

# International Conference on Calcium Aluminates

26-28 July 2021

This is a list of provisional titles for which abstracts have been received and will soon be updated with the list of manuscripts received. As with the previous Calcium Aluminate Conferences, these manuscripts are being peer reviewed prior to acceptance for publication. This list will be updated soon as it is no longer fully up to date. Some titles have changed and we have some additional papers. The titles are grouped provisionally according to subject matter, but the order shown here may not reflect the mode of presentation, the conference programme and the order in the published Proceedings.

## CALCIUM ALUMINATES PHASES

### **Ternary solid solution of CA - SrA - BaA**

*Herbert PÖLLMANN*

University of Halle, Germany

### **Synthesis and properties of calcium rare earth aluminates**

*Chimednorov OTGONBAYAR and Herbert PÖLLMANN*

University of Halle, Germany

### **F- and SO<sub>4</sub>- containing calcium sulfoaluminate $3\text{CaO}\cdot 3\text{Al}_2\text{O}_3\cdot x\text{CaF}_2\cdot (1-x)\text{CaSO}_4$ with $0 \leq x \leq 1$**

*Sabrina GALLUCCIO and Herbert PÖLLMANN*

University of Halle, Germany

### **Investigation of the effects of fuel types on gehlenite and mayenite phases and performance of calcium aluminate cements**

*Berrak AVCIOĞLU and Metehan SEVEROĞLU*

Çimsa Cement Research and Application Center, Turkey

### **Temperature programmed reduction (TPR) and oxidation (TPO) of cementitious materials**

*Stefan STÖBER, Herbert PÖLLMANN*

University of Halle, Germany

### **Phase composition and hydration behaviour of a high silica calcium aluminate cement**

*Ingrid MIKANOVIĆ<sup>1</sup>, Dubravka MARETIĆ<sup>2</sup>, Ronny KADEN<sup>3</sup> and Günther WALENTA<sup>1</sup>*

<sup>1</sup>Calucem GmbH, Germany, <sup>2</sup>Calucem d.o.o, Croatia and <sup>3</sup>University of Halle, Germany

### **An investigation of the chemical distribution of minor elements in high alumina cements by a multidisciplinary approach**

*Marco CANTALUPPI<sup>1</sup>, Fiorenza CELLA<sup>2</sup>, Wojciech KAGAN<sup>2</sup>, Nicoletta MARINONI<sup>1</sup> and Fernando CAMARA<sup>1</sup>*

<sup>1</sup>University of Milan, Italy and <sup>2</sup>Górka Cement SP. Z O.O, Poland

### **New calcium aluminate cements with advanced performance and reduced CO<sub>2</sub> footprint**

*Ronny KADEN<sup>1</sup>, Ingrid MIKANOVIĆ<sup>1</sup>, Dubravka MARETIĆ<sup>2</sup>, Günther WALENTA<sup>1</sup> and Stefan STÖBER<sup>1</sup>,*

<sup>1</sup>Calucem GmbH, Germany, <sup>2</sup>Calucem d.o.o, Croatia

### **The effects of cooling parameters on performance properties of calcium aluminate clinker**

*Melike SUCU and Metehan SEVEROĞLU*

Çimsa Cement Research and Application Center, Turkey

### **Investigation of the relationship between mineralogical content and rapid hardening property of calcium aluminium cement**

*Murat AYDIN, Metehan SEVEROĞLU and Suphi URAL*

Cimsa, Turkey and Çukurova University, Turkey

## HYDRATION

### **Synthesis and characterization of ss CAH<sub>10</sub> – SrAH<sub>10</sub>**

*Herbert PÖLLMANN*

*University of Halle, Germany*

### **Time-resolved investigation of Calcium Aluminate Cement hydration in mix with CaCO<sub>3</sub>**

*Julian GOERGENS, Tanja MANNINGER and Friedlinde GOETZ-NEUNHOEFFER*

*Friedrich Alexander University, Erlangen, Germany*

### **Calorimetry studies on blending of calcium aluminate cement with ground granulated blast furnace slag**

*Yun BAI<sup>1</sup>, Shaoyan LI<sup>1</sup> and Raman MANGABHAI<sup>2</sup>*

*<sup>1</sup>University College London, London, UK, <sup>2</sup>Mangabhai Consulting, UK*

### **Hydration kinetics of CA<sub>2</sub>-CA-filler mixes analysed by in-situ XRD and pore solution composition**

*Andreas KÖHLER, Juergen NEUBAUER and Friedlinde GOETZ-NEUNHOEFFER*

*Friedrich Alexander University, Erlangen, Germany*

### **Setting shrinkage measurement during cement hydration**

*Stefan KUIPER<sup>1</sup>, Geert WAMS<sup>1</sup>, Alexandra SPIES<sup>1</sup>, Dagmar SCHMIDTMEIER<sup>2</sup>, Sebastian KLAUS<sup>2</sup> and Andreas BUHR<sup>2</sup>*

*Almatis BV, The Netherlands, Almatis GmbH, Germany*

### **Deeper insight into hydration kinetics of calcium aluminate cement: results**

*Friedlinde GOETZ-NEUNHOEFFER, Florian HUELLER and Juergen NEUBAUER*

*Friedrich Alexander University, Erlangen, Germany*

### **Hydration modelling**

*Herve FRYDA*

*Imerys Aluminates Research Center, France*

### **The effect of temperature on the formation of the structure of the hydrated calcium aluminate cement with microsilica**

*Valentin ANTONIVIČ, Renata BORIS, Rimvydas STONYS and Jurgita MALAIŠKIENĖ*

*Vilnius Gediminas Technical University, Vilnius, Lithuania*

## SPECIFICATIONS AND TEST METHODS

### **Modifications to test methods and review of specifications for calcium aluminate cement: A North American perspective**

*Anthony F. BENTIVEGNA<sup>1</sup>, Jason H. IDEKER<sup>2</sup> and Thanos DRIMILAS<sup>3</sup>*

*<sup>1</sup>Jensen Hughes, Chicago, Illinois, USA, <sup>2</sup>Oregon State University, Corvallis, Oregon, USA, <sup>3</sup>The University of Texas at Austin, Austin, Texas, USA*

## ADMIXTURES

### **Specific biopolymers as accelerator for alumina cement**

*Alexander ENGBERT and Johann PLANK*

Technical University Munich, Germany

### **The effect of calcium nitrate and microsilica on the property of calcium aluminate cement**

*Hong-xia WANG<sup>1</sup>, Gui-zhi DIAO<sup>1</sup>, Guang-hua LIU<sup>1</sup>, Hong-xia WANG<sup>2</sup>, Guang-wei LIU<sup>3</sup> and Danielle VAN NES<sup>4</sup>*

<sup>1</sup>CBMA, Beijing, China, <sup>2</sup>State Key Laboratory of Green Building Materials, China, <sup>3</sup>Kaifeng Qiming Refractory Materials Co., Ltd. China and <sup>4</sup>Caltra Netherland B.V. Netherlands

### **New insights in Li salt mechanisms**

*Herve FRYDA*

Imerys Aluminates Research Centre, France

### **Effect of $\text{Li}_2\text{CO}_3$ on early CA-cement hydration in mix with $\text{CaCO}_3$ : Hydrate and liquid phase analysis**

*Tanja MANNINGER, Friedlinde GOETZ-NEUNHOEFFER*

Friedrich Alexander University, Erlangen, Germany

### **Hydration control of CAC using alkali carboxylic compounds**

*Herbert PÖLLMANN*

University of Halle, Germany

## BLENDING SYSTEMS

### **The influence of CA addition on the hydration kinetics of C<sub>3</sub>S dominated mixtures**

*Juergen NEUBAUER, Jörg NEHRING and Friedlinde GOETZ-NEUNHOEFFER*  
Friedrich Alexander University, Erlangen, Germany

### **Quantification of phase compositions of complex mixtures of CAC with OPC, anhydrite and metakaolinite**

*Herbert PÖLLMANN and Sabrina GALLUCCIO*  
University of Halle, Germany

### **Effect of metakaolin on binders based on Portland cement, calcium aluminate cement, and calcium sulphate**

*Sarra EL HOUSSEINI<sup>1</sup>, Karen SCRIVENER<sup>1</sup> and Barbara LOTHENBACH<sup>2</sup>*  
<sup>1</sup>EPFL, Lausanne, Switzerland, <sup>2</sup>Empa, Dübendorf, Switzerland

### **Investigation of calcium aluminate cement - Portland cement - anhydrite in ternary system and determination of ratio of calcium aluminate cement to Portland cement**

*Bahadır ÖZTÜRK, Ayten ÇAPUTÇU, Metehan SEVEROĞLU and Berrak AVCIOĞLU*  
Çimsa Cement Research and Application Center, Turkey

### **Use of high ettringite producing ternary blend systems for use in thermochemical energy storage**

*Aaron J STRAND and Matthew ADAMS*  
New Jersey Institute of Technology, Newark, New Jersey, USA

### **Impact of freeze-thaw cycling on bond interface of high ettringite producing cement systems**

*Matthew ADAMS, Noah THIBODEAUX and John A. REIF Jr*  
New Jersey Institute of Technology, Newark, New Jersey, USA

### **Exploring the ternary binder diagram for set on demand concrete**

*Lex REITER, Timothy WANGLER and Robert J FLATT*  
ETH Zurich, Zurich, Switzerland

### **Blended Calcium Aluminate Cements for digital fabrication with concrete**

*Arnesh DAS, Lex REITER and Robert J FLATT*  
ETH Zurich, Zurich, Switzerland

### **Stability of Ettringite in Blended Systems with CAC-PC-C<sub>3</sub>S**

*Jason H IDEKER, Anika SARKAR*  
Oregon State University, Corvallis, Oregon, USA

### **Impact of hemihydrate & anhydrite combination on phase evolution and performance in self-levelling compound containing new generation CAC 50**

*Ronny KADEN<sup>1</sup>, Ingrid MIKANOVIC<sup>1</sup>, A. REIL<sup>1</sup>, Markus SCHMIDT<sup>1</sup>, Dubravka MARETIC<sup>2</sup>, and Günther WALENTA<sup>1</sup>,*  
<sup>1</sup>Calucem GmbH, Germany, <sup>2</sup>Calucem d.o.o, Croatia

### **Influence of sulphate source on hydration kinetics and phase formation of CAC-rich and OPC-rich ternary binders**

*Elsa QOKU and Thomas BIER*  
TU Bergakademie Freiberg, Freiberg, Germany

### **Hydration mechanism of amorphous calcium aluminates in ettringite systems**

*Herve FRYDA*  
Imerys Aluminates Research Center, France

## DIVERSE APPLICATIONS

### **Applicability of calcium aluminate cement based material under deep sea conditions**

*Keisuke TAKAHASHI<sup>1</sup>, Mari KOBAYASHI<sup>1</sup> and Yuichiro KAWABATA<sup>2</sup>*

<sup>1</sup>Ube Industries, Ltd., and <sup>2</sup>Port and Airport Research Institute, Japan

### **Characterization of different types of bauxite, their effect on calcium aluminate cement phase quantity and investigation of refractory properties**

*Metehan SEVEROĞLU and Berrak AVCIOĞLU*

Cimsa Cement Plant – Çimsa Cement Research and Application Centre, Turkey

### **Towards understanding the ageing behaviour of SLU formulations: Impact of prehydration on individual components and role of admixtures**

*Florian HARTMANN, Alexander ENGBERT and Johann PLANK*

Technical University Munich, Germany

### **Performance of rapid-repair (ettringite-based) concrete in a harsh marine environment**

*Ted MOFFATT<sup>1</sup>, Michael D. A. THOMAS<sup>1</sup>, Racheal LUTE<sup>2</sup> and Kevin FOLLIARD<sup>2</sup>*

<sup>1</sup>UNB Fredericton Campus, Canada, <sup>2</sup>The University of Texas at Austin, Texas, USA

### **Research about properties of cost effective structural heat resistant concrete using HAC and EAF slag aggregates**

*Mohammad JR Hossein ABADI<sup>1</sup>, Ahmad EMAMI<sup>2</sup> and Mariyam MOBARAKEH<sup>3</sup>*

<sup>1</sup>Najaf Abad Azad University, Iran, <sup>2</sup>Iran Refractory Cements and <sup>3</sup>Aghigh University of Geotechnics, Iran

### **The use of CAC for the remediation of a Pb contaminated soil: The role of sulfates**

*Silvia CONTESSI<sup>1</sup>, Loris CALGARO<sup>2</sup>, Maria Chiara DALCONI<sup>1</sup>, Enrico GARBIN<sup>1</sup>, Giorgio FERRARI<sup>3</sup> and Gilberto ARTIOLI<sup>1</sup>*

<sup>1</sup>University of Padova, Padova, Italy, <sup>2</sup>Ca' Foscari University of Venezia, Venezia, Italy, <sup>3</sup>Mapei S.p.A., Milano, Italy

### **Calcium Aluminate for digital construction and 3D printing**

*Herve FRYDA*

Imerys Aluminates Research Center, France

### **Interaction of molten slag with calcium aluminate cement mortar**

*Fernando F. DE MENDONCA FILHO and Oğuzhan ÇOPUROĞLU*

Delft University of Technology, Delft, The Netherlands

### **Amorphous flash calcined alumina – effect on shrinkage and set of Portland cement**

*Ludo. C. VAN NES BLESSING*

Caltra bv, The Netherlands

## ASPECTS OF DURABILITY

### **Electric resistivity testing method to assess conversion in calcium aluminate cement concrete systems**

*Marwa KORAYEM, Aaron J STRAND and Matthew ADAMS*

New Jersey Institute of Technology, Newark, New Jersey, USA

### **Impact of conversion on permeability in calcium aluminate cement concrete systems**

*Marwa KORAYEM and Matthew ADAMS*

New Jersey Institute of Technology, Newark, New Jersey, USA

### **Decoupling the effects of hydrate mineralogy and porosity resulting from conversion on calcium aluminate cement corrosion resistance**

*W. LIU, A.W.H. CHEUNG and Marjorie VALIX*

The University of Sydney, NSW 2006, Australia

### **Investigation of mechanical, durability, thermal and microstructural properties of calcium aluminate cement based mortars containing mineral admixtures**

*Murat TUYAN*

Izmir Democracy University, Karabaglar/Izmir, Turkey

### **Aggregate impacts on chemistry, conversion, and strength in calcium aluminate cement concrete**

*Matthew P. ADAMS<sup>1</sup> and Jason H. IDEKER<sup>2</sup>*

<sup>1</sup>New Jersey Institute of Technology, Newark, New Jersey, USA, <sup>2</sup>Oregon State University, Corvallis, Oregon, USA

### **A presentation on the durability of 50-year-old concrete using alumina cement in Japan**

*Taiichiro MORI<sup>1</sup>, Daiki SHIMAZAKI<sup>1</sup>, Y SASAGAWA<sup>1</sup> and Etsuo SAIKAI<sup>2</sup>*

<sup>1</sup>Denka Co., Ltd., Japan, <sup>2</sup>Tokyo institute of Technology Institution, Tokyo, Japan

### **Influence of relative humidity exposure on the microstructure of hardened calcium aluminate cement paste**

*Sandra WAIDA, Mirco WAHAB and Thomas BIER*

TU Bergakademie Freiberg, Freiberg, Germany

## SEWERAGE APPLICATIONS

### **On the thermodynamic modelling of converted and non-converted CAC and their resistance to biodeterioration in sewer**

*Alexandra BERTRON*

University of Toulouse, INSA, Toulouse, France

### **Towards a better understanding of biodegradation mechanisms of calcium aluminate based cementitious materials in sewer conditions**

*Matthieu PEYRE-LAVIGNE, A. ABOULELA, A BUVIGNIER, Cédric PATAPY and Alexandra BERTRON*

University of Toulouse, INSA, Toulouse, France

### **On the resistance of CAC materials to biogas systems**

*Alexandra BERTRON*

University of Toulouse, INSA, Toulouse, France

### **Microbial activity in calcium aluminate based materials**

*Eva KRÄNZLEIN, Paul BRUMM, N SHAHEEN and Thomas BIER*

TU Bergakademie Freiberg, Freiberg, Germany

### **The performance of 70-year old concrete sewer pipe with a calcium aluminate cement-based lining**

*Moses KILISWA*

University of KwaZulu Natal, South Africa

### **Development of a calcium aluminate cement (CAC) based engineered cementitious composites (ECC) with relatively low fibre content**

*Wei FAN<sup>1</sup>, Z. ZHUGE<sup>1</sup>, X. MA<sup>1</sup>, C.W.K. CHOW<sup>1</sup> and N. GORJIAN<sup>2</sup>*

The University of South Australia, Australia, SA Water Corporation, Australia

### **Comparative Acid Resistance of a one-part geopolymer and calcium aluminate cement mortar**

*C. SEEDAO, M.E. FISHER and Marjorie VALIX*

The University of Sydney, NSW 2006, Australia

### **CAC based-based binder for microbiologically induced corrosion resistant concrete and mortars**

*Markus SCHMIDT<sup>1</sup>, Ingrid MIKANOVIC<sup>1</sup>, Dubravka MARETIC<sup>2</sup>, Ronny KADEN<sup>1</sup>, Günther WALENTA<sup>1</sup>, Danilo PASSALACQUA<sup>3</sup>, Francesco SURICO<sup>3</sup>, Fiorenza CELLA<sup>3</sup> and Davide SALVIONI<sup>3</sup>*

<sup>1</sup>Calucem GmbH, Germany, <sup>2</sup>Calucem d.o.o, Croatia, <sup>3</sup>Mapei S.p.A., Milano, Italy

### **Conversion free CAC based-based binder for microbiologically induced corrosion resistant concrete in sewer applications**

*Markus SCHMIDT<sup>1</sup>, Ingrid MIKANOVIC<sup>1</sup>, Dubravka MARETIC<sup>2</sup>, Ronny KADEN<sup>1</sup>, Günther WALENTA<sup>1</sup>*

<sup>1</sup>Calucem GmbH, Germany, <sup>2</sup>Calucem d.o.o, Croatia

### **Effect of Class F fly-ash on the corrosion resistance of calcium aluminate cement mortar**

*Z. HUANG, MS, MD NOOR and Marjorie VALIX*

The University of Sydney, NSW 2006, Australia

### **Host structure requirements to promote adhesion of calcium aluminate cement mortar**

*Y.J. IN and Marjorie VALIX*

The University of Sydney, NSW 2006, Australia