School of Architecture and Civil Engineering, Kyungpook National University, Korea

Wha Jung Kim, School of Architecture and Civil Engineering, Kyungpook National University, Korea

Chul-Woo Chung, Pacific Northwest National Laboratory, United States

Elastic properties of CSH with inclusions of Na⁺ and K⁺ predicted by molecular dynamics simulation: validation by nanoindentation

Oscar Mendoza, Grupo del Cemento y Materiales de Construccion, Universidad Nacional de Colombia, Colombia

Carolina Giraldo, Cementos Argos, Colombia

Jorge Toboán, Grupo del Cemento y Materiales de Construccion, Universidad Nacional de Colombia, Colombia

Photocatalytic cement exposed to nitrogen oxides: Effect of oxidation and binding

Bo Yeon Lee, Georgia Institute of Technology, United States

Kimberly Kurtis, Georgia Institute of Technology, United States

Evaluation of rheological properties and microstructure of cement paste

Dongyeop Han, The University of Texas at Austin, United States

Raissa Ferron, The University of Texas at Austin, United States

Set on demand concrete

Sriramya D. Nair, University of Texas at Austin, United States

Raissa P. Ferron, University of Texas at Austin, United States

Improving the robustness of self consolidating concrete

Sriramya D. Nair, University of Texas at Austin, United States

Alexis A. Martinez, University of Texas at Austin United States

Raissa P. Ferron, University of Texas at Austin, United States

Geothermal silica waste as an addition to synthesize metakaolin-based geopolymers

Elisa Vega-Cordero, Universidad Autonoma de Nuevo Leon, Facultad de Ingenieria Mecanica y Electrica, Mexico

Lauren Gomez-Zamorano, Universidad Autonoma de Nuevo Leon, Facultad de Ingenieria Mecanica y Electrica, Mexico

Micromechanical properties of carbon nanofiber/cement-based composites

Catherine Stephens, Vanderbilt University, United States

Florence Sanchez, Vanderbilt University, United States

The potential use of oil sand tailings as an SCM in concrete

Fahad Rajabali, The University of Texas at Austin, United States
Sarah Taylor-Lange, The University of Texas at Austin, United States
Maria Juenger, The University of Texas at Austin, United States

Preparation and microstructural analysis of UHPCC material

Sujing Zhao, Southeast University, China
Chunping Gu, Southeast University, China
Wei Sun, Southeast University, China
David Lange, University of Illinois at Urbana-Champaign, United States

Alternative cementitious materials for sustainable and high performance infrastructure: Research by the US Army Engineer Research and Development Center

Robert Moser, US Army ERDC, United States
Philip Malone, US Army ERDC, United States
Christopher Moore, US Army ERDC, United States
Charles Weiss, US Army ERDC, United States
Paul Allison, US Army ERDC, United States

Predicting frost damage in concrete due to D-cracking susceptible aggregates

Syeda Rahman, Texas A&M University, United States
Zachary Grasley, Texas A&M University, United States

Measuring in situ loading conditions in the rail seat for the understanding of concrete abrasion

Justin Grasse, University of Illinois, Urbana-Champaign, United States
David Lange, University of Illinois, Urbana-Champaign, United States
J. Riley Edwards, University of Illinois, Urbana-Champaign, United States

Early-age behavior of expansive cements: A closer look

Piyush Chaunsali, University of Illinois, United States
Paramita Mondal, University of Illinois, United States

Effect of recycled aggregate on moisture state in concrete

Jacob Henschen, University of Illinois Urbana-Champaign, United States
William Wilson, University of Illinois Urbana-Champaign, United States
David Lange, University of Illinois Urbana-Champaign, United States

Investigating setting, strength, and stiffness in alkali diffusion-controlled geopolymeric reactions

Daniel Castaneda, University of Illinois at Urbana-Champaign, United States
David Lange, University of Illinois at Urbana-Champaign, United States

The effect of heat treatment on the reactivity of natural zeolite used as a supplementary cementitious material

Lisa Burris, University of Texas at Austin, United States
Maria Juenger, University of Texas at Austin, United States

Exploring very early age hydration using a solution-phase continuum model

Manohar Gottapu, Tennessee Technological University, United States
Joseph Biernacki, Tennessee Technological University, United States

An image-analysis approach to probabilistic modeling of air void networks in hardened concrete

Nathan Mayercsik, Georgia Institute of Technology, United States
Jaymie Kaiser, Georgia Institute of Technology, United States,
Kimberly Kurtis, Georgia Institute of Technology, United States

Two parameter fracture testing of Portland cement mortar containing silica functionalized carbon nanotubes

Peter Stynoski, University of Illinois at Urbana-Champaign, United States
Paramita Mondal, University of Illinois at Urbana-Champaign, United States
Charles Marsh, US Army Corps of Engineers ERDC-CERL, United States
Erik Wotring, US Army Corps of Engineers ERDC-CERL, United States

The effect of particle size on the performance of pumice as a supplementary cementitious material

Saamiya Seraj, University of Texas at Austin, United States
Rachel Cano, University of Texas at Austin, United States
Maria Juenger, University of Texas at Austin, United States

Long-term shrinkage prediction using improved ACI 209 model for local materials

Tengfei Fu, Oregon State University, United States
Tyler Deboodt, Oregon State University, United States
Jason Ideker, Oregon State University, United States

Monitor fresh cement hardening by measuring resonance of bender element

Jinying Zhu, University of Texas Austin, United States
Jinbiao Cai, Zhejiang University, China
Yi-Te Tsai, University of Texas Austin, United States
Xiaowei Dai, University of Texas Austin, United States

Smart stress-sensing carbon nano- / PVA- fiber reinforced composites for stress and chloride detection

Joshua Hoheneder, United States
Konstantin Sobolev , University of Wisconsin- Milwaukee, United States
Ismael Flores, University of Wisconsin- Milwaukee, United States

Characterization of calcium aluminosilicate hydrate

Will Hunnicutt, University of Illinois Urbana-Champaign, United States
Leslie Struble, University of Illinois Urbana-Champaign, United States

Assessment of reutilization options for concrete debris in the Caribbean

Mitchell McKay, Georgia Institute of Technology, United States
Daniel Glass, Georgia Institute of Technology, United States
Kim Nguyen, Georgia Institute of Technology, United States
Josh Gresham, Georgia Institute of Technology, United States
Reginald DesRoches, Georgia Institute of Technology, United States
Kimberly Kurtis, Georgia Institute of Technology, United States