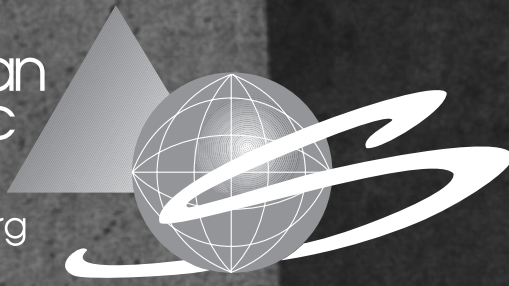


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# 16<sup>th</sup> Advances

**in Cement-Based Materials**  
University of Miami, Coral Gables

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**June 10-12, 2026**  
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University of Miami, Coral Gables

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# 16<sup>th</sup> Advances in Cement-Based Materials

University of Miami, Coral Gables

June 10-12, 2026

WELCOME

## WELCOME TO THE 16<sup>TH</sup> ADVANCES IN CEMENT-BASED MATERIALS CONFERENCE!

We are thrilled to welcome you to the 16<sup>th</sup> Advances in Cement-Based Materials Conference, hosted by the University of Miami and the American Ceramic Society. This year's conference is held in beautiful Miami, FL—a premier coastal destination and the gateway to Latin America. We are excited to host you at the U, which is well-known for its concrete materials research (among many other things)!

The conference continues to serve as a vital platform for researchers, industry professionals, and academics to exchange ideas and explore the latest advancements in cement-based materials. With 80 oral presentations across 10 parallel sessions and 50+ poster presentations, this year's program covers a wide range of topics, including:

- Rheology and Additive Manufacturing
- Bio-Inspired Cementitious Materials
- Sustainability
- AI and Modeling Techniques
- Material Characterization Techniques
- Cement Chemistry
- Supplementary/Alternative Cementitious Materials
- Concrete Durability

We are excited to host two keynote sessions, featuring invited presentations from Dr. Sriramya Nair (Cornell University) and Dr. Evelien Martens (Terra CO2). Each of these speakers brings a unique and timely perspective to share with our community. We will have an exciting Industry Speed Dating event, through which we aim to have industry be more closely integrated into the Cements Division.

We are also honored to celebrate Dr. Robert Flatt from the ETZ Zurich as this year's Della Roy Lecturer. Dr. Flatt will discuss how les-

sons learned from ceramics can be applied to cement research, including questions of dispersion, particle shape and packing, drying shrinkage, and characterization of mechanical properties. Dr. Flatt is well known for his contributions in both fields, exemplifying the leadership and innovation that this lecture seeks to recognize.

In addition to the technical sessions, we have planned several special events that highlight Miami for our attendees. On June 9, join us for a student event at the Unseen Creatures bar. On June 10, after Dr. Flatt's Della Roy lecture, we will have the Della Roy reception in the Frost Institute for Chemistry and Molecular Sciences, followed by the YPN+1 event at Titan America's newly opened Titan Innovation Hub. On June 11, we will take an exciting boat ride, where you will enjoy the intracoastal waters, downtown/Brickell skyline, see homes of a number of celebrities on the islands, and maybe also see some dolphins.

This year, we have more than 20 sponsors and have raised over \$40,000. Thanks to our kind sponsors, we are able to cover lunch on both days, drinks and hors d'oeuvres on both evenings, and award several travel stipends. We are grateful for this support and hope that it can continue!

This conference is not only about sharing knowledge but also about building a dynamic and diverse community. We extend a warm welcome to our young members, whose energy and ideas are vital to the future of our field. Whether this is your first time attending or your sixteenth, we hope you find inspiration, collaboration, and belonging here. This conference is considered to be the best cements conference in the US thanks to attendees such as yourself.

Thank you for joining us. We look forward to an engaging, impactful, and memorable conference experience in Miami.

**Prannoy Suraneni**, University of Miami

**Alex Brand**, Virginia Tech

**Vicki Evans**, ACerS

## CONFERENCE ORGANIZERS



**Prannoy Suraneni**,  
University of Miami  
suranenip@miami.edu



**Alex Brand**,  
Virginia Tech  
asbrand@vt.edu

## 2025-2026 CEMENTS DIVISION OFFICERS

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ABSTRACTS



## AGENDA AND SCHEDULE OF EVENTS

Tuesday, June 9	Location	Time	* Rooms Whitten 160 and Whitten 170 are located in the Whitten Learning Center, 5100 Brunson Drive, Coral Gables, FL 33146
Student Event (RSVP required)	Unseen Creatures	6:00 – 10:00 pm	
Wednesday, June 10	Location	Time	
Registration & Breakfast	Whitten 160 & Whitten 170	8:00 – 8:30 am	
Opening Remarks – Prannoy Suraneni	Whitten 160	8:30 – 8:45 am	
Keynote Speaker – Sriramya Nair	Whitten 160	8:45 – 9:30 am	
Coffee Break	Whitten 160 & Whitten 170	9:30 – 10:00 am	
Breakout Sessions A and B		10:00 am – 12:00 pm	
A – Sustainability (1 of 2)	Whitten 160		
B – AI and Modeling Techniques	Whitten 170		
Lunch & Business Meeting	Whitten 160	12:00 – 1:15 pm	
Breakout Sessions C and D		1:15 – 3:15 pm	
C – Concrete Durability	Whitten 160		
D – Cement Chemistry	Whitten 170		
Coffee Break	Whitten 160 & Whitten 170	3:15 – 3:45 pm	
Della Roy Lecture	Whitten 160	3:45 – 4:45 pm	
Della Roy Reception & Poster Session	Frost Institute Lobby	4:45 – 7:00 pm	
YPN+I Event (RSVP required)	Titan Innovation Hub	7:00 – 10:00 pm	
Thursday, June 11	Location	Time	
Registration & Breakfast	Whitten 160 & Whitten 170	8:00 – 8:45 am	
Keynote Speaker – Evelien Martens	Whitten 160	8:45 – 9:30 am	
Coffee Break and Group Photo	Whitten 160 & Whitten 170	9:30 – 10:00 am	
Breakout Sessions E and F		10:00 am – 12:00 pm	
E – Sustainability (2 of 2)	Whitten 160		
F – Bio-Inspired Cementitious Materials	Whitten 170		
Lunch	Whitten 160 & Whitten 170	12:00 pm – 1:15 pm	
Breakout Sessions G and H		1:15 – 3:15 pm	
G – Supplementary/Alternative Cementitious Materials (1 of 2)	Whitten 160		
H – Rheology and Additive Manufacturing	Whitten 170		
Coffee Break	Whitten 160 & Whitten 170	3:15 – 3:45 pm	
Brunauer Lecture	Whitten 160	3:45 – 4:15 pm	
Campus/Lab Tours; RILEM TC MCA Meeting; Poster Session 2	Whitten 170 (RILEM TC MCA Meeting) Frost Institute Lobby (Poster Session 2)	4:15 – 5:15 pm	
NSF Talk & Discussion	Whitten 160	4:15 – 5:15 pm	
Free Time		5:15 – 7:00 pm	
Membership Engagement Event (RSVP required)	Miamarina Bayside	7:00 – 10:00 pm	
Friday, June 12	Location	Time	
Registration & Breakfast	Whitten 160 & Whitten 170	8:00 – 8:30 am	
Industry Speed Dating	Whitten 160 & Whitten 170	8:30 – 9:30 am	
Coffee Break	Whitten 160 & Whitten 170	9:30 – 10:00 am	
Breakout Sessions I and J		10:00 am – 12:00 pm	
I – Supplementary/Alternative Cementitious Materials (2 of 2)	Whitten 160		
J – Material Characterization Techniques	Whitten 170		
Closing Remarks – Prannoy Suraneni and Alex Brand	Whitten 160	12:00 – 12:30 pm	
Campus/Lab Tours		12:30 – 1:15 pm	

### MEETING REGULATIONS



### NO PHOTOGRAPHY/ RECORDING CELL PHONES SILENT

During sessions conducted during Society meetings, unauthorized photography, videotaping, and audio recording is strictly prohibited for two reasons: (1) conference presentations are the intellectual property of the presenting authors as such are protected, and (2) engaging in photography, videotaping, or audio recording is disruptive to the presenter and the audience. Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

**Note:** The Society may engage photographers to photograph sessions for marketing and promotional purposes.

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## BREAKOUT SESSIONS SCHEDULE

### WEDNESDAY, JUNE 10, 2026

#### A – SUSTAINABILITY (1 OF 2)

10:00AM–12:00PM | ROOM: WHITTEN 160 | Moderator: Linfei Li

Time	Title	Authors
10:00	Sodium carbonate looping for cost competitive cementitious materials	<b>Kyle Shank</b> ; Lisa E. Burris; and Shang Zhai, The Ohio State University, Columbus, OH
10:15	Carbonate cement: A pathway to circular cement and CO <sub>2</sub> supply chains	<b>Richard E. Riman</b> , Rutgers, The State University of New Jersey, Piscataway, NJ
10:30	Theoretical whole-life CO <sub>2</sub> emissions of concrete mixtures considering maximum CO <sub>2</sub> sequestration via carbonation	Matt A. Jungclaus; Sarah L. Williams; Jay H. Arehart; and <b>Wil V. Srubar III</b> , University of Colorado Boulder, Boulder, CO
10:45	Effect of kaolinite and illite on the performance of carbonation cementitious system	<b>Md Montaseer Meraz</b> ; Pavan Akula; Chven Mitchell; and Jessica M. Rimsza, Oregon State University, Corvallis, OR; Sandia National Laboratories, Albuquerque, NM
11:00	Structure–property interactions in biochar-amended recycled aggregate concrete	<b>Fatemeh Hamidi</b> ; Victor Okumko; Andrew King; and Lori Tunstall, Civil, Colorado School of Mines, Golden, CO; Synchrotron SOLEIL, Saint-Aubin, France; PSL University, Evry, France
11:15	Electrochemical production of next-generation, clean cement	<b>Iman Mehdipour</b> , Sublime Systems, Somerville, MA
11:30	How does the reactive transport of Mg <sup>2+</sup> ions influence the phase composition of novel MgO-based cements?	<b>Juan Pablo Gevaudan</b> , Pennsylvania State University, University Park, PA
11:45	Utilizing the carbonated recycled cement powder for supplementary cementitious material	Aron Berhanu Degefa; Ji-Hyun Kim; and <b>Chul-Woo Chung</b> , Pukyong National University, Busan, South Korea

## BREAKOUT SESSIONS SCHEDULE

### WEDNESDAY, JUNE 10, 2026 (CONT'D)

B – AI AND MODELING TECHNIQUES 10:00AM–12:00PM   ROOM: WHITTEN 170   Moderator: Chengcheng Tao		
Time	Title	Authors
10:00	Chemistry-informed machine learning for performance prediction and design space exploration of alkali-activated slag	<b>Qiyao He; Zhanzhao Li;</b> and Kai Gong, Rice University, Houston, TX
10:15	Silica surface stability in high pH solutions	<b>Jessica M Rimsza,</b> Sandia National Laboratories, Albuquerque, NM
10:30	Source-specific reactivity windows for calcined kaolinitic clays identified via Self-Validated Ensemble Models	<b>Amir Hajibabae</b> and Grant McKnight, Ozinga Bros
10:45	Let's accelerate & automate	<b>Nishant Garg,</b> University of Illinois Urbana Champaign, Urbana, IL
11:00	Rethinking crystallinity at the nanoscale	<b>Luis A Ruiz Pestana,</b> University of Miami, Coral Gables, FL
11:15	Structural descriptors linking atomic structure to macroscopic behavior in cementitious materials	<b>Kai Gong; Weiqiang Chen;</b> Qiyao He; Zhu Pan; and Zhanzhao Li, Rice University, Houston, TX; Hebei University of Technology, Tianjin, China
11:30	Multiscale insights into graphene oxide interactions in cementitious materials using molecular dynamics simulations	<b>Meili Liu,</b> University of Miami, Coral Gables, FL
11:45	Towards a more general simulation framework for microstructure development in cementitious binders	<b>Jeffrey W. Bullard</b> and Florin Nita, Texas A&M University, College Station, TX

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## BREAKOUT SESSIONS SCHEDULE

### WEDNESDAY, JUNE 10, 2026 (CONT'D)

#### C - CONCRETE DURABILITY

1:15-3:15PM | ROOM: WHITTEN 160 | Moderator: Matthew D'Ambrosia

Time	Title	Authors
1:15	Role of carbon nanotubes on alkali-silica reaction	<b>Hwan Lee</b> ; Aniruddha Baral; and Raissa Ferron, University of Texas at Austin, Austin, TX; University of Illinois Urbana-Champaign, Urbana, IL
1:30	Carbonation-induced physicochemical transformations and moisture absorption changes in alkali-silica reaction gels	<b>Jianqiang Wei</b> and Arkabrata Sinha, University of Maryland College Park, College Park, MD; University of Florida, Gainesville, FL
1:45	Design of freeze-thaw resistant limestone-calcined clay based cementitious materials	<b>Ahmed Salah Jamal</b> and Mehdi Khanzadeh Moradillo, Temple University, Philadelphia, PA
2:00	Evaluating structural anisotropy from neutron pair distribution function analysis of uniaxially-loaded sustainable cement undergoing viscoelastic relaxation	<b>Abdelrahman Hamdan</b> ; Yuanpeng Zhang; Nishant Garg; Brendan Kehoe; Daniel Olds; Joseph Vocaturo; S. Michelle Everett; Katharine L. Page; Joerg C Neufeind; and Claire E. White, Princeton University, Princeton, NJ; Oak Ridge National Laboratory, Oak Ridge, TN; University of Illinois Urbana Champaign, Urbana, IL; Brookhaven National Laboratory, Upton, NY
2:15	Interaction between air entraining admixtures and ground glass pozzolan in freeze-thaw durability of low-carbon concrete	<b>Subhashree Panda</b> ; Md Maruf Hasan; Matthew J. Bandelt; and Matthew P. Adams, New Jersey Institute of Technology, Newark, NJ
2:30	Using ground tire rubber as an air-entraining agent in concrete: Technical feasibility	<b>Dimitri Feys</b> ; Parisa Nemat; Samantha Young; Ceki Halmen; John Myers; and John Kevern, Missouri University of Science and Technology, Rolla, MO; University of Missouri Kansas-City, Kansas-City, MO; National Renewable Energy Laboratory, Golden, CO
2:45	Artificial neural network based prediction of concrete strength from non-destructive testing under variable curing conditions	<b>Ghazal Gholami Hossein Abadi</b> , Texas State University, San Marcos, TX
3:00	Raman imaging for mineralogical characterization of concrete aggregates: Implications on ASR susceptibility	<b>Omar F Durrani</b> , University of Illinois, Urbana Champaign, Champaign, IL

## BREAKOUT SESSIONS SCHEDULE

# WEDNESDAY, JUNE 10, 2026 (CONT'D)

### D - CEMENT CHEMISTRY

1:15-3:15PM | ROOM: WHITTEN 170 | Moderator: Alessandra Yamagata

Time	Title	Authors
1:15	Selective nano-seeding of cement phases using Ca-Al-NO <sub>3</sub> layered double hydroxide	<b>Godwin Ogbuehi</b> and Monday U. Okoronkwo, Missouri University of Science and Technology, Rolla, MO
1:30	In-situ raman imaging of early stage carbonated cement hydration	<b>Marcin Hajduczek</b> ; Santiago El Awad; Yogiraj Sargam; Sean Monkman; Vishnu Chaudhari; Admir Masic; and Franz Josef Ulm, Massachusetts Institute of Technology, Cambridge, MA; Indian Institute of Technology Jodhpur, Jodhpur, India; CarbonCure Technologies, Dartmouth, Canada
1:45	Surface interfacial dissolution phenomena of calcium silicates	<b>Aidyn Tugelbayev</b> ; Hongyu Wang; D. Jarret Wright; Jing Zhao; F. Marc Michel; and Alexander S. Brand, Virginia Tech, Blacksburg, VA
2:00	Programming earthen materials' shape retention with synergistic biopolymers for 3D printing	<b>Yierfan Maierdan</b> ; Akul N. Seshadri; Yohan Jacquet; Sabrina Fazio DeAraujo; Kendra A. Erk; and Shiho Kawashima, Columbia University, New York City, NY; Purdue University, West Lafayette, IN; Technical University of Denmark, Lyngby Denmark
2:15	Linking composition to mechanical performance and transport properties of type II cement	<b>Zeyu Wang</b> ; Devon Golden; Collins Twum; Newell R Washburn; and Kimberly E. Kurtis, Georgia Tech, Atlanta, GA; Carnegie Mellon University, Pittsburgh, PA
2:30	Crystal vision: An interactive computer video game for learning basic crystallography	<b>Nanzeeba Tabassum</b> ; Jacob Henschen; Jenny Amos; Eric Shaffer; and Nishant Garg, University of Illinois Urbana Champaign, Urbana, IL
2:45	Revisiting hydrogrossular: Experimental evidence against a miscibility gap	<b>Aniruddha Baral</b> ; Boyang Zhan; and Theodore Haneina, University of Leeds, Leeds, United Kingdom; University of California, Los Angeles, CA; University of Texas at Austin, Austin, TX
3:00	How temperature sensitive are calcined clay-type II cement blends?	<b>Kyle Austin Riding</b> ; Sristi Das Gupta; Randa Zeidan; Christopher C. Ferraro; Kimberly E. Kurtis; Maria Juenger; and Kejin Wang, University of Florida, Gainesville, FL; Georgia Institute of Technology, Atlanta, GA; University of Texas at Austin, Austin, TX; Iowa State University, Ames, IA

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### THURSDAY, JUNE 11, 2026

#### E - SUSTAINABILITY (2 OF 2)

10:00AM – 12:00PM | ROOM: WHITTEN 160 | Moderator: Alex Brand

Time	Title	Authors
10:00	Sustainable alkaline binders using composite precursors of hardened recycled concrete and blast furnace slag	<b>Efrain E. DLR-Garcia</b> ; J. Ivan Esacalante-Garcia; and O. Burciaga-Diaz, Cinvestav Saltillo, Saltillo, Mexico; Instituto Tecnológico de Saltillo, Saltillo, CU, Mexico
10:15	A pilot study of using recycled PET flakes as sustainable fine aggregates in concrete	<b>Sailong Hou</b> ; Jialuo He; and Xianming Shi, Washington State University, Pullman, WA; Widener University, Chester, PA; University of Miami, Coral Gables, FL
10:30	Mineralogical and performance evaluation of a volcanic natural pozzolan for use as a supplementary cementitious material	<b>Moe Sharbat</b> ; Rafic Minkara; and Christy Sieg, EP Power Minerals, Atlanta, GA
10:45	Aluminum availability and uptake into C-(A)-S-H from mixed-layer aluminosilicates: Mechanistic insights from the building materials research area at Chalmers	<b>Arezou Babaahmadi</b> , Chalmers University, Gothenburg, Sweden
11:00	Re-establishing air entrainment in biochar-rich concrete through tailored biochar surface engineering	<b>Mahdi Mirabrishami</b> ; S.H. Chu; and Farshad Rajabipour, Pennsylvania State University, State College, PA
11:15	A hybrid mechano-thermal synthesis route to activate clay minerals as scms: A case of kaolinite	<b>Oluwadamilare Charles Adesina</b> ; Bryan K. Aylas-Paredes; Brian R. Cherry; Luciano A. Gobbo; Aditya Kumar; and Narayanan Neithalath, Arizona State University, Tempe, AZ; Missouri University of Science and Technology, Rolla, MO; Malvern PANalytical Inc., Westborough, MA
11:30	Diapers to concrete: Upcycling absorbent waste materials as internal curing agents for more durable concrete	<b>Halle J Block</b> ; Akul Nimish Seshadri; Kendra A. Erk; Arsen Simonyan; and Seth Lindberg, Purdue University, West Lafayette, IN; Procter & Gamble Service GmbH, and Procter and Gamble Co.
11:45	Hydration and phase evolution in bcsa-blended PLC and LC <sup>3</sup> cement systems	<b>Visa Juhani Isteri</b> ; Eric P. Bescher; and Fabian Paniagua, CTS Cement Manufacturing Corporation, Garden Grove, CA; University of California Los Angeles, Los Angeles, CA

## BREAKOUT SESSIONS SCHEDULE

### THURSDAY, JUNE 11, 2026 (CONT'D)

F - BIO-INSPIRED CEMENTITIOUS MATERIALS		
10:00AM - 12:00PM   ROOM: WHITTEN 170   Moderator: Juan Pablo Gevaudan		
Time	Title	Authors
10:00	Hydration and phase evolution in slag-clay-eggshell cement-less binders: Role of calcination temperature and composition	<b>Bryan K. Aylas-Paredes</b> ; Duy-Hai Vo; Taihao Han; Narayanan Neithalath; and Aditya Kumar, Missouri University of Science and Technology, Rolla, MO; Arizona State University, Tempe, AZ
10:15	Calcium silicate/aluminate cements used in dentistry	<b>Carolyn M Primus</b> , Primus Consulting, Sarasota, FL
10:30	Sea sponge-inspired hard-soft cementitious composite enabled by multi-material additive manufacturing and phase field-cohesive zone model simulation	<b>Reza Moini</b> ; Aimane Najmeddine; and Shashank Gupta, Princeton University, Princeton, NJ
10:45	The air-entraining effect of bio-based surfactants in alkali-activated slag pastes	<b>Ali Ghahremaninezhad</b> and Mohammad Sadegh Tale Masoule, University of Miami, Coral Gables, FL
11:00	Microalgae-produced CaCO <sub>3</sub> for decarbonizing cement production	<b>Danielle N. Beatty</b> ; Cansu Acarturk; Matthew R. Wiatrowski; Michael T. Guarnieri; and Wil V. Srubar III, University of Colorado, Boulder, CO; Gebze Technical University, Çayirova, Turkey, National Laboratory of the Rockies, Golden, CO
11:15	Cementless, recyclable biopolymer composites for construction in austere environments	<b>Beng Wei Chong</b> and Xijun Shi, Ingram School of Engineering, Texas State University, San Marcos, TX
11:30	Evaluating internal curing efficiency of cellulose nanofibrils and impact on performance of cementitious materials	<b>Priyan Roy Tamil Eniyan</b> and Linfei Li, Florida International University, Miami, FL
11:45	Development and characterization of bio-permeable concrete using corn waste biochar	<b>Nutchapon Chusai</b> ; Peerapong Jitsangiam; and Thanon Bua-luang, Florida International University, Miami, FL; Chiang Mai University, Chiangmai, Thailand

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### THURSDAY, JUNE 11, 2026 (CONT'D)

#### G – SUPPLEMENTARY/ALTERNATIVE CEMENTITIOUS MATERIALS (1 OF 2)

1:15 – 3:15PM | ROOM: WHITTEN 160 | Moderator: Franco Zunino

Time	Title	Authors
1:15	Enhancing the reactivity of basalt for alkaline activation	<b>Sophia Liron Bergen</b> and Claire E. White, Princeton University, Princeton, NJ
1:30	Cost-competitive SCMs, produced anywhere cement is made	<b>Daniel Kopp</b> ; Bahram Jadidian; Sean Quinn; Mario Davidson; Brian MacDowall; Xinglei Liu; Nick Boyko; and David Gersholowitz, Queens Carbon, Inc., Cedar Grove, NJ
1:45	Cost effective organic molecular additive for hydration control and strength enhancement in cementitious materials	<b>Aniket Patnaik</b> ; Jialai Wang; Monica Amaral; Ayan Saha; Abdulmaliq Alawode; Xi Chen; Maysam Bahmani; and Xinyu Shi, The University of Alabama, Tuscaloosa, AL
2:00	Testing the wrong thing? Why OPC-based standards misread alternative binders	Eric P. Bescher and <b>Fabian Paniagua</b> , University of California Los Angeles, Los Angeles, CA; CTS Cement Manufacturing Corporation, Garden Grove, CA
2:15	Center of excellence for the advancement and acceleration of cement and concrete engineering technologies (ACCENT)	<b>Denise A Silva</b> , Oak Ridge National Laboratory, Oak Ridge, TN
2:30	Lessons from roman lime processing for modern carbon-neutral cements	<b>Ida Marie Nervik</b> and Admir Masic, Massachusetts Institute of Technology, Cambridge, MA
2:45	Na <sub>2</sub> CO <sub>3</sub> as an activator of early reactivity in limestone calcined clay cement	<b>Lenka Scheinherrova</b> ; Hyunuk Kang; and Franco Zunino, CTU in Prague, Prague, Czech Republic; University of California, Berkeley, Berkeley, CA
3:00	Pore structure in low-carbon cement systems: Effects of cement composition and mineral additions	<b>Aiqing Xu</b> ; Dayou Luo; Randa Zeidan; Thien Tran; Sristi Das Gupta; Paola Huynh; Maria Juenger; Kyle Austin Riding; Kejin Wang; and Kimberly E. Kurtis, Georgia Institute of Technology, Atlanta, GA; Iowa State University, Ames, IA; University of Florida, Gainesville, FL; The University of Texas at Austin, Austin, TX

## BREAKOUT SESSIONS SCHEDULE

### THURSDAY, JUNE 11, 2026 (CONT'D)

#### H - RHEOLOGY AND ADDITIVE MANUFACTURING 1:15 - 3:15PM | ROOM: WHITTEN 170 | Moderator: Kyle Riding

Time	Title	Authors
1:15	Mechanical characterization and desiccation-driven interfacial shear degradation in extrusion-based 3D-printed cementitious mortar	<b>Pedram Ghassemi</b> ; Lisa E Burris; Anthony Luscher; and Jeremy Seidt, The Ohio State University, Columbus, OH
1:30	Rheological behavior and printability of cement-blended modified high-plasticity clay mixtures for extrusion-based 3D printing	<b>Maryam Masoomi</b> and Pavan Akula, Oregon State University, Corvallis, OR
1:45	Precision of rheological parameters derived from measurements	Roman Rezaev; <b>Dimitri Feys</b> ; Shравan Muthukrishnan; and Viktor Mechtcherine, Technische Universität Dresden, Dresden, Germany; Missouri University of Science and Technology, Rolla, MO
2:00	Printability and mechanical anisotropy of nanomodified ultra-high-performance concrete for 3D concrete printing	<b>Shady Gomaa</b> , The University of Alabama, Tuscaloosa, AL
2:15	Rheological modeling of cement slurries enhanced by physics-informed neural network	<b>Chengcheng Tao</b> ; Huaisiao Yan; and Jiannan Ding, Purdue University, West Lafayette, IN
2:30	Chemical and rheological evolution governing the early-age behavior of alkali-activated low-grade calcined clay pastes	Sriramy D Nair and <b>Neel Bhuskute</b> , Cornell University, Ithaca, NY
2:45	Toward multifunctional concrete: Rheology control and architected supercapacitors in electron-conducting carbon-cement ( $ec^3$ ) composites	<b>Santiago El Awad</b> ; Damian Stefaniuk; Abdelmounaim Mechaie; Admir Masic; and Franz Josef Ulm, Massachusetts Institute of Technology, Cambridge, MA
3:00	Toward one-part alkali-activated metakaolin via inter-grinding: Assessing rheology and reaction mechanism	<b>Meddelin Setiawan</b> and Claire E. White, Princeton University, Princeton, NJ

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## BREAKOUT SESSIONS SCHEDULE

### FRIDAY, JUNE 12, 2026

#### I - SUPPLEMENTARY/ALTERNATIVE CEMENTITIOUS MATERIALS (2 OF 2)

10:00AM - 12:00PM | ROOM: WHITTEN 160 | Moderator: Moe Sharbaf

Time	Title	Authors
10:00	Structure - reactivity relationships in thermally activated coal slurry for low-carbon cement	<b>Abdulmaliq Alawode</b> ; Maysam Bahmani; Aniket Patnaik; Xi Chen; Monica Amaral; Ayan Saha; Xinyu Shi; and Jialai Wang, The University of Alabama, Tuscaloosa, AL
10:15	Carbon plasma process for low carbon clay activation	<b>Kyle Wong</b> ; Joycelyn Liang; and Franco Zunino, University of California, Berkeley, Berkeley, CA
10:30	Mechanical performance and conductive behavior of nano-reinforced magnesium phosphate mortars	<b>Myrsini Maglogianni</b> , Wayne State University, Detroit, MI
10:45	Carbonate-mediated activation of ultra-high-volume slag blended cement system using sodium carbonate	<b>Samira Hossain</b> ; Zhanzhao Li; and Kai Gong, Rice University, Houston, TX
11:00	Design and multi-response optimization of ternary metakaolin-pumice-limestone powder geopolymer system	<b>Taofiq O Mohammed</b> and Ebenezer O Fanijo, Georgia Institute of Technology, Atlanta, GA
11:15	Influence of limestone content in cement on the hydration kinetics of cement pastes with nontraditional and natural pozzolans	<b>Anelya Zhussupekova</b> ; Alberto J Castillo; Raikhan Tokpatayeva; and Jan Olek, Purdue University, West Lafayette, IN
11:30	Validation of 5-min UR <sup>2</sup> test on a dataset of 140+ calcined clays	<b>M. Farjad Iqbal</b> ; Yujia Min; Bayezid Baten; Syed Rafiuzzaman; and Nishant Garg, University of Illinois Urbana Champaign, Urbana, IL
11:45	Alkali-modified clinoptilolite zeolite as a reactive supplementary cementitious material from early-age performance to later-age durability	<b>M. Shariful Islam</b> and Joseph J. Biernacki, South Carolina State University, Orangeburg, SC; Tennessee Technological University, Cookeville, TN

## BREAKOUT SESSIONS SCHEDULE

### FRIDAY, JUNE 12, 2026 (CONT'D)

J - MATERIAL CHARACTERIZATION TECHNIQUES		
10:00AM - 12:00PM   ROOM: WHITTEN 170   Moderator: Dimitri Feys		
Time	Title	Authors
10:00	Quantifying iron sulfide superstructures in concrete aggregates in the recovered solids after density-based separation	Dip Banik and <b>Alexander S. Brand</b> , Virginia Tech, Blacksburg, VA
10:15	Optimizing supplementary cementitious material blends for concrete enhancement	<b>Amir Hajibabae</b> , Ozinga Bros, Chicago, IL
10:30	Improving concrete performance for transportation infrastructure	Jill Rotherham; Clare Fischer; and <b>Christopher Shearer</b> , South Dakota School of Mines and Technology, Rapid City, SD
10:45	Elemental analysis of concrete pore solutions in emerging binder systems using x-ray fluorescence (XRF)	<b>Mohammad Houshmand</b> ; Kenneth A. Snyder; Irem Efe; and Scott Jones, National Institute of Standards and Technology (NIST), Gaithersburg, MD
11:00	Decoupling the dehydroxylation and amorphization of kaolinite upon thermal and mechanochemical activation for use in low-carbon cements	<b>Hao Chen</b> and Franco Zunino, University of California Berkeley, Berkeley, CA
11:15	Identifying premature deterioration in cementitious materials using volatilomics	<b>Oluwaseun Ayooluwa Jegede</b> ; Jenna Diefenderfer; Trenton Davis; Heather D Bean; and Jason H Ideker, Oregon State University, Corvallis, OR; Arizona State University, Tempe, AZ
11:30	Probing the very early-stage hydration of cements, and cement phases, using in-situ x-ray diffraction	<b>Tu-Nam Nguyen</b> ; Enzo Amah; Lily Allen; Kimberly E. Kurtis; Thomas C. Fitzgibbons; and Angus P. Wilkinson, Georgia Institute of Technology, Atlanta, GA; Dow, Inc., Lake Jackson, TX
11:45	Evolving cement microstructure via nanosilica additions using nuclear magnetic resonance spectroscopy	<b>Alexis Scida</b> ; Keith Fritzsching; Nelson Bell; Melissa Mills; and Jessica M Rimsza, Sandia National Laboratories, Albuquerque, NM

# 16<sup>th</sup> Advances in Cement-Based Materials

University of Miami, Coral Gables

June 10-12, 2026

DELLA ROY LECTURE



Prof. Dr. Robert J. Flatt

## Lessons from Ceramics in Cement Research

### Abstract:

Ceramics and cements share many common features. Both are prepared as suspensions mixing water and ground mineral powders. This leaves both domains with complex problems about the rheology of particulate suspensions, including questions of dispersion, particle shape and packing. Beyond this, they also share common questions about drying shrinkage and characterization of mechanical properties.

Such connections have been a source of inspiration for much of my research on cementitious materials. So, it seems very appropriate to discuss this connection between ceramics and cements for this Della Roy lecture at the Cements Division of the American Ceramic Society.

After trying to establish that panorama, I will develop some of cement-specific questions that are intimately tied to cement's reactivity. They make these systems much more challenging to understand but also more exciting to study. While delving into those systems, it is to remember that in the "parent field" of ceramics,

many lessons are learned by manipulating systems. How can this be done in cement? Which questions can we get enough grasp on in research and which topics should we better leave to industry? These are some of the questions that I hope to conclude the talk with.

### Biography:

Robert J. Flatt is Professor for Physical Chemistry of Building Materials at ETH Zürich since 2010. His main research topic is the working mechanisms of chemical admixtures, in particular for reducing the environmental footprint of concrete. This feeds into research on digital fabrication with concrete, which is developed within the Swiss National Competence Centre on Digital Fabrication in Architecture. Another topic of central interest for him is material science for the preservation of stone in built cultural heritage. On this front his group is advancing Heritage++, a spatial computing platform facilitating interdisciplinary exchanges and spatial contextualization of data, in particular for stone deterioration.

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## KEYNOTE SPEAKERS



**Dr. Sriramy Duddukuri Nair**

### **Cement Chemistry Under Extremes: Phase Evolution and Long-term Performance**

**Abstract:**

Cementitious materials have long been used in subsurface environments such as oil and gas wells and are now also central to emerging geothermal applications, where extreme conditions

drive significant chemical and microstructural change. Calcium (alumino) silicate hydrate (C-(A)-S-H), the principal binding phase in cementitious systems, is typically poorly ordered at ambient conditions, but transforms into mineral-like phases under subsurface high-pressure high-temperature (HPHT) conditions. Using a performance-based experimental framework, our work investigates how the starting oxide chemistry, aluminosilicate source, temperature, pressure, thermal cycling, age, and fluid acidity govern phase development and transformation. The first part of the talk shows how rigorous phase-identification approaches can establish links between early-age phase evolution and macroscopic material performance. The second demonstrates that, at critical transformation temperatures, long-term phase alterations of mineral-like hydration products are governed by the ionic medium and thermal cycling rather than by age alone. These results show that long term performance cannot be understood through equilibrium assumptions alone, but it must be interpreted through the kinetics and pathways of phase transformation in realistic cementitious systems.

**Biography:**

Sriramy Duddukuri Nair is an assistant professor in the School of Civil and Environmental Engineering at Cornell University. Her research centers on cementitious materials for infrastructure, energy, and construction applications, with interests spanning cement chemistry, rheology, and materials characterization. Before joining Cornell, she was a postdoctoral associate at the Cornell High Energy Synchrotron Source (CHESS), where she studied the micromechanical response of alternative cementitious materials. She previously served as a research associate at the University of Texas at Austin, where she worked on cementitious materials for zonal isolation, well decommissioning, and permanent abandonment of wells. Dr. Nair earned her Ph.D. in civil engineering from UT Austin, where she developed a novel set-on-demand concrete based on principles of magnetorheology. She received her M.S. from the University of California, Davis, and her B.Tech. from the Indian Institute of Technology Madras. She was recognized with the 2024 Walter P. Moore Junior Faculty Award from the American Concrete Institute and was named a 2023 Early-Career Research Fellow of the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine.



**Dr. Evelien Martens**

### **Terra CO2 Technology: Production of low carbon engineered cementitious materials through vitrification**

**Abstract:**

Terra has developed a proprietary in-flight flash vitrification process to manufacture low-carbon SCM, called OPUS SCM™. For every ton of Portland cement

replaced by OPUS SCM, a 70% reduction in CO<sub>2</sub> and 90% reduction in NO<sub>x</sub> emissions is achieved. Terra's technology is not restricted to narrow types of rock or mineralogy, which means the same reliable OPUS SCM can be produced from a variety of commonly available materials. Construction aggregate, which is already quarried in or near every large metropolitan area, is often suitable. In addition, waste materials such as mine tailings or under-performing natural pozzolans or fly ashes can be upgraded. Since 2022, Terra has been operating a 1 TPD facility in Golden, CO and has tested hundreds of samples from all over North America and beyond. Terra is currently building its first commercial plant in the Dallas-Fort Worth area in TX, which will be commissioned in 2027.

In the first part of this presentation, we will introduce our technology and products, share performance and durability data, and look at how Terra has scaled from lab scale to the first commercial plant.

Next, a case study will be presented, focusing on clays as feedstock for OPUS SCM and more specifically, comparing clay vitrification to clay calcination. In this study, different types of clays were both vitrified and calcined, and the products were tested in mortars and concrete, at different replacement levels. Pozzolanic reactivity, strength, and water demand will be discussed for both products.

Lastly, we will look to the future and Terra's path towards a true zero CO<sub>2</sub> cement; a complete Portland cement replacement.

**Biography:**

Dr. Evelien Martens is Director of Research and Development at Terra CO<sub>2</sub> Technology, a lower carbon cement company. She was one of Terra's first employees when she joined Terra in 2019. She is involved in the development of OPUS SCMTM and OPUS ZeroTM, Terra's engineered SCM and full-replacement alternative cement.

She holds a M.S. in Chemical Engineering from the KU Leuven in Belgium (2007) and earned a Ph.D. in Earth Sciences from the University of Western Australia (2019). She was awarded the MRIWA Directors' Postgraduate Scholarship for her PhD study of electrokinetic in-situ leaching, a novel, more environmentally friendly mining technique.

She previously worked as a reactive transport modeler at the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Perth, Australia (2009-2014), where she was involved in a range of projects related to water quality issues. Her career started in cement though, studying the transport of radionuclides through concrete to support the design of a safe storage solution for nuclear waste at the Belgian nuclear research center SCK-CEN in Mol, Belgium (2007-2009).

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## POSTER SESSIONS

### ABSTRACT #3699

#### High-SCM 3D-printed mortars for marine conditions

Iman Aghajanzadeh; Montale Tuen; Landolf Rhode-Barbigos; and Prannoy Suraneni, University of Miami, Coral Gables, FL

### ABSTRACT #3724

#### Influence of supplementary cementitious materials on the potential corrosion of steel reinforcement in low-carbon concrete

Paola Huynh and Maria Juenger, University of Texas at Austin, Austin, TX

### ABSTRACT #3761

#### Atomistic insights into radiation effects on borosilicate glasses using molecular dynamics

Chaima el Malki, USMS, Beni Mellal, Morocco

### ABSTRACT #3773

#### Mild activation of slag-metakaolin alkali-activated concrete using potassium carbonate

Sujan Phuyal and Linfei Li, Florida International University, Miami, FL

### ABSTRACT #3775

#### Plasma electrification of kaolinitic clay calcination for cementitious binders

Ellie A. Vaserman and Claire E. White, Princeton University, Princeton, NJ

### ABSTRACT #3794

#### Non-equilibrium plasma effects on kaolinite dehydroxylation and reactivity

Ellie A. Vaserman and Claire E. White, Princeton University, Princeton, NJ

### ABSTRACT #3816

#### Thermal activation of recycled cement to produce novel supplementary cementitious materials

Kingshuk Mukherjee and Prannoy Suraneni, University of Miami, Coral Gables, FL

### ABSTRACT #3830

#### CO<sub>2</sub> uptake in fillers and supplementary cementitious materials

Wasiu Olaniyi Alimi; Sofiane Amroun; and Prannoy Suraneni, University of Miami, Coral Gables, FL

### ABSTRACT #3839

#### Engineering sustainable concrete for improved coral settlement on artificial reefs

Kylee Rux and Prannoy Suraneni, University of Miami, Coral Gables, FL

### ABSTRACT #3848

#### Data-driven strength prediction and design space exploration of concrete containing waste brick powder

Jiabao Zhai, Rice University, Houston, TX

### ABSTRACT #3860

#### Structural performance of 3D-printed SEAHIVE® units for coastal protection

Montale Tuen; Iman Aghajanzadeh; Landolf Rhode-Barbigos, and Prannoy Suraneni, University of Miami, Coral Gables, FL

### ABSTRACT #3879

#### Physical and mechanical properties of two-part alkali-activated pastes utilizing calcined low-grade kaolin clay

Sarah Paschke and Claire E. White, Princeton University, Princeton, NJ

### ABSTRACT #3886

#### Integrated thermal and mechanochemical processing of calcined clays for low-carbon cementitious systems

Maysam Bahmani; Jialai Wang; Xinyu Shi; Xi Chen; Abdulmaliq Alawode; Aniket Patnaik; and Ayan Saha, The University of Alabama, Tuscaloosa, AL

### ABSTRACT #3888

#### LC<sup>3</sup> pastes produced with non-kaolinitic clays from phosphorus mining: Strength development and microstructural characteristics

Duy-Hai Vo; Bryan K. Aylas-Paredes; Taihao Han; Narayanan Neithalath; and Aditya Kumar, Missouri University of Science and Technology, Rolla, MO; Arizona State University, Tempe, AZ

### ABSTRACT #3897

#### Mechanisms governing carbonate polymorphism and core-shell formation during wet carbonation of OPC and RCF

Xinyu Shi; Xiaodong Wang; Xi Chen; Jialai Wang; Maysam Bahmani; Abdulmaliq Alawode; Monica Amaral; Aniket Patnaik; and Ayan Saha, The University of Alabama, Tuscaloosa, AL

## POSTER SESSIONS

### ABSTRACT #3902

**Self-healing performance of hydrogel-modified cementitious materials in marine environments**

**Farzad Rezaeicherati** and Ali Ghahremaninezhad, University of Miami, Coral Gables, FL

### ABSTRACT #3907

**Mechanistic insights into early-age surface resistivity of calcined clay and LC3 blended cements**

**Mohammad Zunaied Bin Harun** and Ebenezer O Fanijo, Georgia Institute of Technology, Atlanta, GA

### ABSTRACT #3912

**Functionalization and pre-carbonation of algae biochar for carbon neutral/negative cementitious composites**

**Jasmine Victoria Rodriguez** and Ali Ghahremaninezhad, University of Miami, Coral Gables, FL

### ABSTRACT #3915

**Mechanistic interpretation of biofuel-based combustion synthesis for next generation cement manufacturing**

**Sayee Srikarah Volaity**; Shubham Agrawal; Aditya Kumar; and Narayanan Neithalath, Arizona State University, Tempe, AZ; Missouri University of Science and Technology, Rolla, MO

### ABSTRACT #3916

**Closing the loop on cement: Flash recycling of hydrated cement paste into reactive clinker**

**Chanyeong Park**, Rice University, Houston, TX

### ABSTRACT #3917

**Effect of biomass source and pyrolysis temperature on the structure and physicochemical properties of biochar**

**Mohammad Hosein Moghadasin** and Sivakumar Ramathan, University of Miami, Coral Gables, FL

### ABSTRACT #3920

**Boxcrete: A Bayesian optimization open-source AI model for concrete strength forecasting and mix optimization**

Bayezid Baten; **Muhammad Ayyan Iqbal**; Sebastian Ament; Julius Kusuma; and Nishant Garg, University of Illinois Urbana Champaign, Urbana, IL; META, Menlo Park, CA

### ABSTRACT #3924

**Synergistic improvement of rheological and mechanical performance of mortar through chemo-physical activation of lime-based additives**

**Ayan Saha**; Jialai Wang; Monica Amaral; Aniket Patnaik; Xinyu Shi; Maysam Bahmani; Xi Chen; and Abdulmaliq Alawode, The University of Alabama, Tuscaloosa, AL

### ABSTRACT #3927

**Biomolecule-regulated carbonation of recycled concrete fines for enhanced CO<sub>2</sub> sequestration and reactivity**

**Xi Chen**; Xinyu Shi; Monica Amaral; Abdulmaliq Alawode; Maysam Bahmani; Aniket Patnaik; Ayan Saha; Armando Gabriel McDonald; Jialai Wang; Augustine Sackey, The University of Alabama, Tuscaloosa, AL; University of Idaho, Moscow, ID

### ABSTRACT #3929

**Development of sustainable repair mortars and sewerage pipe concrete materials incorporating reclaimed asphalt pavement and recycled steel fibers**

**Md Nasir Uddin**; Xijun Shi; and Zachary Grasley, Texas State University, San Marcos; Texas A&M University, College Station, TX

### ABSTRACT #3940

**Atomistic mechanisms of ion transport in CNASH nanoparticles**

**Qiyao He**; Weiqiang Chen; and Kai Gong, Rice University, Houston, TX; Xiamen University, Xiamen, China

### ABSTRACT #3941

**Quantitative characterization of fracture surfaces and crack-space information in concretes with different water-to-binder ratios**

**Sailong Hou**; Jialuo He; and Xianming Shi, Washington State University, Pullman, WA; Widener University, Chester, PA; University of Miami, Coral Gables, FL

### ABSTRACT #3943

**Neutron and gamma irradiation effects on calcium silicate deuterate**

**Hyeonseok Jee**; Elena Tajuelo Rodriguez; Paula C Bran Anleu; Yann Le Pape; and Nishant Garg, University of Illinois Urbana-Champaign, Urbana, IL; Oak Ridge National Laboratory, Oak Ridge, TN

### ABSTRACT #3945

**Admixture-LC3 interactions: Linking nano/microstructure to admixture-modified performance in limestone calcined clay cements**

**Enzo Amah**; Johannes Leisen; Thomas C. Fitzgibbons; Angus P. Wilkinson; and Kimberly E. Kurtis, Georgia Institute of Technology, Atlanta, GA; Dow, Inc., Lake Jackson, TX

### ABSTRACT #3947

**Large language model-enabled automated data extraction for concrete materials informatics**

**Zhanzhao Li**; Kengran Yang; Qiyao He; and Kai Gong, Rice University, Houston, TX

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## POSTER SESSIONS

### ABSTRACT #3950

**Impact of SCM quality on uhpc performance: A sensitivity analysis via ppf and UR<sup>2</sup>**

Fazal Hussain; Bayezid Baten; and Nishant Garg, University of Illinois Urbana Champaign, Urbana, IL

### ABSTRACT #3957

**Quantifying ye'elimite-ettringite evolution in belitic calcium sulfoaluminate cement from SEM and raman imaging**

Momina Rauf; Tausif E Elahi; and Nishant Garg, University of Illinois at Urbana-Champaign, Urbana, IL

### ABSTRACT #3958

**Impact of calcination time on dehydroxylation and morphological evolution of kaolinite via in-situ TEM**

Tausif E Elahi; Pablo Romero; and Nishant Garg, University of Illinois at Urbana-Champaign, Urbana, IL

### ABSTRACT #3967

**Understanding the influence of ash-to-char ratio of wood-based biochar on the performance of carbon-negative cementitious composites**

Nishad Ahmed; Faarzana Mustari Nishat; Kumaran Coopmootoo; Dhruvajouti Karmakar; Sudipto Sarkar; and Warda Ashraf, University of Texas at Arlington, Arlington, TX

### ABSTRACT #3968

**Microstructural transformations in carbonated  $\beta$ -C<sub>2</sub>S and wollastonite exposed to alkaline solutions**

Farzana Mustari Nishat and Warda Ashraf, The University of Texas at Arlington, Arlington, TX

### ABSTRACT #3970

**Recyclability and CO<sub>2</sub> mineralization potential of biochar-amended cementitious concrete**

Dhruvajouti Karmakar; Farzana Mustari Nishat; and Warda Ashraf, The University of Texas at Arlington, Arlington, TX

### ABSTRACT #3971

**Gaussian process regression for predicting rheological behavior of cement slurries with calcined clays**

Sudipto Sarkar; Amrita Basak; and Warda Ashraf, The University of Texas at Arlington, Arlington, TX; The Pennsylvania State University, University Park, University Park, PA

### ABSTRACT #3972

**Optimization of low-paste volume concrete – integrating Compressible Packing Model (CPM) with particle filler effect thresholds for enhanced sustainability**

Marcus Cheung, University of California, Berkeley

### ABSTRACT #3973

**Modeling of hydration kinetics and viscoelastic properties of Portland limestone cement blended with biochar from downdraft gasification**

Ugochukwu Ewuzie and Monday U. Okoronkwo, Missouri University of Science and Technology, Rolla, MO

### ABSTRACT #3974

**Experimental and computational investigation of rheological behavior of ultra-high-performance concrete enhanced by cellulose nanofibers**

Xiaoli Xiong; Rongze Hu; Kamal Khayat; and Chengcheng Tao, Purdue University, West Lafayette, IN; Missouri University of Science and Technology

### ABSTRACT #3975

**Development of calcined clay/calcium sulfate blends for robust performance of LC3 concrete**

Denise A. Silva and Paula Bran Anleu, Oak Ridge National Laboratory, Oak Ridge, TN

### ABSTRACT #3976

**Elastoplastic behaviors of mortar and olivine rock: A triaxial study**

Geng Niu and Laura E. Dalton, Duke University, Durham, NC

### ABSTRACT #3977

**Microstructural Evaluation of Solid Waste Supplementary Cementitious Materials for Enhanced Concrete Thermal Energy Storage Systems**

Soniya Tiwari and Laura E. Dalton, Duke University, Durham, NC

### ABSTRACT #3978

**Alkali fusion-activated copper tailings as supplementary cementitious materials: reactivity, hydration kinetics, and microstructural evolution**

Jiankai Xie; Xiang Zhao; and Qingli Dai, Michigan Technological University, Houghton, US

### ABSTRACT #3979

**Performance and carbon reduction of binary and ternary concrete systems with slag cement and fly ash**

Xiang Zhao; Jiankai Xie; and Qingli Dai, Michigan Technological University, Houghton, US

### ABSTRACT #3980

**Reactive vaterite derived from recycled concrete powder to enhance reactivity and performance of LC3 containing low-grade calcined clays**

Jiankai Xie; Xiang Zhao; and Qingli Dai, Michigan Technological University, Houghton, US

## POSTER SESSIONS

### ABSTRACT #3981

**Exploring ReefCycle biocement as a sustainable supplementary cementitious material**

**Sarah J. Willmann**; Shannon Parker; Mary Lempres; and Laura E. Dalton, Duke University, Durham, NC; ReefCycle Biocement Startup, Durham, NC

### ABSTRACT #3982

**Cement-based batteries with biochar-tuned microporous networks: A solution to infrastructure-integrated energy storage**

Zhiliang Zhou; Jialuo He; Yong Deng; and **Xianming Shi**, University of Miami, Coral Gables, FL; Chinese Academy of Sciences, Qingdao, China; Widener University, Chester, PA; Washington State University, Pullman, WA; South China University of Technology, Guangzhou, China

### ABSTRACT #3983

**Analysis of various lunar geopolymers mixed and cured on the International Space Station**

**Adam Johnson**; Louise Littles; Aleksandra Radlińska; and Sven Bilén, The Pennsylvania State University, College Park, PA; NASA Marshall Space Flight Center, Huntsville, AL

### ABSTRACT #3984

**Insights into the effect of the sulfate-to-alkali ratio on the C3A polymorphism of lab-synthesized Portland clinkers**

Ivo de Castro Carvalho; José da Silva Andrade Neto; Paulo Matos; **Ana Paula Kirchheim**, Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, Brazil; Santa Catarina State University (UDESC), Laguna, Brazil

### ABSTRACT #3985

**Uncertainty-aware bayesian multi-objective optimization for sustainable concrete mix design**

Xianming Shi and **Mayaz Uddin Gazi**, University of Miami, Coral Gables, FL

### ABSTRACT #3996

**Insights into the carbonation of industrial slags: Role of Mg and Al**

**Kumaran Coopamootoo**, Farzana Mustari Nishat, Warda Ashraf

### ABSTRACT #3997

**Low-temperature efflorescence-resistant geopolymers from zeolite-metakaolin hybrid precursors**

S.K. S. Hossain; Atolo A. Tuinukuafe; Jessica M. Rimsza; **Jeffrey W. Bullard**, Texas A&M University, College Station, TX; Sandia National Laboratories, Albuquerque, NM

### ABSTRACT #3998

**Microstructural characteristics of cement paste mixed with cellulose nanocrystal and graphene oxide**

**Yun-Kyung Lee**; Ji-Hyun Kim; and Chul-Woo Chung, Pukyong National University, Busan, South Korea

### ABSTRACT #3999

**Properties of geopolymer paste made of borosilicate glass powder and metakaolin**

**Gang-Min Noh**; Ji-Hyun Kim; and Chul-Woo Chung, Pukyong National University, Busan, South Korea

### ABSTRACT #4004

**Towards carbon-neutral FRP-reinforced biochar engineered cementitious composites slab**

**Jason S. Houston**; Zhigang Zhang; and Xianming Shi, University of Miami, Coral Gables, FL

### ABSTRACT #4005

**Tuning clay self-assembly for 3D-printing of bio-stabilized earthen construction materials**

**Yierfan Maierdan**; In Kuk Kang; Jae Hong Kim; and Shihoh Kawashima, Columbia University, New York, NY; Korea Advanced Institute of Science and Technology, Daejeon, South Korea

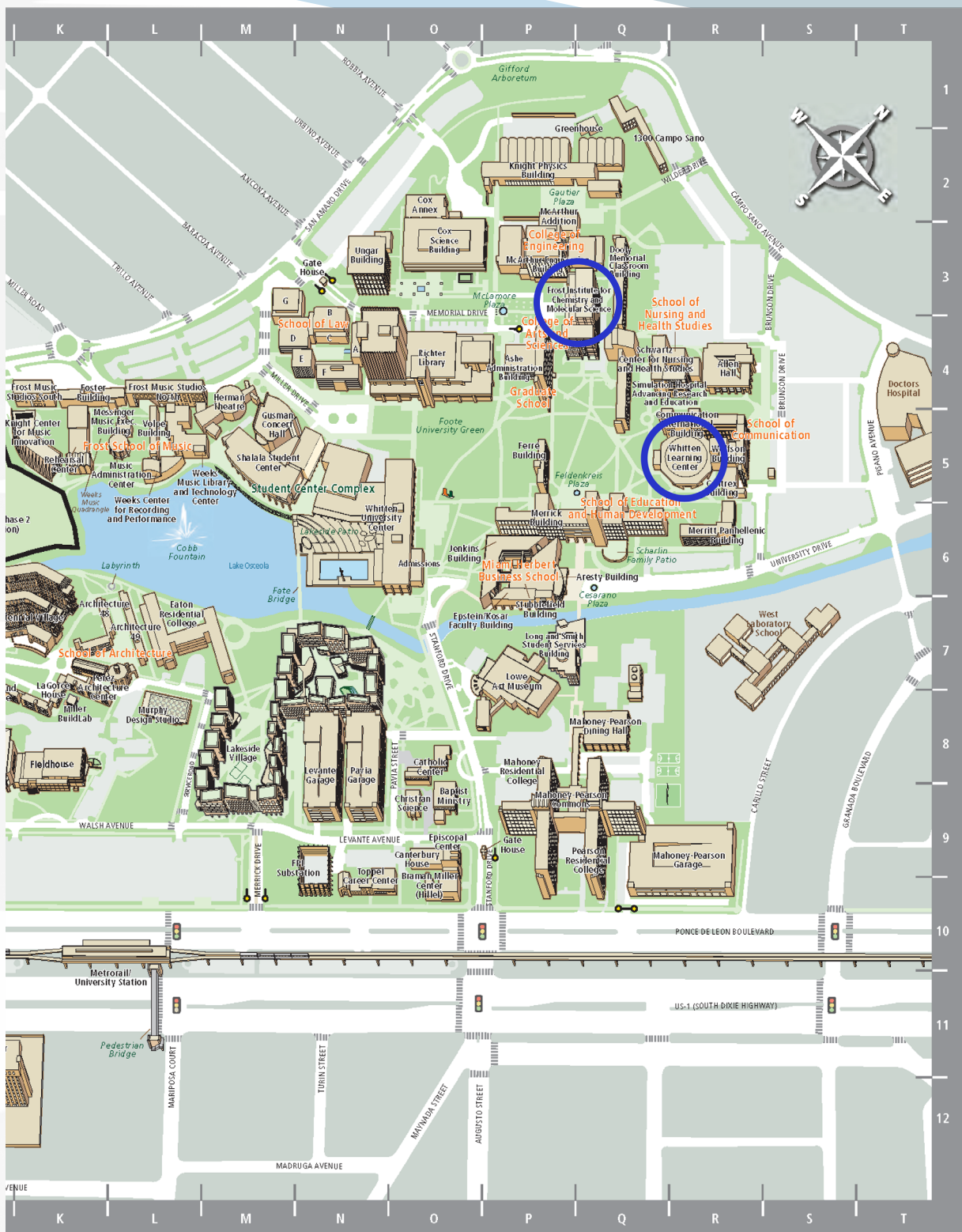
### ABSTRACT #4006

**Multi-carbonation strategy enables carbon-negative concrete infrastructure: An uncertainty-aware life cycle assessment**

**Zhipeng Li** and Xianming Shi, University of Miami, Coral Gables, FL



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