### Wednesday, July 9

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>10:00 am - 1:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td>1:00 - 1:15 pm</td>
<td>Welcome to Workshop</td>
</tr>
<tr>
<td>1:15 - 2:15 pm</td>
<td>Overview of ORNL Facilities</td>
</tr>
<tr>
<td>2:15 - 2:30 pm</td>
<td>Break</td>
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<tr>
<td>2:30 - 3:30 pm</td>
<td>Concrete at ORNL</td>
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<tr>
<td>3:30 - 5:30 pm</td>
<td>Poster Session</td>
</tr>
<tr>
<td>5:00 - 6:00 pm</td>
<td>Cements Division Executive Meeting</td>
</tr>
<tr>
<td>6:00 - 9:00 pm</td>
<td>Student Mixer @ Crawdaddys</td>
</tr>
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### Thursday, July 10

#### 8:00 - 8:15 am

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>8:15 - 8:30</td>
<td>Lori Tunstall and George Scherer</td>
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<tr>
<td>8:30 - 8:45</td>
<td>Rahil Khoshnazar, James Beaudoin, Laila Raki and Rouhollah</td>
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<tr>
<td>8:45 - 9:00</td>
<td>Ratin Mishra, Heinz Hendrik, Falk Wittel, Hans Herrmann, Humberto Carmona, Mark Sawley, David Geissbuhler, Martin Weibel, Emmanuel Gallucci and Robert Flatt</td>
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<tr>
<td>9:00 - 9:15</td>
<td>Daniel I. Castaneda, Jeremy A. Koch, Randy H. Ewoldt, Kyle</td>
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<tr>
<td>9:15 - 9:30</td>
<td>Ratan Mishra, Heinz Hendrik, Falk Wittel, Hans Herrmann, Humberto Carmona, Mark Sawley, David Geissbuhler, Martin Weibel, Emmanuel Gallucci and Robert Flatt</td>
</tr>
<tr>
<td>9:30 - 9:45</td>
<td>Ojas Chaudhari, Joseph Biernacki and Scott Northrup</td>
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</tbody>
</table>

#### Admixtures I

- **8:15 - 8:30** Admixture: Lori Tunstall and George Scherer. *Micellization and Adsorption of Air-Entraining Agents* - Oral
- **8:30 - 8:45** Admixture: Rahil Khoshnazar, James Beaudoin, Laila Raki and Rouhollah. *Durability and Engineering Performance of Calcium-Silicate-Hydrate Systems Modified with Nitro-Benzonic Acid* - Oral
- **8:45 - 9:00** Admixture: Ratin Mishra, Heinz Hendrik, Falk Wittel, Hans Herrmann, Humberto Carmona, Mark Sawley, David Geissbuhler, Martin Weibel, Emmanuel Gallucci and Robert Flatt. *Muli-modelling approach to study the effectiveness of grinding aids* - Oral
- **9:30 - 9:45** Admixture: Ojas Chaudhari, Joseph Biernacki and Scott Northrup. *Conflicting Functionality of a Potential Shrinkage Reducing Compound: Molecular Dynamics Study* - Oral

#### Session No. 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>10:15 - 10:30</td>
<td>Walairat Bunrongjaroen, Kiatuda Somna, Richard Livingston and Isabelle Muller</td>
</tr>
<tr>
<td>10:30 - 10:45</td>
<td>Kho Verian, Parth Panchmatia and Jan Olek</td>
</tr>
<tr>
<td>10:45 - 11:00</td>
<td>Janelle L. Branch, Kevin G. Brown, Josh R. Arnold, Hans A. van der Sloot and David S. Kosson</td>
</tr>
</tbody>
</table>

#### Admixtures II

- **10:30 - 10:45** Admixture/Mineral: Kho Verian, Parth Panchmatia and Jan Olek. *Using Air-Cooled Blast Furnace Slag As Coarse Aggregate in Pavement Concrete* - Oral
- **10:45 - 11:00** Admixture/Mineral/Durability: Janelle L. Branch, Kevin G. Brown, Josh R. Arnold, Hans A. van der Sloot and David S. Kosson. *Geochemical Modeling to Predict Long-Term Material Performance of Concrete Materials with Fly Ash Replacement under Carbonation Attack* - Oral

#### Alternative Cements

- **11:15 - 11:30** Alternative: Jeffrey Thomas, Hamlin Jennings and Enrico Masoero. *Hydration activation of dicalcium silicate (C2S)* - Oral
- **11:30 - 11:45** Alternative: Vahid Jafari Azad, Chang Li, David Esteban Rodriguez, Jason Ideker and O. Burkan Isgor. *Numerical investigation of class H cement deterioration under CO2-O2 co-exposure in high temperature and high pressure down-well conditions* - Oral

#### 11:45 am - 1:15 pm

- **LUNCH**
### Thursday, July 10 (cont’d)

#### Session No. 4  
**Characterization**

1:15 - 1:30  
**Sara Mantellato, Marta Palacios Arevalo and Robert Flatt**  
Characterization  
Reliable specific surface measurements of anhydrous cement  
**Oral**

1:30 - 1:45  
**Federico Aguayo, Anthony Bentivegna and Kevin Folliard**  
Characterization  
Characterization and Development of a Paste and Mortar Isothermal Calorimeter for Calcium Aluminate Cement  
**Oral**

1:45 - 2:00  
**Warda Ashraf and Jan Olek**  
Characterization  
MICROSTRUCTURAL PHASE IDENTIFICATION OF CALCIUM-SILICATE CEMENT PASTES USING NANOINDENTATION TECHNIQUES  
**Oral**

2:00 - 2:30  
**BREAK**

#### Session No. 5  
**Durability**

2:30 - 2:45  
**Jojo France-Mensah and Benjamin Mohr**  
Durability  
Development of Leachate Test for Delayed Ettringite Formation Potential in Cementitious Materials  
**Oral**

2:45 - 3:00  
**Lesa Brown and Florence Sanchez**  
Durability  
MicroCT characterization of degraded cement pastes: density profiles and porosity evolution  
**Oral**

3:00 - 3:15  
**Emily Van Dam and David Lange**  
Durability  
New model for abrasion resistance of composite materials.  
**Oral**

3:15 - 3:30  
**Kai-Wei Liu, Dr. Anol Mukhopadhyay and Zach Grasley**  
Durability  
Prediction of Expansive Stress due to Alkali Silica Reaction (ASR) in a Pure Phase System  
**Oral**

3:30 - 3:45  
**Amir Hajibabaee, Tyler Ley and Zach Grasley**  
Durability  
The Impact of Curing On Curling Caused by Differential Drying Shrinkage in Paste and Concrete  
**Oral**

3:45 - 4:15  
**BREAK**

4:15 - 5:00  
**Business Meeting**

5:00 - 6:00  
**Della Roy Lecture**

6:30 - 9:30  
**Della Roy Reception at Salt Box Inn**

### Friday, July 11

#### Session No. 6  
**Hydration I**

8:00 - 8:15 am  
**Pouya Pourbeik, James Beaudoin, Laila Raki and Rouhollah Alizadeh**  
Hydration  
Dimensional stability of layered calcium silicate hydrates  
**Oral**

8:15 - 8:30  
**Prannoy Suraneni and Robert J. Flatt**  
Hydration  
Filling in the gaps of Alite Hydration  
**Oral**

8:30 - 8:45  
**Fengjuan Liu and Zhihui Sun**  
Hydration  
Using Raman Spectroscopy to Characterize Hydration Process in Different Types of Cement Pastes  
**Oral**

8:45 - 9:00  
**Jeffrey Bullard, George Scherer and Jeffrey Thomas**  
Hydration  
Influences of Solution Chemistry on the Driving Force, Kinetics, and Microstructure of Hydrating Tricalcium Silicate  
**Oral**

9:00 - 9:15  
**Julyan Stoian, Tandre Oey, Jeffrey Bullard, Jian Huang, Aditya Kumar, Magdalena Balonis, Judith Terrill, Narayanan Neithalath and Gaurav Sant**  
Hydration  
Characterizing and Mitigating the Influences of Cement Prehydration: Insights from Experiments and Simulations  
**Oral**

9:15 - 9:30  
**Qinang Hu, Tyler Ley, Mohammed Aboutait and Jay Hanan**  
Hydration  
Direct three dimensional observations of the dissolution and subsequent hydration of C3S  
**Oral**

9:30 - 10:00  
**BREAK**
**Friday, July 11**

**Session No. 7**  
**Hydration II**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter/Authors</th>
<th>Topic</th>
<th>Presentation Type</th>
</tr>
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<tbody>
<tr>
<td>10:00 - 10:15</td>
<td>Nicola Ferralis, Deepak Jagannathan, Jeffrey C. Grossman and Krystyn J. Van Vliet</td>
<td>Reaction volume-dependent competition between calcium silicate hydration and carbonation</td>
<td>Oral</td>
</tr>
<tr>
<td>10:15 - 10:30</td>
<td>Mohammad Javad Abdolhosseini Qomi, Mathieu Bauchy, Franz-Josef Ulm and Roland Pellenq</td>
<td>The Anomalous Behavior of Nanconfined Water in the Interlayer Spacing of Calcium-Silicate-Hydrates</td>
<td>Oral</td>
</tr>
<tr>
<td>10:30 - 10:45</td>
<td>George Scherer and Jeffrey Bullard</td>
<td>Toward a Computationally Efficient Model of Dissolution, Nucleation, and Growth in Hydrating Cement Paste</td>
<td>Oral</td>
</tr>
<tr>
<td>11:15 - 11:30</td>
<td>Chang Hoon Lee and Kenneth Hover</td>
<td>Growth Model in Setting Behavior of Mortars</td>
<td>Oral</td>
</tr>
<tr>
<td>11:30 am - 1:00 pm</td>
<td><strong>LUNCH</strong></td>
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**Session No. 8**  
**Mechanics I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter/Authors</th>
<th>Topic</th>
<th>Presentation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 - 1:15</td>
<td>Mathieu Bauchy, Mohammad Javad Abdolhosseini Qomi, Franz-Josef Ulm and Roland Pellenq</td>
<td>Improving the fracture toughness from atomic scale modeling</td>
<td>Oral</td>
</tr>
<tr>
<td>1:15 - 1:30</td>
<td>Pan Feng, Jeffrey W. Bullard and Edward Garbocz</td>
<td>A Thermodynamic-Microstructure Model for Simulating the Onset of Damage in Hydrating Cement Paste by External Sulfate Attack</td>
<td>Oral</td>
</tr>
<tr>
<td>1:30 - 1:45</td>
<td>Catherine Eiben, George W. Scherer and Claire E. White</td>
<td>Elucidating the Intrinsic Permeability of Alkali-Activated Slag Cement using the Beam-Bending Method</td>
<td>Oral</td>
</tr>
<tr>
<td>1:45 - 2:00</td>
<td>Rouzbeh Shamsavari and Navid Sakhavand</td>
<td>Hexagonal Boron Nitride and Graphite Oxide Reinforced Multifunctional Porous Cement Composites</td>
<td>Oral</td>
</tr>
<tr>
<td>2:00 - 2:15</td>
<td>Jarett Nickerson and Matthew Ouellette</td>
<td>Simplifying the thermal conductivity (W/mK) and coefficient of thermal expansion (CTE) characterization of insulative concretes</td>
<td>Oral</td>
</tr>
<tr>
<td>2:30 - 2:45</td>
<td>Chang Li, Vahid Jafari Azad, David Rodriguez, Jason Ideker and Burkan Isgor</td>
<td>Experimental and Thermodynamic Modeling Approach to Elucidate Damage Mechanisms in Cement-Well Casting-Host Rock Settings for underground Storage of CO2</td>
<td>Oral</td>
</tr>
<tr>
<td>2:45 - 3:00</td>
<td>Robert Moser</td>
<td>Characterization and Geochemical Modeling of Dissolution of Limestone Aggregates in Civil Works Structures</td>
<td>Oral</td>
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