

PROVISIONAL PROGRAMME

CALCIUM ALUMINATES 2022

18 – 20 July 2022

Hinxton Hall, Cambridge, England

Sunday, 17 July

Delegates will be able to collect their registration packs from the conference desk from 11am and the desk will be open throughout the conference.

Monday, 18 July

9.00 – 9:20	Charles FENTIMAN & Karen SCRIVENER Welcome and introduction to the Conference
SESSION 1 – CALCIUM ALUMINATE TYPES AND MANUFACTURE	
9:20 – 9:40	Characterization of different types of Bauxite, their effect on calcium aluminate cement phase quantity and investigation of refractory properties <i>Presented by <u>Berrak AVCIOĞLU</u>, R&D and Process Technologies Manager, and Metehan SEVEROĞLU</i> Çimsa Çimento San. Tic. A.Ş (ÇİMSA CEMENT), Toroslar Mah. Tekke Cad. Yenitaşkent-Akdeniz Mersin 33013, Turkey
9:40 – 10:00	Investigation of the effect of fuel types on Gehlenite and Mayenite phases and performance of Calcium Aluminate Cements <i>Presented by <u>Sezin ARIKAN KANSAV</u>, Operation Manager, for Metehan SEVEROĞLU and Berrak AVCIOĞLU</i> Çimsa Çimento San. Tic. A.Ş (ÇİMSA CEMENT), Toroslar Mah. Tekke Cad. Yenitaşkent-Akdeniz Mersin 33013, Turkey
10:00 – 10:20	An investigation of the chemical distribution of minor elements in high alumina cements by a multidisciplinary approach <i>Marco CANTALUPPI, <u>Fiorenza CELLA</u>, Wojciech KAGAN, Nicoletta MARINONI and Fernando CÁMARA</i> Earth Science Department “Ardito Desio”, University of Milan, 20133, Milan, Italy; MAPEI S.p.A., R&D Central Laboratory, Milan, Italy; Gorka Cement SP. Z. O. O., Lipcowa 58, 32540, Trezbinia, Poland
10:20 – 10:25	Discussion
10:25 – 11:00	Coffee
SESSION 2 – HYDRATION AND METHODS OF ANALYSIS	
11:00 – 11:20	New advances in dynamic EIS (DEIS) methods for the understanding of the calcium aluminate cement hydration mechanisms <i><u>Dominika MADEJ</u></i> AGH University of Science and Technology, Faculty of Materials Science and Ceramics, 30-059 Krakow, Poland
11:20 – 11:40	Hydration of CAC-based binders: Population balance equations for kinetic modelling <i><u>Nicolas MAACH</u>, Jean-François GEORGIN, Judith POMMAY and Stéphane BERGER</i> GEOMAS Laboratory, INSA Lyon, 69621 Villeurbanne, France; Imerys Technology Center, 38090 Vaulx-Milieu, France
11:40 – 12:00	Early-age hydration of anhydrous calcium aluminate phases on suspension <i><u>Birsen C. BUDAN</u>, Jean-Baptiste CHAMPENOIS, Céline CAU DIT COUMES, Jean-Baptiste D'ESPINOSE DE LACAILLERIE</i> CEA, DES, ISEC, DE2D, SEAD, LCBC, Univ Montpellier, Marcoule, France; Laboratoire de Sciences et Ingénierie de la Matière Molle, UMR CNRS 7615, ESPCI Paris, PSL Research University, 75231 Paris Cedex 05, France
12:00 – 12:05	Discussion
12:05 – 13:10	Lunch

SESSION 3 - HYDRATION AND METHODS OF ANALYSIS	
13:10 – 13:30	Influence of C₁₂A₇ addition on the early hydration of calcium aluminate cement at different temperatures <u>Andreas KOEHLER</u> , Juergen NEUBAUER and Friedlinde GOETZ-NEUNHOEFFER Friedrich-Alexander-University Erlangen-Nürnberg (FAU), GeoZentrum Nordbayern, Mineralogy, Erlangen, Germany
13:30 – 13:50	Influence of relative humidity exposure on the microstructure of hardened CAC paste <u>Sandra WAIDA</u> , Mirco WAHAB and Thomas A. BIER Institute for Ceramics, Refractories and Composite Materials, TU Bergakademie Freiberg, 09596 Freiberg, Germany
13:50 – 14:10	Electric resistivity testing method to assess conversion in calcium aluminate cement concrete <u>Marwa M. KORAYEM</u> , Aaron J. STRAND, Matthew P. ADAMS and Anthony BENTIVEGNA John A. Reif, Jr. Department of Civil and Environmental Engineering, New Jersey Institute of Technology, Newark, NJ, USA; Jensen Hughes, Baltimore, MD, USA
14:10 – 14:30	Decoupling the effect of hydrate mineralogy and porosity resulting from conversion on calcium aluminate cement corrosion resistance W. LIU, A. W. H. CHEUNG and <u>Marjorie VALIX</u> The University of Sydney, Sydney, NSW, Australia
14:30 – 14:35	Discussion
14:35 – 15:00	Coffee
SESSION 4 – USES AS ACCELERATORS FOR PORTLAND CEMENTS	
15:00 – 15:20	Ettringite accelerator in Portland cement dominated systems: A comparison of different calcium aluminate technologies <u>Stéphane BERGER</u> , D. TOURLAKIS and Sébastien PERROT Imerys Technology Center, 38090 Vaulx-Milieux, France
15:20 – 15:40	Amorphous flash calcined alumina, effect on shrinkage and set of Portland cement <u>Ludo C. VAN NES BLESSING</u> CALTRA Nederland BV., 3640 AH Mijdrecht, The Netherlands.
16:00 – 16:20	Blended calcium aluminate cements for digital fabrication with concrete <u>Arnesh DAS</u> , Lex REITER, Sara MANTELLATO and Robert FLATT Institute of Building Materials, ETH Zurich, Switzerland
16:20 – 16:25	Discussion
17:00 – 20:00	Walking Tour of Cambridge

Tuesday, 19th July

SESSION 5 – ADMIXTURES FOR CAC	
9.00 – 9:20	Accelerating calcium aluminate cements with lithium salt: New insights on the hydration mechanism and on the properties <u>Camille NALET</u> , Nicolas MAACH, Eric CHARPENTIER, Stéphane BERGER and Hervé FRYDA Imerys Technology Center, 38090 Vaulx-Milieux, France
9:20 – 9:40	Specific biopolymers as accelerator for alumina cement Alexander ENGBERT and <u>Johann PLANK</u> Chair for Construction Chemistry, Technische Universität München, 85747 Garching, Germany
9:40 – 10:00	The effect of temperature on the formation of the structure of hydrated calcium aluminate cement with microsilica Valentin ANTONOVIČ, <u>Renata BORIS</u> , Rimvydas STONYS and Jurgita MALAIŠLIENĖ Laboratory of Composite Materials, Institute of Building Materials, Vilnius Gediminas Technical University, Vilnius 08217, Lithuania
10:00 – 10:05	Discussion
10:05 – 10:30	Coffee
SESSION 6 – HYDRATION AND DURABILITY OF BINARY SYSTEMS	
10:30 – 10:50	Long-term durability of calcium aluminate cement concrete in Japan Daiki SHIMAZAKI, <u>Taiichiro MORI</u> , Yukio SASAGAWA and Etsuo SAKAI Denka Co., Ltd. Omi Plant, Cement & Special Cement Additives Research Dept., Niigata 949-0393, Japan; Denka Co., Ltd. Head Office, Production & Process Technology Dept., Tokyo 103-8338, Japan; Tokyo Institute of Technology, School of Materials and Chemical Technology, Department of Materials Science and Engineering, Tokyo 152-8552, Japan
10:50 – 11:10	Aggregate impacts on chemistry, conversion, and strength in calcium aluminate cement concrete systems <u>Matthew P. ADAMS</u> , Marwa M. KORAYEM and Jason H. IDEKER John A. Reif, Jr. Department of Civil and Environmental Engineering, New Jersey Institute of Technology, Newark, NJ, USA; School of Civil and Construction Engineering, Oregon State University, Corvallis, OR, USA
11:10 – 11:30	Impacts of conversion on drying shrinkage of calcium aluminate cement using finely ground limestone Marwa M. KORAYEM and <u>Matthew P. ADAMS</u> John A. Reif, Jr. Department of Civil and Environmental Engineering, New Jersey Institute of Technology, Newark, NJ, USA
11:30 – 11:50	In-situ QXRD study of the temperature dependent early hydration of CAC in mix with calcite <u>Julian GOERGENSE</u> and Friedlinde GOETZ-NEUNHOEFFER Friedrich-Alexander-University Erlangen-Nürnberg (FAU), GeoZentrum Nordbayern, Mineralogy, Erlangen, Germany
11:50 – 11:55	Discussion
11:55 – 13:00	Lunch

SESSION 7 – TERNARY BINDERS	
13:00 – 13:50	<p>Influence of sulphate source on hydration and phase formation in ternary binders <i>Elsa QOKU and <u>Thomas A. BIER</u></i> Institute for Ceramics, Refractories and Composite Materials, TU Bergakademie Freiberg, 09596 Freiberg, Germany</p> <p>Early shrinkage mechanisms in self-flowing mortars using ternary binders <i>Adrian BAJRAMI and <u>Thomas A. BIER</u></i> Institute for Ceramics, Refractories and Composite Materials, TU Bergakademie Freiberg, 09596 Freiberg, Germany</p> <p>Multi-response optimization on ternary binder systems using Taguchi design of experiments and Principal Component Analysis (PCA) <i>Anxhelina QORLLARI and <u>Thomas A. BIER</u></i> Institute for Ceramics, Refractories and Composite Materials, TU Bergakademie Freiberg, 09596 Freiberg, Germany</p>
13:50 – 14:10	<p>Impact of calcium sulfate combination on performance and phase evolution in self-levelling compound <i>Ingrid MIKANOVIC, Ronnie KADEN, Arno REIL, Markus SCHMID, Gunther WALENTA and Dubravka MARETIC</i> CALUCEM GmbH, 68219 Mannheim, Germany; CALUCEM d.o.o, 52100 Pula, Croatia</p>
14:10 – 14:30	<p>Towards understanding the ageing behaviour of SLU formulations: Impact of prehydration on individual components and the role of admixtures <u>Florian A. HARTMANN</u>, Alexander ENGBERT and Johann PLANK Chair for Construction Chemistry, Technische Universität München, 85747 Garching, Germany</p>
14:30 – 14:50	<p>Investigation of CAC - PC - CŠ in a ternary system and determination of ratio of CAC cement to PC Presented by <u>Melike SUCU</u>, Sales Manager, for A. B. ÖZTÜRK, Ayten ÇAPUTÇU, Metehan SEVEROĞLU and Berrak AVCIOĞLU Çimsa Çimento San. Tic. A.Ş (ÇİMSA CEMENT), Toroslar Mah. Tekke Cad. Yenitaşkent-Akdeniz Mersin 33013, Turkey</p>
14:50 – 15:10	<p>Dimensional stability of CSA-based binders for flow-applied screeds <u>Federica BERTOLA</u>, Livio CAPELLI and Fulvio CANONICO Buzzi Unicem, 13039 Casale Monferrato, Italy</p>
15:10 – 15:15	Discussion
15:15 – 15:45	Coffee
SESSION 8 – FURTHER ETTRINGITE SYSTEMS	
15:45 – 16:05	<p>Influence of calcined clay on the hydration of ternary binders based on calcium aluminate cement, calcium sulfate and Portland cement <i>Sarra EL HOUSSEINI, <u>Karen SCRIVENER</u> and Barbara LOTHENBACH</i> Laboratory of Construction Materials, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland; Laboratory Concrete/Construction Chemistry Empa, Uberlandstr.129, CH-8600 Dubendorf, Switzerland</p>
16:05 – 16:25	<p>Use of high ettringite producing ternary blend systems for thermochemical energy storage <u>Aaron J. STRAND</u> and Matthew P. ADAMS John A. Reif, Jr. Department of Civil and Environmental Engineering, New Jersey Institute of Technology, Newark, NJ, USA</p>
16:25 – 16:45	<p>Stability of ettringite in blended systems with CAC-PC-CŠ <u>Jason A. IDEKER</u>, Anika T. SARKAR, J. A. SMITH and Lamiya NOOR School of Civil & Construction Engineering, Oregon State University, Corvallis, Oregon 97331, USA; Department of Civil and Environmental Engineering University of Tennessee, Knoxville, TN 37996, USA</p>
16:45 – 17:05	<p>Performance of rapid-repair (ettringite-based) concrete in a harsh marine environment <i>Edward (Ted) G. MOFFATT, Mike D. A. THOMAS, Racheal LUTE, Thanos DRIMALAS and Kevin FOLLIARD</i> Royal Military College of Canada, Kingston, Ontario, Canada; University of New Brunswick, Fredericton, New Brunswick, Canada; Katerra, Austin, Texas, USA; University of Texas at Austin, Austin, Texas, USA</p>
17:05 – 17:10	Discussion
19:30 - Late	Gala Dinner

Wednesday, 20th July

SESSION 9 – DURABILITY IN BIOGENIC CONDITIONS	
9:00 – 9:20	<p>Towards a better understanding of biodegradation mechanisms of calcium aluminate based materials in sewer conditions <u>Amr ABOULELA</u>, Cédric PATAPY, Alexandra BERTRON, Amaury BUVIGNIER and Matthieu PEYRE LAVIGNE LMDC, Université de Toulouse, UPS, INSA, Toulouse, France ; TBI, Université de Toulouse, CNRS, INRA, INSA, Toulouse, France</p>
9:20 – 9:40	<p>CAC-based binder for microbiologically induced corrosion resistant concretes and mortars Markus SCHMID, Gunther WALENTA, Danilo PASSALAQUA, Francesco SURICO, Fiorenza CELLA and Davide SALVIONI CALUCEM GmbH, 68219 Mannheim, Germany; MAPEI S.p.A., 20158 Milano, Italy</p>
9:40 – 10:00	<p>Microbiologically induced corrosion resistant concrete for sewer networks Markus SCHMID, Alexandra GERZ, Ingrid MIKANOVIC and Gunther WALENTA CALUCEM GmbH, 68219 Mannheim, Germany</p>
10:00 – 10:20	<p>Characterisation of a 60-year old cementitious lining on a concrete sewer pipe removed from Mahatma Gandhi road sewer network in Durban, South Africa <u>Moses W. KILISWA</u> Department of Civil Engineering, University of KwaZulu-Natal, 4041, South Africa</p>
10:20 – 10:25	Discussion
10:25 – 11:00	Coffee
SESSION 10 – DURABILITY IN BIOGENIC CONDITIONS	
11:00 – 11:20	<p>Comparison of converted and unconverted CAC pastes, reactivity in sewer environment using transport-reaction modelling <u>Matthieu PEYRE LAVIGNE</u>, Amaury BUVIGNIER, Cédric PATAPY, Etienne PAUL and Alexandra BERTRON TBI, Université de Toulouse, CNRS, INRA, INSA, Toulouse, France; LMDC, Université de Toulouse, UPS, INSA, Toulouse, France</p>
11:20 – 11:40	<p>Microbial activity in calcium aluminate based materials Eva KRÄNZLEIN, <u>Paul BRUMM</u>, Thomas BIER, N. SHAHEEN and Syed Ali RIZWAN Institute for Ceramics, Refractories and Composite Materials, TU Bergakademie Freiberg, 09599 Freiberg, Germany; NUST, Islamabad, Pakistan</p>
11:40 – 12:00	<p>Degradation of mortar in acetic acid: Calcium aluminate versus Portland cement <u>Neven UKRAINCZYK</u>, Eduardus KOENDERS, Cyrill GRENGG and Martin DIETZEL Technische Universität Darmstadt, Institut für Werkstoffe im Bauwesen, 64 287 Darmstadt, Germany; Graz University of Technology, Institute of Applied Geosciences, 8010 Graz, Austria</p>
11:45 – 12:05	<p>Comparative acid resistance of one-part geopolymer and calcium aluminate cement mortar Cherdphong SEEDAO, M. E. FISHER and <u>Marjorie VALIX</u> The University of Sydney, NSW 2006, Australia</p>
12:05 – 12:10	Discussion
12:10 – 13:40	Lunch

SESSION 11 – WIDE RANGING APPLICATIONS	
13:40 – 14:00	Calcium aluminate cement composites to improve CO₂ injection well integrity <i>Krunoslav SEDIĆ, <u>Neven UKRAINCZYK</u>, Vilko MANDIĆ and Nediljka GAURINA-MEDIMUREC</i> Crosco, Integrated Drilling & Well Services Co., Ltd., 10 313 Graberje Ivaničko, Croatia; Technische Universität Darmstadt, Institut für Werkstoffe im Bauwesen, 64 287 Darmstadt, Germany; University of Zagreb, Faculty of Chemical Engineering and Technology, 10 000 Zagreb, Croatia; University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, 10 000 Zagreb, Croatia
14:00 – 14:20	Applicability of ternary blended calcium aluminate cement-based mortar in deep sea conditions <u>Keisuke TAKAHASHI</u> , Mari KOBAYASHI and Yuichiro KAWABATA Ube Industries, Ltd., Okinoyama 1-6 Ube 7558633, Japan; Port and Airport Research Institute, Nagase 3-1-1 Yokosuka 2390826, Japan
14:20 – 14:40	Setting shrinkage measurements during cement hydration <u>Stefan KUIPER</u> , Geert WAMS, Alexandra SPIES, Dagmar SCHMIDTMEIER, Sebastian KLAUS, Andus BUHR and Jerry DUTTON Almatis B. V., Rotterdam, The Netherlands; Almatis GmbH, Frankfurt/Ludwigshafen, Germany
14:40 – 15:00	Mineral interactions of CAC in refractory castables during thermal treatment <u>Alexandra GERZ</u> , Markus SCHMID and Gunther VALENTA CALUCEM GmbH, 68219 Mannheim, Germany
15:00 – 15:05	Discussion
15:05 – 15:20	Closing Comments
15:20 – 16:00	Coffee

POSTERS

The posters will be displayed throughout the meeting and we ask the poster authors to be in attendance near their posters during selected coffee breaks