

International Congress on the **Chemistry** of Cement

PROGRAMME



MADRID, 3-8 JULY 2011

"CEMENTING A SUSTAINABLE FUTURE"

Table of contents



2.....	Welcome
5.....	General information
8.....	Committees
12.....	Themes
14.....	Overview of the programme
17.....	Floor plans
19.....	Technical sessions
19.....	<i>Sunday, 3rd July</i>
19.....	<i>Monday, 4th July</i>
29.....	<i>Tuesday, 5th July</i>
39.....	<i>Wednesday, 6th July</i>
51.....	<i>Thursday, 7th July</i>
59.....	<i>Friday, 8th July</i>
67.....	<i>General posters</i>
80.....	Technical visits
81.....	Social programme
83.....	Special mentions
86.....	Sponsors and exhibits



Welcome

As anyone attending this congress or reading its proceedings will immediately see, the papers constituting the scientific corpus of the 13th ICCC were written by most of the scientific groups of international prestige in the area of the chemistry of cement, working in countries around the world. This introductory note is intended as a tribute to everyone who, with their presence and participation, has contributed not only to this 13th ICCC in Madrid, but to scientific and technological progress in our area of knowledge (chemistry of cement), which we shall be sharing in the first week of July 2011.



Angel Palomo
Chairman 13th ICCC

The abstracts contained herein are an invitation to reflect on the scientific structure of the 13th ICCC. The main areas covered by the over 650 papers submitted by their authors are:

- 1.- Production process chemistry and engineering
- 2.- Sustainable production
- 3.- New cementitious matrix
- 4.- Hydration and microstructure
- 5.- Hydration and thermodynamics
- 6.- Modelling
- 7.- Properties of fresh and hardened concrete
- 8.- Concrete durability
- 9.- Standardization

This classification is essentially a reflection of the interest shown by authors; i.e., it was designed by the authors themselves, based on their lines of research. It would be scantily sensible to attach more or less importance to any of these areas on the grounds of the number of papers submitted. Only three communications were received in Area 9 (legislation), for instance, but no one would question the importance of legislation for our science. The more pertinent question is why we authors fail to include legislative factors in our everyday research.

Portland cement hydration, sustainability and the pursuit of new binders are the subjects that clearly prevail in early twenty-first century chemical research on cement. This would appear to require no justification. Our planet's economic and social realities are charting courses and posing challenges to which we have decided to rise.

But in addition to the scientific corpus briefly mentioned, the 13th ICCC in



Madrid features several innovations with respect to previous editions of the Congress. Only time and participants' response will tell whether the efforts to modernise its format have been productive. Two weeks away from the opening, nearly 800 men and women have now registered to visit Madrid in July. This figure is much higher than the number of participants in Montreal 2007, despite the economic crisis. I therefore think that we can feel modestly but proudly satisfied over the confidence the international scientific community is placing in our organization.

Of the features introduced at this edition of the congress, I would stress four.

1.- For the first time in ICCG history, an International Congress on the Chemistry of Cement has scheduled a series of pre-congress courses, whose objectives are:

- to intensely address a specific, short number of subject areas that, judging from the expectations aroused, seem to constitute topics of particular present and future interest in the field of cement
- to provide attendees a broad overview of the chemistry of cement from different perspectives, under the stewardship of a highly qualified group of international experts.

These courses are proving to have exceptional appeal. To date, with the registration deadline still a few days away, around 200 people have signed on for these seven courses. The organization is naturally endeavouring to ensure that all 200 will benefit immensely from course attendance: i.e., that they will return to their home institutions with new knowledge, new working plans and new ideas, after having interacted directly with specialists of prestige in these specific areas.

2.- Panel discussions. These panels cannot be said to be an innovation per se because they have formed part of past editions of the ICCG. Nonetheless, this formula for sharing knowledge and expressing different scientific opinions had been neglected in the most recent congresses, very likely due to the pressure exerted on organizers to distribute the scant time available among many hundreds of participants eager to discuss their research with colleagues from other institutions. The 13th ICCG (Madrid 2011) organizers have striven to recover a practice that should never have been discontinued. Scientific debate in its most traditional format will hold a place of privilege in Madrid.

3.- A third new feature is the organization's endeavour to assemble a series of particularly relevant papers for publication in a special issue of Cement and Concrete Research which will indisputably constitute the backbone of the



knowledge stemming from Madrid-2011. I take this opportunity to thank each and every author for the effort made to meet the publication deadlines so that this issue of the CCR would be in the hands of all participants on the opening day of the 13th ICCC. This apparently simple achievement has called for a good deal of energy that readers will surely be able to appreciate in just measure. I believe that this is the first time that a publication of these characteristics has been included among ICCC documents for participants.

4.- Posters. Posters continue to be the orphan child of congresses in general, and the ICCC is no exception to that rule. Many authors feel that their research has been undervalued if they receive a proposal to present their paper in poster form. In this congress we have introduced a new, three-pronged approach: digital format, poster presentation during (short) plenary sessions, and specific timeslots (shown on the programme) for formal poster presentations. There is no way of knowing, at this writing, whether these innovations will (at least partially) overcome the inertia that relegates the research behind posters to oblivion. But we hope that the effort will encourage future ICCC organizers to continue to highlight the value of this format for presenting research papers.

Lastly, from the modesty that should govern a scientist's professional life, I wish to express my enormous satisfaction over what has been an exciting, once in a lifetime experience: organizing an ICCC. It has been both fantastic and revitalising. I feel extraordinarily fortunate and am looking forward to sharing the satisfaction it has afforded me with all the Congress participants in Madrid.

Welcome to Madrid and many thanks for your support and patience and, above all, my best wishes for successful research.

Ángel Palomo
Chairman 13th ICCC
Madrid, July 2011.



General information

Venue


Palacio de Congresos de Madrid, Paseo de la Castellana, 99.

Public Transport:  Station "Santiago Bernabeu" line 10 dark blue colour.

Buses: Number 27, 14, 150, 40, 147.

Official language

Scientific programme and technical sessions will be given in English.

Simultaneous interpretation (English-Spanish-English) will be provided for the keynote lectures sessions. During "Singular Constructions" panel, simultaneous interpretation (Spanish-English) will be available. Lectures in Spanish are marked with .

Simultaneous interpretation will be provided in those sessions.

Congress secretariat

The Congress secretariat will be located in the venue's lower ground floor.

Registration desk

The registration desk is located at the Palacio de Congresos lower ground floor and will be opened during the technical sessions.

Speakers ready room

Speakers are kindly requested to check their pen drive, CD or DVD at least three hours before their presentations at the speaker's ready room located on the lower ground floor. The organization disclaims any responsibility for any malfunction of the power point files, if they have not been checked well in advance to their presentation.

E-posters

Poster will be displayed on the screens. Screens will be numbered from 1 to 10. See screen location on page 18.

Short presentations associated with poster, have a slot at the assigned screen.

Although all posters will be available in all screens to be examined by delegates at anytime, during General posters sessions, delegates will be able to ask authors for more information. Schedule by session and screen is detailed in the programme. Authors are requested to be available on those dates next to the assigned screen.

Badges

A personal badge will be handed together with the congress package. **Badges must be worn at all times** in order to gain access to the scientific sessions, posters sessions, commercial exhibition, breaks, lunches and social activities.



Coffee breaks and luncheons

Coffee breaks will be served at the Exhibition Area in the main lobby of the Congress venue, according to the programmed schedule. Working lunch will be served at the dining room on the first floor as per the programmed schedule.

Technical visits

Technical visits will take place on Tuesday 5th and Wednesday 6th July. See detailed programme on page 80.

Wi-Fi

Wi-Fi will be available at the exhibition area in the main lobby of the venue. Users are requested to limit their access to 15 minutes during busy periods due to the limited capacity for simultaneous users.

Attendance certificate

All registered participants will obtain an attendance certificate.

Author's certificate

Authors will obtain a certificate of their presentation.

Proceedings

Each registered delegate will receive one CD including all proceedings.

No smoking policy

Smoking is not permitted in the Palacio de Congressos.

Cellular phones

Cellular phones must be switched off during all sessions.

APROCOR Foundation

Fundación APROCOR is a non-profit and private foundation, which aim is the promotion of activities and the improvement of the quality of people's life with intellectual disabilities. The organization of the XIII International Congress of the Chemistry of Cement has decided to benefit from their many abilities and a team of APROCOR will assist us during the congress.

Website: www.fundacionaproc.com.



CASA DE S. M. EL REY

CREDENCIAL

Nº 204/2011

S.M. el Rey, accediendo a la petición que tan amablemente Le ha sido formulada, ha tenido a bien aceptar la

PRESIDENCIA DEL COMITÉ DE HONOR

del **"XIII CONGRESO INTERNACIONAL DE LA QUÍMICA DEL CEMENTO"** que, bajo el lema **«Cimentando un futuro sostenible»**, tendrá lugar en Madrid del 3 al 8 de julio próximo.

Lo que me complace participarle para su conocimiento y efectos.

PALACIO DE LA ZARZUELA, 20 de junio de 2011

EL JEFE DE LA CASA DE S.M. EL REY,

SEÑOR PRESIDENTE DEL COMITÉ ORGANIZADOR DEL CONGRESO.

MADRID

Committee of Honour

President:

His Majesty Juan Carlos I, *King of Spain*.



Members:

- Mr. José Luis Rodríguez Zapatero. *President of the Spanish Government*.
- Mrs. Esperanza Aguirre Gil de Biedma. *President of the Regional Government of Madrid*.
- Mr. José Blanco López. *Minister of Public Works*.
- Mrs. Cristina Garmendia Mendizábal. *Minister of Science and Innovation*.
- Mr. Alberto Ruiz-Gallardón Jiménez. *Mayor of Madrid*.
- Mr. Rafael Rodrigo Montero. *President of the National Research Council (CSIC)*.
- Mr. Dieter Kiefer. *President of the Spanish Cement Association, Oficemen. President of the Spanish Institute of Cement and its Applications*.

Organizing Committee

- Mr. Juan José de Damborenea. *Deputy Chairman, Technical and Scientific Area, National Research Council (CSIC)*.
- Mr. Ángel Palomo. *President of the 13-ICCC, Instituto de Ciencias de la Construcción Eduardo Torroja*.
- Mr. Aniceto Zaragoza. *General Manager of the Spanish Cement Association, Oficemen*.
- Mr. Juan Carlos López Agüí. *General Manager of the Spanish Institute of Cement and its Applications*.
- Mr. Víctor Ramón Velasco. *Director of the Instituto de Ciencias de la Construcción Eduardo Torroja*.



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Mrs. Carmen Andrade, *Cisdem (CSIC-UPM), Spain*

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- Mr. Fred Glasser, *University of Aberdeen (United Kingdom)*
- Mr. Donald McPhee, *University of Aberdeen (United Kingdom)*
- Mrs. Karen Scrivener, *Ecole Polytechnique Federale de Lausanne (Switzerland)*
- Mr. Henri Van Damme, *ESPCI (France)*
- Mr. Jochen Stark, *University of Weimar (Germany)*
- Mr. S. Tsvilllis, *National Technical University of Athens (Greece)*
- Mr. Harald Justnes, *SINTEF (Norway)*
- Mr. André Nonat, *Université de Bourgogne (France)*
- Mr. Markus Tschudin, *Holcim Group (Switzerland)*
- Mr. Duncan Herfort, *Aalborg Portland Group (Denmark)*
- Mr. Ángel Palomo, *IETcc (Spain)*
- Mr. Miguel Ángel Sanjuán, *IECA (Spain)*

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- Mr. Hamlin Jennings, *Northwestern University (USA)*
- Mr. J. Kirppatrick, *Michigan State University (USA)*
- Mr. George Scherer, *Princeton University (USA)*
- Mr. Jacques Marchand, *Laval University (USA)*
- Mr. Paulo Monteiro, *Berkeley University (USA)*
- Mr. Steve Skosmatka, *Portland Cement Association (USA)*
- Mr. Sandro Torres, *Universidad de Pariba (Brasil)*
- Mr. Iván Escalante, *CINVESTAV (Mexico)*
- Mr. Vicente Zetola, *Universidad Católica del Norte (Chile)*



Asia:

- Mr. Caijun Shi, *Hunan University Changsha (China)*
- Mr. A.K. Chatterjee, *Conmat Technologies (India)*
- Mr. Shunsuke Hanehara, *IWATE University (Japan)*
- Mr. Ravindra Gettu, *Indian Institute of Technology Madras (India)*
- Mr. Kazuo Yamada, *Taheiyo Cement (Japan)*
- Mr. Ha-Won Song, *Yonsei University (Korea)*

Australia:

- Mr. Kwesi Sagoe-Crensil, *CSIRO*
- Mr. Kenneth MacKenzie, *New Zealand Institute for Industrial Research and Development (New Zealand)*

Africa:

- Mr. Mark Alexander, *University of Cape Town (South Africa)*



National scientific- technical committee

Chairwoman:

Mrs. M^a Teresa Blanco-Varela, *IETcc*

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- Mr. Ángel Leiro, *Cedex*
- Mr. Ángel Palomo, *IETcc*
- Mr. Antonio Porro, *Labein-Tecnalia*
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- Mr. Enric Vázquez, *Universidad Politécnica de Catalunya (UPC)*
- Mrs. Francisca Puertas, *IETcc*
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- Mr. Joaquín Navarro, *FYM*
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- Mrs. Sagrario Martínez-Ramírez, *IETcc*
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- Mr. Tomás Vázquez, *IETcc*
- Mr. Victor Villar, *Lafarge Cemento*
- Mr. Miguel Ángel Climent, *Universidad de Alicante*
- Mrs. Ana Fernández, *IETcc*



Themes

AREA 1: Production process chemistry and engineering

- Clinker formation reactions
- Volatile cycles
- The chemistry of emissions
- Advanced techniques for process control
- New clinker types: chemistry and processing

AREA 2: Sustainable production

- Use of alternative raw materials and fuels
- Reduction of clinker content
- Other ways of lowering CO₂ emissions
- Energy balance
- CO₂ capture: physico-chemical treatments
- Life cycles
- Waste re-use

AREA 3: New cementitious matrix

- Alkali-activated binders (aluminosilicate and calcium silicate systems)
- Other non-Portland cement systems
- Hybrid organic-inorganic binders

AREA 4: Hydration and microstructure

- Hydration reactions
- Hydrated structure
- Microstructure development
- Modelling
- Toxic and radioactive waste solidification and immobilization

AREA 5: Hydration and thermodynamics

- Thermodynamics and kinetics



AREA 6: Modelling

- Ab. Initio. Molecular dynamics, etc...
- Other technics for modelling

AREA 7: Properties of fresh and hardened concrete

- Chemical admixtures
- Rheology and workability
- Shrinkage, creep
- Supplementary cementitious materials
- Relationship between microstructure and properties
- Special concretes

AREA 8: Concrete durability

- Sulphate attack
- Gas and ion transport processes: permeability, diffusion and modelling
- Reinforcement corrosion
- Alkali-aggregate reaction
- Freezing-thawing resistance
- Performance at high temperatures

AREA 9: Standardization

- EN, ASTM and other regional cement standards
- Performance and prescriptive approaches
- Harmonization of standards (for development of new cement types and movement of goods)

Overview of the programme

	Monday, 4 th July				Tuesday, 5 th July			
	Auditorium	Tomás Vázquez room	José Calleja room	Posters area	Auditorium	Tomás Vázquez room	José Calleja room	Posters area
09:00								
09:15	Opening				Keynote lectures and short presentations			
09:30								
09:45	Keynote lectures and short presentations							
10:00								
10:15								
10:30	Area 1							
10:45								
11:00	Coffee break			Area 1	Coffee break			Area 4
11:15					Keynote lectures			
11:30	Keynote lectures and short presentations				Area 9			
11:45								
12:00								
12:15								
12:30					Panel on Singular constructions	Panel on Climate change challenges		
12:45	Area 2							
13:00								
13:15								
13:30				Area 2				
13:45	Lunch				Lunch			
14:00								
15:00								
15:15					Parallel session 7	Parallel session 8	Parallel session 9	General posters session 1
15:30	Parallel session 1	Parallel session 2	Parallel session 3	Area 4	Area 2	Area 4		
15:45								
16:00								
16:15								
16:30								
16:45								
17:00								
17:15								
17:30	Parallel session 4	Parallel session 5	Parallel session 6		Parallel session 10	Parallel session 11	Parallel session 12	
17:45								
18:00								
18:15								
18:30	Area 2	Area 2	Area 1		Area 4	Area 4	Area 2	
18:45								
19:00								
19:15								



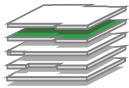
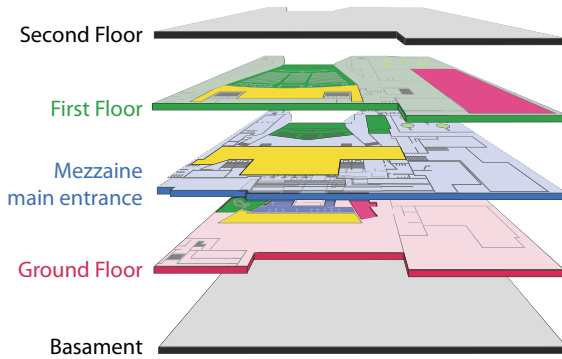
	Wednesday, 6 th July				Thursday, 7 th July				
	Auditorium	Tomás Vázquez room	José Calleja room	Posters area	Auditorium	Tomás Vázquez room	José Calleja room	Posters area	
09:00									
09:15	Keynote lectures and short presentations Area 5				Keynote lectures and short presentations Area 6				
09:30									
09:45									
10:00									
10:15									
10:30					Coffee break			Area 6	
10:45	Coffee break			Area 5					
11:00	Keynote lectures and short presentations Area 3				Keynote lectures and short presentations Area 7				
11:15									
11:30									
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12:00									
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13:00							Area 7		
13:15				Area 3					
13:30									
13:45	Lunch				Lunch				
14:00									
15:00									
15:15	Parallel session 13 Area 3	Parallel session 15 Area 3	Parallel session 14 Area 4		Panel on Standards	Role of scientific journals		Posters session 2	
15:30									
15:45									
16:00									
16:15									
16:30									
16:45									
17:00									
17:15									
17:30	Parallel session 16 Area 3	Parallel session 17 Area 4	Parallel session 18 Area 3		Parallel session 21 Area 6	Parallel session 20 Area 7	Parallel session 19 Area 7		
17:45									
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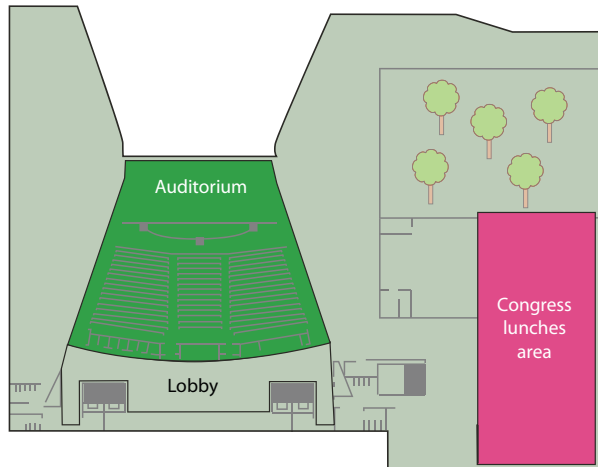
Friday, 8 th July				
	Auditorium	Tomás Vázquez room	José Calleja room	Posters area
09:00				
09:15	Keynote lectures and short presentations Area 8			
09:30				
09:45				
10:00				
10:15				
10:30	Coffee break			Area 8
10:45				
11:00	Parallel session 23 Area 8	Parallel session 24 Area 8	Parallel session 22 Area 7	
11:15				
11:30				
11:45				
12:00				
12:15				
12:30				
12:45				
13:00	Parallel session 25 Area 8	Parallel session 26 Area 8	Parallel session 27 Area 8	
13:15				
13:30				
13:45				
14:00	Closing session			
15:00				

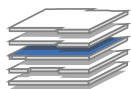
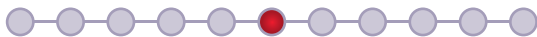


Floor plans

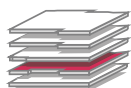
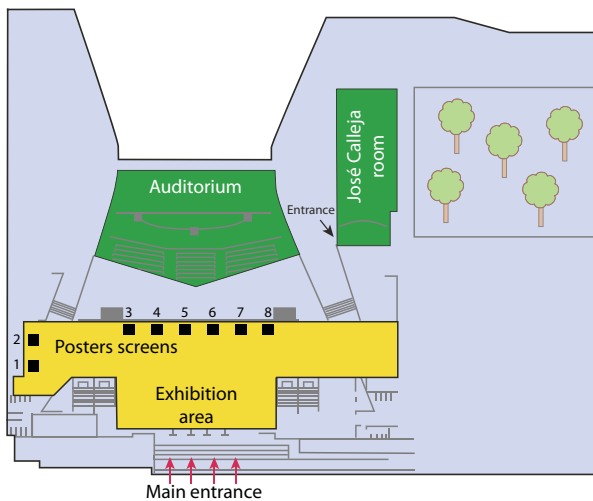


First Floor

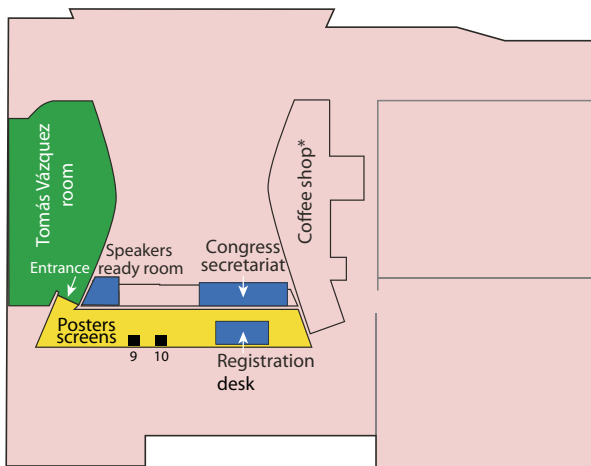




Mezzaine, main entrance



Ground Floor



*Open to the public and not included in the fee.



Technical sessions

Sunday, 3rd July

17:00 – 20:00 Registration

Monday, 4th July

08:00 – 09:00 Registration

09:00 – 09:30 Opening Session

09:30 – 10:15

Keynote lectures

Area 1: Production process chemistry and engineering

Chairpersons: François Sorrentino and Miguel Ángel Sanjuán

Guest speakers:

Anjan K. Chatterjee, *Conmat Technologies Private Limited, India*

Sandra Lebreiro, *Cimpor, Portugal*

10:15 – 11:00

Short Presentations

Area 1: Production process chemistry and engineering

Chairpersons: François Sorrentino and Miguel Ángel Sanjuán

Active belite clinker doped with SO₃

Staněk, T., Sulovský, P. and Všíanský, D., Research Institute of Building Materials, Brno, Czech Republic

Poster on the screen 2 at 11:10

Synthesis of high reactive belite cement at low temperature by using sulphate fly ash waste

Kacimi, L., Laboratoire de Génie des Procédés, Département de Chimie, Algeria; Cyr, M. and Clastres, P. Laboratoire Matériaux et Durabilité des Constructions (LMDC)- INSA, France

Poster on the screen 3 at 11:10

Detection of the portland cement clinker phases

Hartwich, P., Pritzel, C. and Trettin, R., Institute for building and materials chemistry; University of Siegen, Germany

Poster on the screen 4 at 11:10

A case study of quantitative phase analysis of clinkers using laboratory powder X-ray diffraction data

Wan, Y., Pan, Z., Li, X., Jiang, H. and Shen, X., State Key Laboratory of Materials-Oriented Chemistry Engineering, College of Materials Science and Engineering, Nanjing University of Technology, China

Poster on the screen 5 at 11:10



Mechanism of shell corrosion caused by volatiles in cement kilns and remedial measures
Yadav, D., Chaturvedi, S.K., Sethi, Y.P., Ali, M.M. and Vasudeva, M., Centre for Cement Research and Independent Testing National Council for Cement and Building Materials, India

Poster on the screen 7 at 11:10

Recent developments and perspectives regarding the standardisation and quality surveillance of cement in the east, central, and south african region
Marinescu, M., Eindhoven University of Technology, The Netherlands; Schmidt, W., Msinjili, N.S., Kuehne, H.C. and Rogge, A., BAM Federal Institute for Materials Research and Testing, Germany; Uzoegbo, H.C., University of the Witwatersrand, South Africa; Stipanovic Oslakovic, I., Institut IGH d.d (IGH), Croatia; Kumaran, G.S., Kigali Institute of Science and Technology, Rwanda; Brouwers, J., Eindhoven University of Technology, The Netherlands

Poster on the screen 8 at 11:10

11:00 – 11:30 Opening of the Commercial Exhibition Area.
Posters from short presentations Area 1: Production process chemistry and engineering
Coffee break

11:30 – 12:15 **Keynote lectures**
Area 2: Sustainable production
Chairpersons: Fred Glasser and Steven Kosmatka
Guest speakers:
Martin Schneider, *Verein Deutscher Zementwerke (VDZ), Germany*
Michael Romer, *Holcim Group Support, Ltd, Switzerland*

12:15 – 13:15 Short Presentations
Area 2: Sustainable production
Chairpersons: Fred Glasser and Steven Kostmatka

Production of activated clays for low cost building materials in developing countries
Martirena Hernández, J.F., Alujas, A. and Castillo, R., Universidad Central de las Villas (CIDEM), Cuba; Fernández, R. and Scrivener, K.L., Ecole Polytechnique Federal de Lausanne, EPFL, Lausanne, Switzerland

Poster on the screen 1 at 13:20

Investigation of cement substitution by combined addition of calcined clays and limestone
Antoni, M., Rossen, J. and Scrivener, K., EPFL-STI-IMX— Laboratoires des Matériaux de Construction, Switzerland; Castillo Lara, R., Alujas Díaz, A. and Martirena Hernández, J.F., Universidad Central Las Villas, Cuba

Poster on the screen 2 at 13:20



Composite cement based on portland cement clinker, limestone and calcined clay
Steenberg, M. and Herfort, D., Cementir Holding S.p.A., Denmark; Poulsen, S.L. and Skibsted, J., Instrument Centre for Solid State NMR Spectroscopy, Department of Chemistry and Interdisciplinary Nanoscience Center (iNANO), Denmark; Damtoft, J.S., Cementir Holding S.p.A., Denmark

Poster on the screen 3 at 13:20

Variables involved in the planting of rice in the rice husk ash's characteristics
Akasaki, J.L., Silva, E.J., Sousa, L.C., Marinho, J.H.D., Melges, J.L.P. and Manzoli Junior, W., Faculdade de Engenharia, UNESP – Univ Estadual Paulista, Campus de Ilha Solteira, Departamento de Engenharia Civil, Brazil; Payá Bernabeu, J.J. and Tashima, M.M., Universidad Politécnica de Valencia, Instituto de Ciencia y Tecnología Del Hormigón, Spain

Poster on the screen 4 at 13:20

Fluidised bed reactor-produced rice husk ash optimised for sustainable concrete applications
Sinthupinyo, S., Siam Research and Innovation, Siam Cement Group, Thailand; Macphée, D., University of Aberdeen, UK

Poster on the screen 5 at 13:20

Characterization and pozzolanic activity of a calcined natural zeolite
Fernández, R., Vigil de la Villa, R. and García, R., Universidad Autónoma de Madrid, Departamento de Geología y Geoquímica, Spain; Rodríguez, O. and Frías, M., Instituto de Ciencias de la Construcción Eduardo Torroja (CSIC), Spain; Villar-Cociña, E., Universidad Central de Las Villas, Departamento de Física, Cuba

Poster on the screen 6 at 13:20

Evaluation of the pozzolanic activity of natural zeolite tuffs
Snellings, R., Mertens, G. and Elsen, J., Department of Earth and Environmental Sciences, Katholieke Universiteit Leuven, Belgium

Poster on the screen 7 at 13:20

Glass cullet in cement production process
Gołek, Ł., Kołodziej, Ł. and Deja, J., University of Science and Technology, Faculty of Materials Science and Technology, Department of Building Materials Technology, Poland

Poster on the screen 8 at 13:20

Effect of micronized sands on the water permeability of cementitious material
Wang, Y., Ye, G. and Van Breugel, K., Faculty of Civil Engineering & Geosciences (Delft University of Technology), Netherlands

Poster on the screen 9 at 13:20

Utilization of spent pot liner (SPL) as a raw mix component in cement manufacturing
Singh, A.K., Mishra, A. and Kumar, S., UltraTech Cement Co. Ltd. Hirni Cement Works, India

Poster on the screen 10 at 13:20



Synthetic gypsum production from coal acid mine drainage treatment with cement kiln dust

Martínez Londoño, E. and Morales Rendón, J., Cementos Argos S.A., Colombia; Tobón, J., Colombia

Poster on the screen 1 at 13:30

Utilization of by-product from petroleum refinery in portland clinker and cement manufacturing

Al-Dhamri, H. and Ganesh, R., Oman Cement Company SAOG, Oman; Melghit, K. and Taha, R., Sultan Qaboos University, College of Science, Department of Chemistry, Oman

Poster on the screen 2 at 13:30

Hexavalent chromium release mechanisms due to portland clinker mineralogy

Moudilou, E. and Rousseau, F., CTG Italcementi Group, France; Cassat, P. and Germaneau, B., Ciments Calcia Italcementi Group, France

Poster on the screen 3 at 13:30

Gehlenite as mineral for binders identification

Mavilia, L., Dipartimento Patrimonio Architettonico e Urbanistico (PAU), Italy

Poster on the screen 4 at 13:30

Environmental impact of implementing alternative fuels in cement plants

Rovira, J., Mari, M. and Schuhmacher, M., Environmental Analysis and Management Group, Universitat Rovira i Virgili, Spain; Nadal, M., Laboratory of Toxicology and Environmental Health, Universitat Rovira i Virgili, Reus, Spain; Domingo, J.L., Laboratory of Toxicology and Environmental Health, Universitat Rovira i Virgili, Spain

Poster on the screen 5 at 13:30

13:20 – 13:40 Posters from Short presentations
Area 2: Sustainable production

13:45 – 15:30 Lunch

15:30 – 17:15 Parallel Sessions: 1, 2 and 3
Session 1- Area 2: Sustainable production
Auditorium
Chairpersons: Moisés Frías and Arezki Tagnit Hamou

Properties of portland-composite cement with limestone

Piechówka, M., Division of Building Materials, Timber and Monumental Heritage Structures, Institute of Building Engineering, Wrocław University of Technology, Poland; Giergiczny, Z., Department of Building Processes, Faculty of Civil Engineering, Silesian University of Technology, Poland



Portland dolomite cement as alternative to portland limestone cement

Schöne, S., Dienemann, W. and Wagner, E., HeidelbergCement Technology Center GmbH Leimen, Germany

Ternary cement blends for improved sustainability

Mullick, A., Cement and Concrete Technology Consultant, India; Justnes, H., SINTEF Building and Infrastructure, Norway; Fidjestøl, P., Elkem Materials, Norway; Harsh, S., National Council for Cement and Building Materials, India

Investigations on nanosilica blended cements

Harsh, S., Arora, A.K., Ali, M.M. and Vasudeva, M., National Council for Cement and Building Materials, Centre for Cement Research & Independent Testing, India

Colloquia (8 minutes)

Effect of silica fume replacement by fine fly ash on the properties of fresh and hardened UHPC

Gerlicher, T., Hilbig, H., Urbonas, L. and Heinz, D., CBM-centre for building materials, Technische Universität München, Germany

Microstructure and mechanical properties of composite cements with ultra fine silica waste additions

Iñiguez Sánchez, C.A. and Gómez Zamorano, L.Y., Universidad Autónoma de Nuevo León, Facultad de Ingeniería Mecánica y Eléctrica, Centro de Investigación y Desarrollo Tecnológico (CIDET), México; Lothenbach, B., Empa, Swiss Federal Laboratories for Materials Testing and Research, Laboratory for Concrete and Construction Chemistry, Switzerland

Synergic effect of non-clinkier constituents in portland composite cements

Giergiczny, Z., Silesian University of Technology, Gliwice, Gorazdze Group, Poland; Garbacik, A. and Drozd, W., Institute of Ceramics and Building Materials, Division of Glass and Building Materials, Poland

A method for a fair allocation of the environmental impacts of supplementary cementitious materials

Habert, G. and Roussel, N., Université Paris-Est, Laboratoire Central des Ponts et Chaussées, LCPC, France

Colloquia (8 minutes)

15:30 – 17:15

Session 2 - Area 2: Sustainable production

Room Tomás Vázquez

Chairpersons: Francisca Puertas and Iván Escalante



Surface properties of calcined clays and their dispersion in blended portland cement pastes

Pardo, P. and Skibsted, J., Instrument Centre for Solid-State NMR Spectroscopy, Department of Chemistry, and Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Denmark; Christensen, P.V. and Keiding, K., Section of Chemistry, Department of Biotechnology, Aalborg University, Denmark; Herfort, D., Technical Centre, Aalborg Portland A/S, Denmark

Thermal activation of natural clays containing kaolinite

Tironi, A., Trezza, M.A. and Irassar, E.F., Facultad de Ingeniería, Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina; Scian, A.N., Centro de Tecnología de Recursos Minerales y Cerámica CONICET UNLP, Argentina

Preparation of high performance blended cement with low clinker content by a new gap-graded particle size distribution

Zhang, T.S., School of Materials Science and Engineering, South China University of Technology, China; Yu, Q.J., Wei, J.X. and Zhang, P.P., Key Laboratory of Special Functional Materials of the Ministry of Education, South China University of Technology, China

Determination of slag content in blastfurnace slag blended cement

Hanehara, S. and Oyamada, T., Iwate University, Morioka, Japan; Nito, N. and Koibuchi, K., DC Corporation, Japan

Colloquia (8 minutes)

Ladle slag as new constituent for blended cement: a microstructural study

Bignozzi, M.C., Dipartimento di Ingegneria Civile, Ambientale e dei Materiali, Università di Bologna, Italy; Andreola, F., Barbieri, L. and Lancellotti, I., Dipartimento di Ingegneria Ambientale e dei Materiali, Università di Modena e Reggio Emilia, Italy

Investigation of the behavior of composite cements with ground granulated blast furnace slag, fly ash and geothermal silica

Gómez-Zamorano, L.Y., Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León, México; Lozano-Vargas, J., Escuela Superior de Ingeniería Química e Industrias Extractivas, Instituto Politécnico Nacional, México

Evaluation of acid slag as mineral admixture in portland cement

Carvajal Vinasco, J.F., Ochoa Botero, J.C. and Tobón, J.I., Universidad Nacional de Colombia, Colombia

Experimental analysis of pozzolanic properties of pulverized coal combustion bottom ash compared to fly ash in portland cements with additions

Sanjuán, M.A., Instituto Español del Cemento y sus Aplicaciones (IECA), Spain; Menéndez, E., Instituto de Ciencias de la Construcción "Eduardo Torroja" (CSIC), Spain



Colloquia (8 minutes)

15:30 – 17:15 **Session 3 - Area 1: Chemistry and engineering of the construction process**
Room José Calleja
Chairpersons: Serafín Lizarraga and Pavel Martauz

Determination of slag content in blended cement by xrd/rietveld method without adding internal standard

Yamashita, M. and Tanaka, H., Mitsubishi Materials Corporation, Cement Research, Yokoze, Japan

In-situ clinkering study of belite sulfoaluminate clinkers by synchrotron X-ray powder diffraction

De la Torre, A.G., Cuberos, A.J.M., Álvarez-Pinazo, G., Cuesta, A. and Aranda, M.A.G., Departamento de Química Inorgánica, Cristalografía y Mineralogía, University of Malaga, Spain

Site preferences of F^- , Al_3^+ and Fe_3^+ guest-ions in the calcium silicate phases of portland cement clinker by from solid-state NMR spectroscopy

Tran, T., Jakobsen, H.J and Skibsted, J., Instrument Centre for Solid-State NMR Spectroscopy and Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Denmark; Herfort, D, Aalborg Portland A/S, Denmark

Chemistry of the different phases contained in a sulfo-belitic clinker by means of energy dispersive X-ray analysis, time of flight-secondary ion mass spectrometry and selective dissolution

Barnes-Davin, I., Pasquier, M., Bosmet, J. and Vial, V., Vicat, France; Barnes, J.P., CEA-Leti, France

Colloquia (8 minutes)

Quantitative analysis of heated portland cement paste by X ray diffraction

Zhang, Q. and Ye, G., Microlab, Section of Materials and Geosciences, Faculty of Civil Engineering and Geoscience, The Netherlands

Quantitative multi-spectral analysis of portland cement, fly ash and slag using scanning electron microscopy and X-ray μ -analysis

Stutzman, P., Snyder, K. and Bullard, J.W., National Institute of Standards and Technology, Materials and Construction Research Division, USA

Study on the relationship of narrow particle size fractions and properties of cement

Xu, L., Wang, Y., Liu, M. and Ye, X., Nanjing University of Technology, College of Materials Science and Engineering, China



Study of grinding aids for clinker by zeisel mill

Goisis, M., Italcementi, Innovation Department, Italy; Capone, C., Zonca, G. and Capelli, A., CTG, Italcementi Group, Laboratory Department, Italy

Colloquia (8 minutes)

17:20 – 19:00

Parallel Sessions: 4, 5 and 6

Session 4 - Area 2: Sustainable production

Auditorium

Chairpersons: André Nonat and Karen Scrivener

Synthesis of special cements using different waste

Burlov, Y.A. and Burlov, I.Y., JSC "Podolsk-Cement" Russia; Krivoborodov, Y.R., Mendeleev University of Chemical technology of Russia, Russia

Mortars added with chemically inert sediment aggregates: performance assessment and microstructure changes

Agostini, F., Davy, C.A., Skoczylas, F. and Dubois, Th. Univ. Lille Nord de France, France

Potentials of utilizing spent pot refractory lining waste from alumina smelter in cement

Chaturvedi, S., Yadav, D. and Ali, M.M., Centre for Cement Research and Independent Testing National Council for Cement and Building Materials, India; Nanda, S. and Das, S.N. National Aluminium Company Limited, India

Physical-chemical characteristics of cane bagasse ashes used in the manufacturing of concretes

Pádua, P.G.L., Souza, C.A. and Aguilar, M.T.P., Department of Structural Engineering (Federal University of Minas Gerais), Brazil

Colloquia (5 minutes)

Influence of rice husk and sugar cane bagasse ultrafine ashes on hydration characteristics of cement based pastes

Cordeiro, G.C., Universidade Estadual do Norte Fluminense Darcy Ribeiro, Brazil; Toledo Filho, R.D and Fairbairn, E.M.R., Universidade Federal do Rio de Janeiro, Brazil

Waste valorization from the burning of rice husk

Rodríguez de Sensale, G., Romay, C. and Costa, F., Instituto de Ensayo de Materiales (IEM), Universidad de la República, Uruguay

An investigation on sulfur based composite materials containing C&D waste

Manzi, S., Dipartimento di Ingegneria Civile, Ambientale e dei Materiali, Facoltà di Ingegneria (Università di Bologna), Italy



Lime- mud from pulp and paper mills effects in cement based materials

Modolo, R., Senff, L., Ferreira, V.M., Labrincha, J.A. and Tarelho, L.A., University of Aveiro (UA), Portugal

The assessment of clinker and cement regenerated from completely recyclable concrete

De Schepper, M., De Belie, N. and Vernimmen, L., Magnel Laboratory for Concrete Research, Ghent University, Belgium; Van Driessche, I. and De Buysser, K., Scripts, Ghent University, Belgium

Colloquia (5 minutes)

17:20 – 19:00

Session 5 - Area 2: Sustainable production

Room Tomás Vázquez

Chairpersons: Fernando Martirena and Qijun Yu

Removal of hexavalent chromium from aqueous sample by calcium alumino-zincate

Hirano, M., Murakami, M., Sugano, M. and Sango, H., College of Science and Technology, Nihon University, Japan

Parameters influencing the leachability of antimony from hardened concrete

Magistri, M., Recchi, P. and Bravo, A., Mapei SpA, Milan, Italy

Effect of gypsum content on calcium strontium. Sulphoaluminate cement

Cheng, X., Tan, W., Ye, Z. and Chang, J., Department of Materials Science and Engineering, University of Jinan, Jinan, China / The Key Laboratory of Building Materials Prepared and Tested technology in Shandong Province, China

Immobilisation of selected ions in natural clinoptilolite incorporated in slag cement pastes

Mozgawa, W., Król, M., Pichór, W. and Nocuń-Wczelik, W., Faculty of Materials Science and Ceramics AGH University of Science and Technology, Poland

Colloquia (5 minutes)

Research on metaconglomerate utilization to cement production

Draganoaia, C. and Paceagiu, J., Ceprochim SA, Projects and Binding Materials Research Department, Romania

Modeling the chemical reaction process of fly ash under portland cement circumstance

Yu, Z. and Ye, G., Microlab, Faculty of Civil Engineering and Geosciences, Delft University of Technology, The Netherlands

Characterization of fly ash produced in Mexico for construction purposes

Reyes Uribe, A. and Comisión Federal de Electricidad, México



Characterization of fly and bottom ash from a fluidized-bed power plant as an addition to cement

González Fonteboa, B. D. and Carro-López, D., Escuela Técnica Superior de Ingenieros de Caminos, C. y P. Universidade da Coruña, Spain; Gutiérrez, S. and Sánchez, M., Cementos Occidentales S.A., Spain

Colloquia (5 minutes)

17:20 – 19:00

Session 6 - Area 1: Chemistry and engineering of the construction process

Room José Calleja

Chairpersons: Joan Puig and Elena Guede

Clinker mineralogy and reactivity with the use of high-sulfur petcoke fuel

Wang, H., Farzam, H. and Caballero, E., Cemex USA, USA

Obtaining belite cements from ceramic waste and the fluxing/mineralizer pair $\text{CaF}_2/\text{CaSO}_4$. A statistical study

García Díaz, I., Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc-CSIC), Spain; Palomo, J.G., Universidad Politécnica de Madrid, Escuela de Arquitectura Técnica Madrid, Spain

Catalysis of the ammonium salts in the SO_2 emission reduction of cement kilns

Lizarraga Galarza, S. and Arratibel Zabalo, I., Cementos Portland Valderrivas, S.A., Spain

Energy saving low emissions belite cements

Garbacik, A., Baran, T. and Ostrowski, M., Institute of Ceramics and Building Materials, Division of Glass and Building Materials, Poland

Colloquia (5 minutes)

Proven experiences with alternative fuels in cement kilns

Baier, H. and Menzel, K., Polysius AG, Germany

Threshold limits for trace elements in portland cement clinker

Gineys, N., Aouad, G. and Damidot, D., Univ Lille Nord de France, France; Sorrentino, F., Mineral Research Processing Company, France

Iron ore fractionation and characterization

Belakrouf-Akachat, A., Université M'hamed Bougara, Laboratoire de Matériaux Minéraux et Composites, Algérie; Dellys, D., Université M'hamed Bougara, Faculté des Hydrocarbures et de la Chimie, Algérie



Improving strength testing and customer value

Koski, P., Johansson, N. and Johansson, S.E., HC, Cementa Research, Sweden; Isaksson, R., Isaksson-Taylor Management Consultants, Sweden; Taylor, N., Isaksson-Taylor Management Consultants, Australia

Energy saving raw material grinding with high-pressure grinding roll Polycom®

Engeln, I., Senior Executive – Raw Material Preparation, Polysius AG. Beckum, Germany

Colloquia (5 minutes)

Tuesday, 5th July

09:00 – 09:45

Keynote lectures

Area 4: Hydration and microstructure

Chairpersons: Paulo Monteiro and M^a Teresa Blanco-Varela

Guest speakers:

Karen Scrivener, École Polytechnique Fédérale de Lausanne, Switzerland

André Nonat, Université de Bourgogne, France

09:45 – 10:45

Short Presentations

Area 4: Hydration and microstructure

Chairpersons: Paulo Monteiro and M^a Teresa Blanco-Varela

Modelling hydration kinetics of multi-phase cementitious systems

Kumar, A. and Scrivener, K., Laboratory of Construction Materials, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Poster on the screen 1 at 10:50

In-situ C-S-H density measured with continuous analytical methods –influence of particle size and hydration conditions

Gallucci, E., Sika Technology AG, Switzerland; Costoya, M., Holcim Group Support, Switzerland; Quennoz, A. and Scrivener, K., EPFL, Switzerland

Poster on the screen 2 at 10:50

Synchrotron-based micro-spectroscopic investigations on the Al, S, and Fe speciation in cementitious materials

Wieland, E. and Dähn, R., Paul Scherrer Institut, Switzerland; Dilnesa, B. Z. and Lothenbach, B., Empa, Swiss Federal Laboratories for Materials Testing and Research, Switzerland

Poster on the screen 3 at 10:50



Hydration of C_3S , C_2S and their blends. micro- and nanoscale characterization
Puertas, F., Goñi, S., Hernández, M.S., Guerrero, A. and Varga, C., Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc-CSIC), Spain; Palacios, M., Institute for Building Materials, Switzerland; Dolado, J.S., Labein-Tecnalia, Spain; Zhu, W. and Howind, T.U., University of the West of Scotland, UK
Poster on the screen 4 at 10:50

Influence of superplasticizers on long term variation in C_3A hydration and formation of AFM phases – effects on durability
Rößler, C. and Sowoidnich, T., Finger-Institute for Building Materials Science, Bauhaus-University Weimar, Germany
Poster on the screen 5 at 10:50

Formation and destabilization of organo-aluminate AFM phases
Giraudeau, C. and d'Espinose de Lacaillerie, J.B., Ecole Supérieure de Physique et de Chimie Industrielles, ESPCI ParisTech, France; Nonat, A., Université de Bourgogne, France; Flatt, R., Sika Technology AG, Switzerland
Poster on the screen 6 at 10:50

Effect of diethanol-isopropanolamine on the hydration of slag blended cements
Riding, K., Kansas State University (KSU), U.S.A.; Silva, D., W.R. Grace & Co., U.S.A.; Scrivener, K., Laboratory of Construction Materials, Ecole Polytechnique Fédérale de Lausanne, Switzerland
Poster on the screen 7 at 10:50

Influence of alkali ions on a silicon site distribution in portland cement paste by ^{29}Si -MAS NMR spectroscopy
Brykov, A. and Danilov, V., Saint-Petersburg State Institute of Technology, Russia; Mokeev, V., Institute of Macromolecular Compounds, Russia
Poster on the screen 8 at 10:50

Study the hydration process of cement blended with rice husk ash by means of isothermal calorimetry
Nguyen, V.T. and Ye, G., Faculty of Civil Engineering and Geosciences, Delft University of Technology, Netherlands; Bui, D.D., Department of Building Materials, Hanoi University of Civil Engineering, Vietnam
Poster on the screen 9 at 10:50

Study on the hydration of cement based pastes with silica gel from residual rice husk ash
Lima, S.P.B., Paiva, O.A., Toledo Filho, R.D. and Fairbairn, E.M.R., Universidade Federal do Rio de Janeiro, Brazil; Cordeiro, G.C., Universidade Estadual do Norte Fluminense Darcy Ribeiro, Brazil; Chaves, M.R.M., Escola Politécnica da Universidade de São Paulo, Brazil; Vasconcelos, R.P., Universidade Federal do Amazonas, Brazil
Poster on the screen 10 at 10:50



Influence of mineral additions on the phase composition in autoclaved ultra-high performance concrete UHPC

Lehmann, C., Fontana, P., Müller, U., Österle, W. and Meng, B., Federal Institute for Materials Research and Testing (BAM), Germany

Poster on the screen 1 at 11:00

Preliminary application of NMR/MRI analysis during the repair procedure of an old concrete-interactions between water transfer and hydration

Wang, B. and Faure, P., Imaging and Materials Group, Institute Navier, IFSTTAR/ École des Ponts Paristech/CNRS, France; Thiery, M. and Baroghel-Bouny, V., Materials Department, Microstructure Durability and Modeling Group, IFSTTAR, France

Poster on the screen 2 at 11:00

Immobilization of arsenite and arsenate ions in aqueous sample using calcium alumino-zincate

Sango, H., Hirano, M., Murakami, M. and Sugano, M., College of Science and Technology, Nihon University, Japan

Poster on the screen 3 at 11:00

TEM/EDS/EELS as electron probe alternative to the synchrotron radiation for elucidating the cement phases composition: a review

Rincón, J.M., Instituto de Ciencias de la Construcción Eduardo Torroja, CSIC, Spain

Poster on the screen 5 at 11:00

10:45 – 11:15

Posters from Short Presentations Area 4: Hydration and microstructure

Coffee break.

11:15 – 12:00

Keynote lectures

Area 9: Standardization

Chairpersons: Luigi Buzzi and Harald Justnes

Guest speakers:

Juan Carlos López Agúí, Instituto Español del Cemento y sus Aplicaciones (IECA), Spain

Aniceto Zaragoza, Agrupación

de Fabricantes de Cemento de España (Oficemen), Spain

Michel Delort, Atilh, France



12:00 – 13:30

Panel on Concrete singular constructions

Auditorium



Chairpersons: José Ignacio Elorrieta and José Manuel Domínguez

Carlos Ferrater, Architect, Spain

Antonio Lamela, Architect, Spain

Jesús Mateos, FCC, Spain

Agustín Laplaza, FYM (Italcementi Group), Spain



- 12:00 – 13:30 Panel on Climate change challenges
Tomás Vázquez room
Chairman: Aniceto Zaragoza
Vicente Cortés, *Director of Ciuden, Spain*
Jean-Marie Chandelle, *Chief Executive of Cembureau, Belgium*
Philippe Fonta, *Program Director - Cement Sustainability Initiative. World Business Council for Sustainable Development (WBCSD), Switzerland*
- 13:30 – 15:00 Lunch
- 15:00 – 16:45 Parallel Sessions 7, 8, 9 and General Posters Session 1
Session 7 - Area 4: Hydration and microstructure
Auditorium
Chairpersons: Thomas Matschei and Mette Geiker

Interaction between cement and anti-graffiti coating: surface energy and acid-base constants
Carmona-Quiroga, P.M. and Blanco-Varela, M.T., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain; Rubio, J. and Sánchez, M.J., Instituto de Cerámica y Vidrio (CSIC), Spain; Martínez-Ramírez, S., Instituto de Estructura de la Materia (CSIC), Spain / Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Calcium silicate – calcium aluminate interactions and their influence on cement early hydration
Quennoz, A., Gallucci, E. and Scrivener, K., Ecole Polytechnique Fédérale de Lausanne (EPFL), Laboratory of Construction Materials, Switzerland

The effect of limestone powder additions on strength and microstructure of fly ash blended cements
De Weerd, K. and Justnes, H., SINTEF Building and Infrastructure Trondheim, Norway; Lothenbach, B. and Ben-Haha, M., EMPA, Swiss Federal Laboratories for Material Testing and Research, Switzerland

Influence of calcium sulphate on hydration and mechanical strength of tricalcium silicate
Gunay, S., Garrault, S. and Nonat, A., Laboratoire de Recherche sur la réactivité des systèmes granulaires, France; Termkhajornkit, P., Lafarge Centre de Recherche, France

Colloquia (8 minutes)

Influence of hydrates rate formation on the rheological properties of the paste
Bundyra-Oracz, G., The Institute of Building Materials and Concrete Technology, Poland; Kurdowski, W., The Institute of Ceramics and Building Materials, Poland

Acceleration by retardation
Justnes, H., SINTEF Building and Infrastructure, Norway



Characterization of C-S-H using an advanced synchrotron based spectroscopic technique: study on the effects of polymers on C-S-H nanostructures using scanning transmission X-ray microscopy

Ha, J., Chae, S. and Monteiro, P.J.M., University of California-Berkeley, Department of Civil and Environmental Engineering, USA; Chou, K.W. and Tyliszczak, T., Advanced Light Source, Lawrence Berkeley National Laboratory, USA

From atoms to microstructure of cement hydrates

Shahsavari, R. and Ulm, F.J., Department of Civil and Environmental Engineering, MIT, USA; Pellenq, R., Centre Interdisciplinaire des Nanosciences de Marseille, CNRS and Marseille Université, France

Colloquia (8 minutes)

15:00 – 16:45

Session 8 - Area 2: Sustainable production

Room Tomás Vázquez

Chairpersons: Umberto Costa and M^a Carmen Naranjo

Reactive transport modeling of CO₂ through cementitious materials under CO₂ geological storage conditions

Shen, J., Dangla, P. and Thiery, M., Université Paris-Est, UMR Navier, UMR8205 CNRS/École des Ponts ParisTech., France; Poupard, O. and Capra, B., Oxand, France

Nanoparticles usage tendencies in cementing systems for hydrocarbon wells

Balza, A., Perera, Y., Brito, J., Hurtado, A., Quercia, G., Corona, O.A., Colina, A. and Blanco, A., PDVSA-Intevep, S.A., Venezuela

Photocatalysis in construction materials: use of experimental design in development of a lab-scale analysis

Pellerej, D. and Ricchiardi, G., Centro di Eccellenza NIS, Italy; Canonico, F., Buzzi Unicem SpA, Italy; Droll, K., Wilhelm Dyckerhoff Institut für Baustofftechnologie, Germany

The chemically modified vapour grown carbon fibres as micro-reinforcement in cement-carbon composites

Ślosarczyk, A., Institute of Structural Engineering, Poznan University of Technology, Poznan, Poland

Colloquia (8 minutes)

Parametric study, based on kinetic constants, of the photocatalytic NO_x abatement by construction materials

Bengtsson, N. and Castellote, M., Centro de Seguridad y Durabilidad Estructural y de Materiales-CISDEM-(CSIC), Spain

Session
8



Behavior of inorganic foam in solution

Prud'homme, E., Le Troedec, M. Peyratout, C., Michaud, P. and Rossignol, S., Groupe d'Etude des Matériaux Hétérogènes (GEMH-ENSCI-CEC), France

Synthesis and crystal chemistry of manganese containing perovskite phases

Stöber, S. and Pöllmann, H., Martin - Luther - Universität Halle Institut für Geowissenschaften Mineralogie/Geochemie Von Seckendorff, Germany; Redhammer, G., Universität Salzburg FB Materialforschung und Physik Abt., Austria; Schorr, S., Freie Universität Berlin FB Geowissenschaften Mineralogie/Petrologie, Germany; Pomakushin, V., Laboratory for Neutron Scattering (LNS) Paul Scherrer Institut, Switzerland; Prokhnenko, O., Helmholtz-Zentrum-Berlin für Materialien und Energie, Germany

Formation of hydrotalcite type structures in activated paper sludge waste/Ca(OH)₂ system

Frias Rojas, M., Rodríguez Largo, O., Sánchez de Rojas Gómez, M.I., Instituto de Ciencias de la Construcción Eduardo Torroja (CSIC), Spain; Ramírez, M., Vigil de la Villa, R. and García Jiménez, R., Universidad Autónoma de Madrid, Unidad Asociada CSIC-UAM, Spain; Vegas Ramiro, I., Tecnalia, Spain

Colloquia (8 minutes)

15:00 – 16:45

Session 9 - Area 4: Hydration and microstructure

Room José Calleja

Chairpersons: Jorgen Skibsted and Ignasi Casanova

Re-examination of portland cement from nano scale perspective

Wu, H.C., Advanced Infrastructure Materials Laboratory, Department of Civil and Environmental Engineering, Wayne State University, USA

Chemical aspects of eva redispersible powders influence on the hydration of tricalcium aluminate

Kotwica, L. and Małolepszy, J., University of Science and Technology, Faculty of Materials Science and Technology, Department of Building Materials Technology, Poland

Synthesis hydrogarnets in the system $Al_2O_3 \cdot 2SiO_2 - SiO_2 - CaO - H_2O$ under hydrothermal conditions

Pytel, Z., AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Building Materials, Poland

Chloride and carbonate immobilisation by monosulfoaluminate: study of the solid solutions in the $CO_3^{2-} - Cl^- - SO_4^{2-}$ AFM systems

Renaudin, G. and Mesbah, A., Clermont Université, ENSCCF, Laboratoire des Matériaux Inorganiques, France; Cau-dit-Coumes, C. and Frizon, F., Commissariat à l'Energie Atomique et aux énergies alternatives, France; Leroux, F., CNRS, France

**Colloquia (8 minutes)****Interfacial chemistry of C–S–H on waste ion immobilization**

Elakneswaran, Y., Sato, T., Nawa, T., Iwasa, A. and Kurumisawa, K., Division of Sustainable Resources Engineering, Faculty of Engineering, Hokkaido University, Japan; Haga, K., Taiheiyo Consultant Co. Ltd, Japan

Production and characterization of clinker thin films as a new tool for nanoscale studies of hydration mechanisms

Rheinheimer, V., Veglio, N. and Casanova, I., Center for Research in Nanoengineering (CRnE), Spain

Influences of the chemical composition of fly ashes on their reactivity

Schulze, S. and Rickert, J., Verein Deutscher Zementwerke e.V., Germany

Influence of cement properties in the reaction rate and mechanical behavior of concrete with high fly ash content

Molina Bas, O.I., University of Puerto Rico – Mayagüez Campus, Puerto Rico; Moragues Terrades, A., Universidad Politécnica de Madrid, Spain; Gálvez Ruiz, J.C., Universidad Politécnica de Madrid, Spain; Guerrero Bustos, A.M., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Colloquia (8 minutes)**16:50 – 19:00****Parallel Sessions 10, 11 and 12****Session 10 - Area 4: Hydration and microstructure****Room Tomás Vázquez****Chairpersons: H. Poellman and Sagrario Martínez****Effect of filler on the early hydration**

Le Saout, G. and Ben Haha, M., Empa, Swiss Federal Laboratories for Materials Science and Technology, Concrete and Construction Chemistry Laboratory, Switzerland

Effect of finely dispersed limestone additives of different origin on cement hydration kinetics and cement hardening

Nocuń-Wczelík, W. and Lój, G., AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Poland

Development of C-S-H microstructure in ultra high performance concrete with QENS, ²⁹Si NMR and XRD

Gutberlet, T., Hilbig, H. and Beddoe, R.E., Centre for building materials (Technische Universität München), Germany



The dynamics of deuterium in hardened cement paste measured by solid state 2h NMR
 Minato, D., Nawa, T., Hiraoki, T. and Goto, S., Hokkaido University, Japan

The effects of silicate structures on hydration of pozzolanic materials
 Koizumi, K., Kagami, K. and Umemura, Y., Department of Chemistry, College of Science and Technology (Nihon University), Japan; Tsuyuki, N., Department of Chemistry, College of Science and Technology (Nihon University), Japan

Colloquia (10 minutes)

C-S-H seeding: an approach for the nanostructural tailoring of cement-based materials
 Alizadeh, R., Beaudoin, J.J., Raki, L. and Makar, J., Institute for Research in Construction, National Research Council, Canada; Moudrakovski, I., Steacie Institute for Molecular Sciences, National Research Council, Canada

On the origin of the dormant period of cement hydration
 Garrault, S., Nonat, A. and Sallier, Y., ICB, France; Nicoleau, L., Basf Construction Chemicals GmbH, Germany

A new method for X-ray investigation of cementitious materials-ranging from classical bragg-brentano type diffraction phase analysis to 3 dimensional CT microstructure analysis
 Pöllmann, H., Institut für Geologische Wissenschaften und Geiseltalmuseum, Germany; Meier, R., Riedl, U. and Blaj, G. Panalytical company, Netherlands

Quasi-elastic neutron scattering investigation of the effect of water/cement ratio on tricalcium silicate hydration
 Livingston, R., Department of Materials Science & Engineering, University of Maryland, USA; Nemes, N., Departamento de Física Aplicada III, Universidad Complutense de Madrid, Spain; Neumann, D., Center for Neutron Research, USA

Effect of temperature on the composition and structure of C-S-H gel obtained from the hydration of C_3S
 Sáez del Bosque I.F., Martínez Ramírez, S. and Blanco-Varela, M.T., Instituto de Ciencias de la Construcción Eduardo Torroja.(CSIC), Spain; Martín Pastor M., Universidad de Santiago de Compostela, Spain

Colloquia (10 minutes)

16:50 – 19:00 Session 11 - Area 2: Sustainable production
 Room José Calleja
 Chairpersons: Pedro Garcés and Camilo Restrepo



A sustainability analysis of a potential low energy route to cement production by synthesis in molten salts

Maries, A., Tyrer, M., Inman, D., Photiadis, G., Simons, S., Sheikh, R., Bensted, J., Barnes, P. and Cockcroft, J., University College London, UK

Use of oxygen steelmaking slag to obtain clinker: experimental study in laboratory scale and hydration characterization in the first ages

Chotoli, F.F. and Quarcioni, V.A., Instituto de Pesquisas Tecnológicas do Estado de São Paulo (IPT) - Laboratório de Materiais de Construção Civil, Brazil; Gobbo, I., Panalytical do Brasil, Brazil; Cincotto, M.A., Escola Politécnica da Universidade de São Paulo - Departamento de Engenharia da Construção Civil, Brasil

Normalized cement mortar with expanded polystyrene

Ferrándiz Mas, V., Huesca, J.A. and García Alcocel, E., Architectural Constructions department UA, Spain

Valorization of high-carbon fly ash and spent sand as raw materials in the portland cement clinker manufacture

Paceagiu, J., Nastac, D., Toader, M. S. and Draganoaia, C., Ceprochim SA, Research Department, Romania

Colloquia (10 minutes)

The effect of grinding on the structure group and its chemical environment for fly ash
Zhang, W., Dong, G., Wang, H. and Zhang, H., State Key Laboratory of Green Building Materials, China Building Materials Academy, China

Use of high-calcium ladle slag as a partial limestone substitute for clinker manufacturing with reduced CO₂ emissions

Mancio, M. Kirchheim, A.P. and Masuero, A.B., Federal University of Rio Grande do Sul, Brazil

PbO-glass behavior in cement based materials

Bignozzi, M.C. and Saccani, A., Dipartimento di Ingegneria Civile, Ambientale e dei Materiali Università di Bologna, Italy; Andreola, F., Barbieri, L., Lancellotti, I. and Zanasi, T., Dipartimento di Ingegneria Ambientale e dei Materiali Università di Modena e Reggio Emilia, Italy

Analysis of cubic and orthorhombic C₃A hydration in the presence and absence of gypsum

Kirchheim, A.P. and Dal Molin, D.C.C., Department of Civil Engineering of Federal University of Rio Grande do Sul, Brazil; Souza, R.B. and Cincotto, M.A., Polytechnic School of the University of São Paulo, Brazil; Gobbo, L.A., Institute of Geosciences of the University of São Paulo and Panalytical, Brazil; Monteiro, P.M., Department of Civil and Environmental Engineering University of California, USA



Influence of tartaric acid on phase development and setting time during early opc hydration

Stabler, C., Goetz-Neunhoffer, F. and Neubauer, J., GeoZentrum Nordbayern, Mineralogy, Friedrich-Alexander University Erlangen-Nuremberg; Germany; Braeu, M., BASF Construction Chemicals GmbH, Germany

Colloquia (10 minutes)

16:50 – 19:00

Session 12 - Area 4: Hydration and microstructure
Auditorium

Chairpersons: Marta Palacios and Emmanuel Gallucci

Effect of organic additives on dissolution kinetics of fly ash

Göbel, M., Urbonas, L. and Heinz, D., CBM – Centre for Building Materials, TU München, Germany

Influence of plasticizer type on hydration kinetics of self-compacting concrete

Lesage, K., Cizer, Ö. and Vandewalle, L., Katholieke Universiteit Leuven, Department of Civil Engineering, Belgium; Desmet, B. and Vantomme, J.; de Schutter, G., Ghent University, Department of Structural Engineering, Belgium

Influence of polycarboxylate side chains length on cement hydration and strengths development

Moratti, F., Magarotto, R., Mantellato, S., BASF Construction Chemicals Italia Spa, Italy; Roncero, J., BASF Construction Chemicals Espana S.L., Development Admixture Systems Europe, Spain

Impact of sodium gluconate on cubic and orthorhombic-C₃A, “C₃S”/cubic-C₃A blends and commercial OPCS with different sulfate contents

Cheung, J., Grace Construction Products, USA

The effects of prehydration of a combination of cubic C₃A with β-hemihydrate on adsorption of BNS superplasticizer

Dubina, E. and Plank, J. Technische Universität München, Germany; Wadsö, L., Lund University, Sweden; Black, L., University of Leeds, School of Civil Engineering, UK

Colloquia (10 minutes)

Formation of organo-mineral phases incorporating PCE superplasticizers during early hydration of calcium aluminate cement

Ng, S. and Plank, J., Technische Universität München, Germany



Structural effect of the comb-polymer on the hydration of C₃S phase

Eusebio, L. and Gronchi, P. Politecnico di Milano- Chemistry Materials and Chemical Engineering dept, Italy; Goisis, M., Italcementi - Innovation Department, Italy; Manganelli, G., CTG Italcementi Group, R&D, Italy

Influences of the type and amount of calcium sulphate on the reactivity of alkanolamine-based set accelerators/strength improvers

Recchi, P., Magistri, M., Lo Presti, A. and Cerulli, T., Mapei S.p.A., Italy

Effect of comb type superplasticizers on hydration kinetics of industrial portland cements

Regnaud, L. and Vichot, A., CTG Italcementi Group, France; Rossino, C. and Alfani, R., CTG Italcementi Group, Italy

Effects of alkali metal hydroxides on the efficacy of alkali-free accelerators

Maltese, C., Pistolesi, C., Bravo, A., Cella, F., Cerulli, T., Salvioni, D. and Dal Negro, E. Mapei SpA R&D Laboratory, Italy

Colloquia (10 minutes)

Wednesday, 6th July

09:00 – 09:45

Keynote lectures

Area 5: Hydration and thermodynamics

Chairpersons: Duncan Herfort and Denis Damidot

Guest speakers:

Fred Glasser, University of Aberdeen, United Kingdom

Barbara Lothenbach, Swiss Federal Laboratories for Materials, Science and Technology, Switzerland

09:45 – 10:45

Short Presentations

Area 5: Hydration and thermodynamics

Chairpersons: Duncan Herfort and Denis Damidot

Buffering in cementitious systems based on OPC

Matschei, T., Product Innovation & Support (Holcim Group Support Ltd.), Switzerland; Glasser, F.P., Department of Chemistry (University of Aberdeen), UK

Poster on the screen 1 at 10:50

Mechanisms of hydration of cementitious materials at early age

Juilland, P. and Gallucci, E., Sika Technology AG, Switzerland; Scrivener, K., EPFL-LMC, Switzerland; Flatt, R., ETHZ-Institute for Building Materials, Switzerland

Poster on the screen 2 at 10:50



Compatibility studies between N-A-S-H and C-A-S-H gels. Study in the ternary diagram $\text{Na}_2\text{O}-\text{CaO}-\text{Al}_2\text{O}_3-\text{SiO}_2-$

García-Lodeiro, I., Fernández-Jiménez, A. and Palomo, A., Eduardo Torroja Institute (CSIC), Spain; Macphee, D.E., University of Aberdeen, Department of Chemistry, UK

Poster on the screen 3 at 10:50

Thermodynamic stability of hydrated portland cement phases in the presence of barium carbonates

Carmona-Quiroga, P., Martínez Ramírez, S. and Blanco-Varela, M.T., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Poster on the screen 4 at 10:50

Fe-containing hydrates in cementitious systems

Dilnesa, B.Z., Lothenbach, B. and Le Saout, G., Empa, Swiss Federal Laboratories for Materials Testing and Research, Laboratory for Concrete and Construction Chemistry, Switzerland; Wieland, E., Paul Scherrer Institute, Laboratory for Waste Management, Switzerland; Scrivener, K.L., Ecole Polytechnique Fédérale de Lausanne, Laboratory of Construction Materials, Switzerland

Poster on the screen 5 at 10:50

Formation of an intermediate phase and influence of crystallographic defects on dissolution of C_3S

Bellmann, F., Sowoidnich, T. and Möser, B., Bauhaus University Weimar, Germany

Poster on the screen 6 at 10:50

Tricalcium silicate hydration CaCL_2 : application of the boundary nucleation model to quasielastic neutron scattering data

Peterson, V.K., The Bragg Institute, Australian Nuclear Science and Technology Organisation (ANSTO), Australia; Thomas, J.J., Schlumberger-Doll Research, USA; Whitten, A.E., Institute for Molecular Bioscience, The University of Queensland, Australia

Poster on the screen 7 at 10:50

Does applied stress affect portland cement hydration?

Bisschop, J., Institute for Building Materials, ETH-Zürich, Switzerland

Poster on the screen 8 at 10:50

Analysis of chemical shrinkage experiments on blended cement paste via a coupled thermodynamic/kinetic hydration model

Guillon, E., Termkhajornkit, P. and Chen, J.J., Lafarge Centre de Recherche, France

Poster on the screen 9 at 10:50

Model for equilibrium, surface chemistry and interface properties of hydrates in the $\text{CaO}-\text{SiO}_2-\text{Al}_2\text{O}_3-\text{H}_2\text{O}$ system

Haas, J., Pochard, I. and Nonat, A., Université de Bourgogne, France

Poster on the screen 10 at 10:50



Thermodynamic modeling of compositional variations of an ordinary portland cement and their effect on the phase changes under sulfate attack

Kunther, W., Lothenbach, B. and Ben Haha, M., Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; Scrivener, K., École Polytechnique Fédérale de Lausanne, Laboratory for Construction Materials, Switzerland

Poster on the screen 1 at 11:00

Impact of calcium nitrite corrosion inhibitor on the constitution of cement hydrates exposed to chloride

Balonis, M. and Glasser, F.P., Department of Chemistry, University of Aberdeen, UK

Poster on the screen 2 at 11:00

A coupled thermodynamic phase equilibrium – multi species mass transfer model capable of reproducing the combined action of chloride attack and carbonation

Hosokawa, Y. and Yamada, K., Taiheiy Cement Corporation, Japan; Johannesson, B., Technical University of Denmark, Denmark; Nilsson, L.O., Lund Institute of Technology, Sweden


Poster on the screen 3 at 11:00

Anion-exchange reaction of friedel's salt between Cl⁻ and SO₄²⁻ or CrO₄²⁻

Ohya, J., Hirano, M. and Sango, H., College of Science and Technology, Nihon University, Japan; Sakai, E., Tokyo Institute of Technology, Japan

Poster on the screen 4 at 11:00

10:45 – 11:15 Posters from Short Presentations Area 5: Hydration and thermodynamics
Coffee break.

11:15 – 12:00 **Keynote lectures**
Area 3: New cementitious matrix
Chairpersons: Ellis Gartner and Donald McPhee
Guest speakers:
Ángel Palomo, *Instituto de Ciencias de la Construcción Eduardo orroja (CSIC), Spain* 
Caijun Shi, *College of Civil Engineering, Hunan University, China*

12:00 – 13:00 Short Presentations
Area 3: New cementitious matrix
Chairpersons: Ellis Gartner and Donald McPhee

Synchrotron infrared study of thermally treated celitement single crystal precursor

Gasharova, B., Garbev, K. and Stemmermann, P., Karlsruhe Institute of Technology (KIT), Germany

Poster on the screen 1 at 13:00



Hydration behaviour of magnesium oxychloride cement

Schollbach, K. and Pöllmann, H., Institute of Geosciences, Martin-Luther-University Halle-Wittenberg, Germany

Poster on the screen 2 at 13:00

The hydration process of the alkali activated calcium aluminosilicate glasses

Deja, J. and Gótek, Ł., AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Building Materials Technology, Poland

The influence of mineral additives and alkalis on metakaolinite hydration in hydrothermal conditions

Łaskawiec, K., The Institute of Ceramics and Building Materials, Research Centre of Concrete CEBET, Poland; Malolepszy, J., AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Poland

Poster on the screen 4 at 13:00

Optimization of the alkaline activation process of difficult-to-treat inorganic wastes

García-Triñanes, P., Pereiro, G. and Bao, M. University of Santiago de Compostela, Spain

Poster on the screen 5 at 13:00

Durability of geopolymers synthesized from calcined ore-dressing tailing of bauxite exposed to sulfate and acid solutions

Zhang, W.S., Ye, J.Y., Wang, Y. and Shi, D., State Key Laboratory of Green Building Materials, China Building Materials Academy, China

Poster on the screen 6 at 13:00

Hardening processes and properties of alkali activated fly ash - cement kiln dust mixtures

Badanoiu, A., Voicu, G. and Catanescu, I., University Politehnica from Bucharest, Faculty of Applied Chemistry and Materials Science, Romania

Poster on the screen 7 at 13:00

Slag alkaline concrete with mineral admixtures

Bilek, V., ZPSV a.s., Uhersky Ostroh, Czech Republic

Poster on the screen 8 at 13:00

Influence of the calcium sulfate and w/c ratio on the hydration of calcium sulfoaluminate cement

Marchi, M. and Costa, U., CTG S.p.A. – Italcementi Group, Italy

Poster on the screen 9 at 13:00

Hydration mechanisms of calcium sulfoaluminate cements assessed by scanning electron microscopy and thermodynamic modelling

Winnefeld, F., Ben-Haha, M. and Lothenbach, B., Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Concrete/Construction Chemistry, Switzerland

Poster on the screen 10 at 13:00



Retention of alkalis by hydrated low-ph cements designed for underground radioactive waste repositories

*Bach, T.T.H. and Cau-dit-Coumes, C., Commissariat à l'Energie Atomique, France;
Pochard, I. and Nonat, A., ICB, Université de Bourgogne, France*

Poster on the screen 1 at 13:15

13:00 – 13:25 Posters from Short Presentations Area 3: New cementitious matrix

13:30 – 15:00 Lunch

15:00 – 17:10 Parallel Sessions 13, 14 and 15

Session 13 - Area 3: New cementitious matrix

Auditorium

Chairpersons: K. Sagoecretil and J. Vandeventer

Hybrid binders based on alkali sulfate-activated portland clinker and metakaolin

Bernal, S. and Skibsted, J., Instrument Centre for Solid-State NMR Spectroscopy, Department of Chemistry, and Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Denmark; Herfort, D., Aalborg Portland A/S, Denmark

Hybrid cements with very low OPC content

Fernández-Jiménez, A., Sobrados, I. and Palomo, A., Instituto Ciencias de la Construcción Eduardo Torroja (IETcc del CSIC), Spain; Sanz, J., Instituto de Materiales de Madrid, Spain

Alkaline activation of metakaolin-slag-clinker blends

Zibouche, F., Boudissa, N. and Abadli, M.T., Laboratoire Matériaux Minéraux et Composites, Université de Boumerdès, Algeria; Fernández - Jiménez, A. and Palomo, A., Instituto Ciencias de la Construcción Eduardo Torroja (IETcc del CSIC), Spain

Quantitative determination of reactive SiO₂ and Al₂O₃ in aluminosilicate materials

Ruiz-Santaquiteria, C., Fernández-Jiménez, A. and Palomo, A., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Linking structure, performance and durability of alkali-activated aluminosilicate binders

Provis, J.L., Myers, R.J., White, C.E. and Van Deventer, J.S.J., Department of Chemical & Biomolecular Engineering, University of Melbourne, Australia

Colloquia (10 minutes)

Properties of geopolymer mortars made of glass cullet

Idir, R., Cyr, M., Poinot, T. and Khelil, N., Université de Toulouse; UPS, INSA; LMDC (Laboratoire Matériaux et Durabilité des Constructions), France



Investigation of synthetic fly ash glass reactivity using nuclear resonance reaction analysis and wet chemistry

Bumrongjaroen, W. and Muller, I., Vitreous State Laboratory, Catholic University of America, USA; Livingston, R., Department of Materials Science & Engineering, University of Maryland, USA; Schweitzer, J., Spillane, T. and Zickefoose, J., Department of Physics, University of Connecticut, USA; Becker, H.W. and Rolfs, C., Tandem Dynamitron Laboratory, University of the Ruhr, Germany; Kubsy, S., Synchrotron Soleil, France

The effect of Na₂O on the pore structure and water permeability of alkali activated fly ash
Ma, Y. and Ye, G., Delft University of Technology, Faculty of Civil Engineering and Geosciences, The Netherlands

Transport properties of geopolymer systems and their effect on binder permeability and durability

Sagoe-Crentsil, K., Taylor, A. and Brown, T., CSIRO Materials Science and Engineering, Australia; Plank, J., Technische Universität München, Chair for Construction Chemicals, Germany

Preparation and performance of graphite-filled geopolymer conductive composite bipolar plate

Wang, F. and Hu, S., Wuhan University of technology, School of material science and technology, China; Wu, J., Wuhan Textile University, School of material science and technology, China

Colloquia (10 minutes)

15:00 – 17:10

Session 14 - Area 4: Hydration and microstructure

Room José Calleja

Chairpersons: Sotiris Tsivilis and Barbara Lottenbach

Studies the hydration and microstructure of ultra high performance concrete incorporating rice husk ash

Nguyen, V.T. and Ye, G., Faculty of Civil Engineering and Geosciences, Delft University of Technology, Delft, Netherlands

Contribution of class F fly ash to the hydration reactions in blended portland cements

Deschner, F., Lothenbach, B. and Winnefeld, F., Empa, Laboratory for Concrete and Construction Chemistry, Switzerland; Dittrich, S., Goetz-Neunhoeffler, F. and Neubauer, J., GeoZentrum Nordbayern, Mineralogy, University of Erlangen-Nuremberg, Germany

The hydration of the blended cement with micronized sand

Quyên, P.T., Faculty of Civil Engineering and Geosciences, Delft University of Technology, The Netherlands



Development and evaluation of methods to follow microstructural development of cementitious systems including slags

Kocaba, V., Saint-Gobain Recherche, Service Physique et Chimie des Plâtres et Ciments, France; Scrivener, K.L., Ecole Polytechnique Fédérale de Lausanne, Switzerland

Impact of curing on the porosity development of cement pastes with and without slag

Canut, M.M. and Geiker, M.R., Technical University of Denmark, Denmark

Colloquia (10 minutes)

Modelling of microstructure of portland cement-fly ash binders based on calorimetric and thermogravimetric experiments

De Belie, N., Baert, G. and De Schutter, G., Magnel Laboratory for Concrete Research, Department of Structural Engineering, Ghent University, Belgium

Use of X-ray diffraction to investigate the early stiffening of cement pastes

Ramlochan, T. and Hooton, R.D., Dept. of Civil Engineering, University of Toronto, Canada; Popoff, N.J., St. Marys Cement, USA

Conduction calorimetry and X-ray diffraction investigation of cement retardation at 70 - 120°C

Luke, K., Trican Well Service, R&D, Canada

Comparative experimental and virtual investigations of the influence of calcium and magnesium carbonates on reacting cement

Zajac, M., Dienemann, W. and Bolte, G., HeidelbergCement Technology Center GmbH, Germany

Effects of metakaolin or silica fume on hydration of cement-admixtures blended systems

Wang, Z.Y., Zhang, W.S., Ye, J.Y., Wang, H.X. and Zhang, J.B. State Key Laboratory of Green Building Materials, China Building Materials Academy, China

Analysis of cementitious materials by X-ray diffraction methods-time and spatial resolved

Schlegel, M., Mueller, U. Panne, U., Meng, B. and Emmerling, F., BAM Federal Institute of Materials Research and Testing, Germany

Colloquia (10 minutes)

15:00 – 17:10

Session 15 - Area 3: New cementitious matrix

Room Tomás Vázquez

Chairpersons: Miguel Ángel García Aranda and Xin Cheng

Calcium sulfoaluminate cements obtained from bauxite-free raw mixes

Telesca, A., Marroccoli, M., Pace, M.L. and Valenti, G.L., Dipartimento di Ingegneria e Fisica dell'Ambiente (DIFA), Italy



Investigation on high-performance concrete based on calcium sulfoaluminate cement
Buzzi, L. and Canonico, F. B., Buzzi Unicem S.p.A., Italy and Schäffel, P., German Cement Works Association (VDZ), Germany

Hydraulic behaviour of calcium sulfoaluminate cement alone and in mixture with portland cement
Gastaldi, D., Canonico, F., Capelli, L. and Bianchi, M., Buzzi Unicem SpA, Italy; Pace, M.L., Telesca, A. and Valenti, G., Department of Environmental Engineering and Physics, University of Basilicata, Italy

Composition-property relationships in calcium sulfoaluminate cements
Juenger, M., The University of Texas at Austin, Department of Civil, Architectural and Environmental Engineering, USA; Chen, I., Calera, USA

Hydration mechanism of portland cement-calcium sulphoaluminate clinker-calcium sulphate binders: characterization of the x-ray amorphous hydrate assemblage
Pelletier-Chaignat, L., Winnefeld, F., Lothenbach, B. and Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Concrete/Construction Chemistry, Switzerland; Müller, C.J. and Famy, C., Saint Gobain Weber, Winterthur, Switzerland

Colloquia (10 minutes)

Leaching of calcium sulfoaluminate cement-based materials: experimental investigation and modelling
Berger, S. and Cau Dit Coumes, C., Commissariat à l'Energie Atomique et aux Energies Alternatives, DEN / DTCD / SPDE, France; Le Bescop, P., Commissariat à l'Energie Atomique et aux Energies Alternatives, DEN / DPC / SCCME, France; Aouad, G. and Damidot, D., Ecole des Mines de Douai, MPE-GCE, Douai, France/Université Lille Nord de France, France

Hydration of a belite-calcium sulfoaluminate-ferrite cement: Aetherm
Morin, V., Walenta, G., Gartner, E., Termkhajornkit, P., Baco, I. and Casabonne, J.M., Lafarge Research Centre, France

Celitement® – A new sustainable hydraulic binder based on calcium hydrosilicates
Stemmermann, P., Beuchle, G., Garbev, K. and Schweike, U., Karlsruhe Institute of Technology, Institute of Technical Chemistry, Germany

Hydration behavior of celitement®: kinetics, phase composition, microstructure and mechanical properties
Garbev, K., Beuchle, G., Schweike, U. and Stemmermann, P., Karlsruhe Institute of Technology, Institute of Technical Chemistry, Germany

**Application of γ -2CaO-SiO₂ for high durability concrete**

Morioka, M. and Yamamoto, K., *Denki Kagaku Kogyo Co.Ltd, Japan*; Hori, A., *Denka Chemicals GmbH, Germany*; Yokozeki, K., *Kajima Technical Research Institute, Japan*; Torichigai, T. and Watanabe, K., *Kajima Technical Research Institute, Japan*

Colloquia (10 minutes)

17:15 – 19:20

Parallel Sessions 16, 17 and 18**Session 16 - Area 3: New cementitious matrix****Auditorium****Chairpersons: J. Deja and Ana Fernández-Jiménez****Alkali-activation of slag cements: activation process, microstructure and mechanical properties**

Puertas, F. and Varga, C., *Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc-CSIC), Spain*; Palacios, M., *Institute for Building Materials, Switzerland*; Pellerin, B., *Eychenne-Baron, C., Babayan, D., Boustingorry, P. and Elkhadiri, I., Chryso, S.A.S., France*

The hydration mechanisms of alkali activated slag systems (AASS) with different MgO content

Ben Haha, M., Le Saout, G., Lothenbach, B. and Winnefeld, F., *Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

Effects of the fineness of blast furnace slag on the hydration of high-sulfated slag cement

Otsuka, Y., Ueki, Y. and Dan, Y., *Nippon Steel Blast-Furnace Slag Cement Co., Ltd, Technology And Development Laboratories, Japan*; Goto, S. *Professor Emeritus, Yamaguchi University, Japan*

The effect of Si/Al ratio on the strength development and microstructure of fly ash and slag based geopolymers

Panagiotopoulou, C., Kakali, G. and Tsivilis, S., *National Technical University of Athens (NTUA), School of Chemical Engineering, Greece*; Perraki, T. and Perraki, M., *National Technical University of Athens (NTUA), School of Mining and Metallurgical Engineering, Greece*

Magnesia modification alkali-activated slag fly ash cement: a novel low carbon cement

Shen, W. G., Tan, Y., Wang, Y.H., Gan, G.J., Zhou, M.K. and Dong, R., *Wuhan University of Technology, China*

Colloquia (8 minutes)**Durability of activated composites of metakaolin and blastfurnace slag in HCl and MGSO₄**

Escalante-García, J.I. and Burciaga-Díaz, O., *Centro de investigación y de estudios avanzados del IPN (Cinvestav), México*

Leaching study of alkali activated materials for their use in road building

Beleña-Pozo, I., Ordoñez-Belloc, L.M. and Aliques-Granero, J., Materials Research Technical Unit, AIDICO, Spain

Mechanical and microstructural changes of alkali-activated binder due to the leaching process

Komljenovic, M., Bascarevic, Z., Nikolic, V. and Marjanovic, N., Institute for Multidisciplinary Research, Material Sci. Dept., Serbia; Rsumovic, M., Highway Institute, Laboratory for concrete and binders, Serbia; Rosic, A., Faculty of Mining and Geology, Dept. for Crystallography, University of Belgrade, Serbia

Alkali activation of highly crystalline indian fly ashes towards developing clinkerless binders

Ganguly, P. and Chatterjee, A.K., Conmat Technologies Private Limited, Kolkata, India

Influence of admixtures on phase development in ternary binder systems

Westphal, T. and Bier, T., Technische Universität Bergakademie Freiberg, Institut für Keramik, Glas und Baustofftechnik, Germany; Dlugosch, F., Franz Carl Nuedling Basaltwerke GmbH +Co. KG, Germany

Colloquia (8 minutes)

17:15 – 19:20

Session 17 - Area 4: Hydration and microstructure

Room Tomás Vázquez

Chairpersons: Lucía Fernández and Ana Guerrero

Nuclear resonance reaction analysis and wet chemistry investigation of the hydration of tricalcium aluminate phases

Schweitzer, J. and Zickefoose, J., Department of Physics, University of Connecticut, USA; Livingston, R. Department of Materials Science & Engineering, University of Maryland, USA; Cheung, J., Grace Construction Products, Inc, USA; Becker, H.W. and Rogalia, D., Tandem Dynamitron Laboratory, University of the Ruhr, Germany; Galán, I. and Bengtsson, N., Instituto Eduardo Torroja, Spain

Effect of blast furnace slag and limestone powder addition on the properties of cement with various C₃A content

Hirao, H., Sutou, S., Kuga, R. and Yamada, K., Taiheiyo Cement Corporation, Research & Development Center, Japan

Investigation of highly soluble sulfate carriers in rapid setting cement systems

Seufert, S. and Hesse, C., Basf Construction Chemicals GmbH, Germany; Goetz-Neunhoeffer, F. and Neubauer, J., Geozentrum Nordbayern, Mineralogy, University of Erlangen-Nuremberg, Germany



The first 24 hours of commercial cement hydration

De Rooij, M., The Netherlands Organization for Applied Scientific Research (TNO), The Netherlands; Scher, S., Delft University of Technology, Faculty of Civil Engineering and Geosciences, The Netherlands

Particle aggregation phenomena during the early hydration stages, studied by small amplitude oscillating rheological measurements

Bellootto, M., Giovanni Bozzetto S.p.A., Italy

Colloquia (8 minutes)

Sequential dispersion-flocculation mechanism for cement-based materials

Betoli, A.M., Federal Institute of Santa Catarina, Brazil; Pileggi, R.G. and John, V.M., University of São Paulo, Brazil

Surface modification of fly ashes with carbide slag and its effect on strength and autogenous shrinkage of cement pastes

Hao, C.W., Deng, M., Mo, L.W. and Liu, K.W., State Key Laboratory of Materials-Oriented Chemical Engineering, Nanjing University of Technology, China

Origin of drying shrinkage of hardened cement paste: hydration pressure

Maruyama, I., Graduate School of Environmental Studies, Nagoya University, Japan

C-S-H gel dissolution kinetics. First results

Trapote Barreira, A., Soler, J.M. and Cama, J., Institute of Environmental Assessment and Water Research (IDAEA-CSIC), Spain; Gali, S., Department of Mineralogy and Ore deposits, Faculty of Geology, Barcelona University, Spain; Lothenbach, B., Swiss Federal Laboratories for Materials Science and Technology (EMPA), Switzerland

Impact of steam treatment on the microstructure and chemistry of cured oil well cements

Makar, J., National Research Council Canada, Institute for Research in Construction, Canada; Luke, K., Trican Well Service, R&D, Canada

Colloquia (8 minutes)

17:15 – 19:20

Session 18 - Area 3: New cementitious matrix

Room José Calleja

Chairpersons: I. García Lodeiro and Caijun Shi

Development of high strength cement in consideration of packing fraction of powder particles

Sakai, E. and Kakinuma, Y., Tokyo Institute of Technology, Dept. of Metallurgy and Ceramics Science, Japan; Kurokawa, D., Taiheiyo Cement Corporation, Central Research Center, Japan; Aikawa, Y., Taiyo Yuden Co. Ltd., Materials R&D Department, Japan



Development of high-strength concrete without portland cement

Iwata, M., Fujiwara, H. and Maruoka, M., Utsunomiya University, Japan; Saitoh, K. T., Sika Ltd., Technology Center, Japan

Inhibition of steel corrosion for application in carbonated chloride-polluted ordinary portland cement and fly ash mortars

Criado, M. and Bastidas, J.M. National Centre for Metallurgical Research (CSIC), Spain; Monticelli, C. and Frignani, A., Corrosion Study Centre "A. Daccò" (University of Ferrara), Italy

Incorporation of higher amounts of P_2O_5 in clinker - new possibilities

Sulovský, P., Department of Geology, Faculty of Science, Palacký University, Czech Republic; Staněk, T. Research Institute of Building Materials, Czech Republic

Development of photocatalytic cement-based materials: situation and perspectives

Guerrini, G., Italcementi S.p.A., Italy

Colloquia (8 minutes)

Cementing system for carbon capture and storage (CCS)

Dugonjić-Bilić, F., Nonat, A., Lesti, M. and Plank, J., Technische Universität München, Germany

Waste glass nanoparticles as an alternative supplementary cementitious material

Harbec, D., Tagnit-Hamou, A. and Gitzhofer, F., Université de Sherbrooke, Canada

Synthesis of metakaolin-based geopolymers and the effect of the incorporation of geothermal silica waste

Vega Cordero, E. and Gómez Zamorano, L., Facultad de Ingeniería Mecánica y Eléctrica, UANL, México; Escalante García, J.I., Centro de Investigación y de Estudios Avanzados del IPN, México

Geopolymers as matrix for industrial wastes

Lancellotti, I., Ponzoni, C., Kamseu, E., Romagnoli, M., Barbieri, L. and Leonelli, C., Dipartimento di Ingegneria dei Materiali e dell'Ambiente, Università di Modena e Reggio Emilia, Italy

Reactivity of silica to form silicate-based consolidated materials

Tognonvi, M., Kouassi, S., Soro, J. and Rossignol, S., Groupe d'Etude des Matériaux Hétérogènes, Ecole Nationale Supérieure de Céramiques Industrielles, France

Colloquia (8 minutes)



Thursday, 7th July

09:00 – 09:45

Keynote lectures

Area 6: Modelling

Chairpersons: Klaas Vanbreugel and Jorge Sánchez Dolado

Guest speakers:

Hamlin Jennings, *Northwestern University Evanston IL, USA*

Jeff Bullard, *National Institute of Standards and Technology, USA*

09:45 – 10:30

Short Presentations

Area 6: Modelling

Chairpersons: K. Vanbreugel and Jorge Sánchez Dolado

Molecular dynamics calculations of hydrogen embrittlement in high strength steels

Sánchez, J., Fulla, J., Andrade, C. and de Andres, P.L., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Poster on the screen 1 at 10:40

On the atomic structure and mechanical properties of C-A-S-H

Abdolhosseini Qomi, M.J., Manzano, H. and Ulm, F.J., Concrete Sustainability Hub, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, United States; Pellenq, R., Centre Interdisciplinaire des Nanosciences de Marseille, Centre National de la Recherche Scientifique and Marseille Université, France

Poster on the screen 2 at 10:40

Statistical mechanics of cement setting: molecular dynamics of a colloidal model

Monasterio, P., Masoero, E., Pellenq, R. and Yip, S., Concrete Sustainability Hub, Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, USA

Poster on the screen 3 at 10:40

Water, water everywhere: effects of computational water models on the structure and dynamics of confined water in calcium-silicate-hydrate phase of cement

Ji, Q., Bonnaud, P., Youssef, M., Yildiz, B., Pellenq, R. and Van Vliet, K.J., Massachusetts Institute of Technology, USA

Poster on the screen 4 at 10:40

Modeling the hydration of cement blended with rice husk ash

Nguyen, V.T., Zhang, Q. and Ye, G., Faculty of Civil Engineering and Geosciences, Delft University of Technology, The Netherlands

Poster on the screen 5 at 10:40

A granular topochemical model for cement and concrete

Yanqui Murillo, C., San Agustin National University of Arequipa, Peru

Poster on the screen 6 at 10:40

Cleavage energy of tricalcium silicate and interactions with amine additives

Mishra, R. and Heinz, H., Department of Polymer Engineering, University of Akron, USA;

Flatt, R., Sika Technology AG, Switzerland

Poster on the screen 7 at 10:40

Percolation of phases in hydrating cement paste at early ages: an experimental and numerical study

Chen, W., Li, Y. and Shui, Z., School of Materials Science and Engineering, Wuhan

University of Technology, China

Poster on the screen 8 at 10:40

10:30 – 11:00

Posters from Short Presentations Area 6: Modelling

Coffee break.

11:00 – 11:45

Keynote lectures

Area 7: Properties of fresh hardened concrete

Chairpersons: K. Kovler and N. Rousset

Guest speakers:

Olafur Wallevik, Reykjavik University, Iceland

Kazuo Yamada, Taiheyo Cement Corporation, Japan

11:45 – 12:45

Short Presentations

Area 7: Properties of fresh hardened concrete

Chairpersons: K. Kovler and N. Rousset

Polycarboxylate superplasticizers to ensure workability retention and durability

Magarotto, R., Moratti, F. and Zeminian, N., Basf Construction Chemicals Italia, S.p.A.,

Development Admixture Systems Europe, Italy; Albrecht, G. and Flakus, S., Basf

Construction Chemicals GmbH, Germany

Poster on the screen 1 at 12:50

Influence of sulfate and soluble alkali content on the compatibility of cement with naphthalene superplasticizer

Han, S. and Yan, P.Y., Department of Civil Engineering, Tsinghua University, China

Poster on the screen 2 at 12:50

Surface chemistry of ground granulated blast furnace slag in cement pore solution: understanding the behavior of slag in blended cements containing polycarboxylate superplasticizers

Habbaba, A. and Plank, J., Technische Universität München, Germany

Poster on the screen 3 at 12:50



Rheological behavior between portland cement type i and commercial silica fume
Zapata-Orduz, L., Molina-Bas, O.I. and Portela-Gauthier, G, University of Puerto Rico at Mayagüez, Puerto Rico
Poster on the screen 4 at 12:50

Porosity determination of self-compacting concretes using combined forced saturation
Desmet, B., Hernández Serrano, J., Willain, L. and Vantomme, J., Department of Civil and Materials Engineering (Royal Military Academy), Belgium; Feys, D., Département du Génie Civil (Université de herbrooke), Canada; De Schutter, G., Magnel Laboratory for Concrete Research, Department of Structural Engineering (Ghent University), Belgium; Elsen, J., Department of Earth and Environmental Sciences (K. U. Leuven), Belgium; Cizer, Ö., Heirman, G., Vandewalle, L. and Van Gemert, D. R, Reyntjens Laboratory, Department of Civil Engineering (K. U. Leuven), Belgium
Poster on the screen 5 at 12:50

Study of influence of fines in the self-compacting concrete
Bustamante Montoro, R., Rangel, S. and Hernández Olivares, F., Department of Construction and Technology in Architecture Superior Technical School of Architecture, Universidad Politécnica de Madrid, Spain
Poster on the screen 6 at 12:50

A unique relationship fluidity/adsorption in sulfated pore solution for comb-type superplasticizers
Dalas, F., Pourchet, S. and Nonat, A., Laboratoire Interdisciplinaire Carnot de Bourgogne, France; Rinaldi, D. and Mosquet, M., LCR Lafarge, France
Poster on the screen 7 at 12:50

Influence of power ultrasound on fluidity and microstructure of cement suspensions
Peters, S., Kraus, M., Röbber, C. and Ludwig, H.M., Bauhaus-University Weimar, F.A. Finger-Institute for Building Material Science, Germany
Poster on the screen 8 at 12:50

Evolution of electrical resistivity of concrete with cement hydration
Lima, M.G. and Lencioni, J.W., Instituto Tecnológico de Aeronáutica (ITA), Brasil
Poster on the screen 9 at 12:50

The use of a new type of evaporation retardant based on silicone in hot climate concreting
Bella, N., FIMAS Lab.: reliability of materials in the south, University of Bechar, Algeria; Asroun, A. and Bella, I.A., Department of civil engineering, University of Djilaly Liabess, Algeria
Poster on the screen 10 at 12:50



The frost resistance of drainage concrete used as an internal layer of concrete pavement
Jasiczak, J. and Kucz, M., Poznan University of Technology, Institute of Structural Eng., Poland
Poster on the screen 1 at 13:00

Reactivity characterization of portland pozzolanic cements in order to explain the unsatisfactory performance of concrete – case study
Quarcioni, V.A. and Aleixo, D.M., Instituto de Pesquisas Tecnológicas do Estado de São Paulo (IPT) - Laboratório de Materiais de Construção Civil, Brazil; Gobbo, L., Panalytical do Brasil. São Paulo, Brazil; Cincotto, M.A., Escola Politécnica da Universidade de São Paulo - Departamento de Engenharia da Construção Civil, Brasil
Poster on the screen 2 at 13:00

12:50 – 13:10 Posters from Short Presentations Area 7: Properties of fresh hardened concrete

13:30 – 15:00 Lunch

15:00 – 16:00 Parallel Panels and General Posters Session 2

Panel on Standards

Auditorium

Chairman: Serafín Lizarraga

Guest speakers:

Juan Carlos López Agüí, *Instituto Español del Cemento y sus Aplicaciones (IECA), Spain*

Gonzalo Sotorrio, *Aenor, Spain*

Steven H. Kosmatka, *Portland Cement Association, USA*

Panel: Role of scientific journals in cement chemistry

Room Tomás Vázquez

Chairwoman: Francisca Puertas, *Editor-in-Chief Materiales de Construcción*

Guest speakers:

Fred Glasser, *Editor-in-Chief Advances in Cement Research*

Karen Scrivener, *Editor-in-Chief Cement and Concrete Research*

Weislam Kurdowski, *Editor-in-Chief Cement Wapno Beton*

Raisa Burshtein, *Editor-in-Chief Cement and its Applications*

16:15 – 18:30 Parallel Sessions 19, 20 and 21

Session 19 - Area 7: Properties of fresh and hardened concrete

Room José Calleja

Chairpersons: P. Banfill and M^a Mar Alonso

Configurational nmr study of sodium polymethacrylate-g-peo comb polymers
Rozzoni, A. and Bellotto, M., Giovanni Bozzetto S.p.A., Italy



Multi-method approach for the characterization of the behavior of superplasticizer at cement suspensions

Ferrari, L., Kaufmann, J. and Winnefeld, F., Empa, Swiss Federal Laboratories for Materials Testing and Research, Switzerland; Plank, J., Technische Universität München, Germany

Interaction of water reducer admixtures with recycled aggregates for concrete

Roncero, J., López, J. and Gimenez, V., Basf Construction Chemicals España, S.L., Development Admixture Systems Europe, Spain; Magarotto, R., Basf Construction Chemicals Italia, S.p.A., Development Admixture Systems Europe, Italy

Compatibility between pce admixtures and calcium aluminate cement

Alonso López, M., Vázquez, T. and Puertas, F., Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc-CSIC), Spain; Palacios, M., Institute for Building Materials-ETH, Switzerland

Effect of the molecular weight of pce-based superplasticizers on their interaction with different cements

Zeminian, N., Magarotto, R. and Tucci, I., Basf Construction Chemicals, Italy

Colloquia (8 minutes)

Study of new plasticizing admixture as “sulfated humus sodium” and its influence on properties for cement and concrete

Sanjaasuren, R. and Erdenebat, T., National University of Mongolia, Research Centre for Chemistry and Technology of New Materials, School of Chemistry and Chemical Technology, Mongolia

Concentration effects in the rheology of cement pastes: Krieger-Dougherty revisited

Banfill, P., School of the Built Environment, Heriot-Watt University, UK

Interactions between granulated blastfurnace slag or limestone as cement main constituent and super-plasticisers based on polycarboxylate ether

Rickert, J., Verein Deutscher Zementwerke e.V., Research Institute of the German Cement Industry, Germany; Herrmann, J., Gerd Wischers Foundation, Science Foundation of the German Cement Industry, Germany

Flow properties of fluid concretes incorporating or not metakaolin

Carneiro, A., Universidade Federal de Pernambuco, Department of Civil Engineering, Brazil; Mouret, M., Université de Toulouse; UPS, INSA; LMDC (Laboratoire Matériaux et Durabilité des Constructions), France



Effects of sulphates on rheological behaviour and electrokinetical properties of cement pastes for self compacting concrete

Benmounah, A., Samar, M., Kheribet, R., Safi, B. and Saidi, M., Faculty of Engineering Sciences (FSI), University of Boumerdes, Algeria

Effect of cement grinding on workability of concrete

Qureshi, L., University of Engineering & Technology, Pakistan; Sultan, T. and Ilyas Sh., M., Bahaudin Zakariya University, Pakistan

Optimization of SCC mixtures incorporating a polycarboxylate-based superplasticizer and fine materials available in Saudi Arabia

Fares, G., Al-Negheimish, A.A., Al-Hozaimy, A.A. and Khan, M.I., Center of Excellence for Concrete Research and Testing, College of Engineering, King Saud University Riyadh, KSA

Colloquia (8 minutes)

16:15 – 18:30

Session 20 - Area 7: Properties of fresh and hardened concrete
Room Tomás Vázquez

Chairpersons: M.C. Alonso and Shunsuke Hanehara

Influence of admixtures and temperature on the performance of shrinkage compensating concrete

Corcella, C.M. and Cereda, C., Addiment Italia Srl, Medolago (Bg), Italy; Canonico, F. and Gastaldi, D., Buzzi Unicem S.p.A., Casale Monferrato (AI), Italy

NMR investigations of the water retention mechanisms by cellulose ethers in mortars

Govin, A., Patural, L. and Grosseau, P., École Nationale Supérieure des Mines de Saint-Étienne, France; Porion, P., Centre de la Recherche sur la Matière Divisée, CNRS-Université d'Orléans, France; Ruot, B. and Devès, O., Université Paris-Est, CSTB, France

Influence of high molar mass polymers on the rheological behavior of fresh cement pastes

Brumaud, C. and Roussel, N., Université Paris-est, Laboratoire Central des Ponts et Chaussées, département matériaux, France; Baumann, R. and Schmitz, M., Dow Chemicals, Germany

Correlation between setting, heat evolution, and deformations of cementitious binder systems depending on type and amount of superplasticizer

Schmidt, W. B., Kuehne, H.C. and Meng, B., BAM Federal Institute for Materials Research and Testing, Germany; Brouwers, J., Eindhoven Technical University, Netherlands



Influence of nano-silica addition on rheological properties of portland cement pastes
Collodetti, G., Repette, W.L., Hotza, D. and Gleize, P.J.P., Federal University of Santa Catarina, Brazil

Colloquia (8 minutes)

Water layer thickness of silica fines and their effect on the workability of cement pastes
Quercia, G., Materials innovation institute (M2i) The Netherlands; Brouwers, H.J.H. and Hüsken, G., Eindhoven University of Technology, Department of Architecture Building and Planning, The Netherlands

Microstructural investigation of extrudable reactive powder concrete
Noirfontaine, M.N.de, Courtial, M., Dunstetter, F. and Signes-Frehel, M., Laboratoire des Solides Irradiés, Ecole Polytechnique, France; Mounanga, P. and Khelidj, A., LUNAM Université, Université de Nantes – IUT Saint-Nazaire, Institut de Recherche en Génie Civil et Mécanique, France

Methodology for the assessment of the influence of synthetic fibers on the moisture release mechanism of concretes
Capote Abreu, J.A., Alvear Portilla, D. and Crespo Álvarez, J., GIDAI – Fire Research Center – University of Cantabria, Spain

Mechanical performance of mortar made with pure or blended cement and waste glass dust
Aguillar, M.T.P., Nelcy, D.S.M., Motta, R.S.F. and Abi-Ackel, E., Federal University of Minas Gerais - (UFMG), Brasil; Bezerra, A.C.B. and Sales, F.A., Federal Technology Education Center of Minas Gerais (CEFET), Brasil; Sales, R.B.C., State University of Minas Gerais (UEMG), Brasil

Reduction of air pollution through a photocatalytic active cement
Bolte, G. and Dienemann, W., HeidelbergCement Technology Center, Germany

Impact of low magnesium concentrations on sulfate resistance of cement fly ash blends at practical relevant sulfate attack conditions
Lipus, K. and Rickert, J., Verein Deutscher Zementwerke e.V., Germany

Colloquia (8 minutes)

16:15 – 18:30 **Session 21 - Area 6: Modelling**
Auditorium
Chairpersons: P. Bowen and Antonio Porro

**The C-S-H gel formation understood by atomistic simulation methods**

Manzano, H., Yip, S., Buehler, M. and Ulm, F.J., Concrete Sustainability Hub, Department of Civil and Environmental Engineering, USA; van Duin, A.C.T., Department of Mechanical and Nuclear Engineering Pennsylvania State University, USA; Pellenq, R., Centre Interdisciplinaire des Nanosciences de Marseille, Centre National de la Recherche Scientifique and Marseille Universite, France

Evaluation of microstructure and transport properties of hydrating cement paste using micro-CT Image

Zhang, M.Z., Ye, G. and Van Breugel, K., Microlab, Faculty of Civil Engineering and Geosciences, Delft University of Technology, The Netherlands; He, Y.J., Key Laboratory for Silicate Materials Science and Engineering, Wuhan University of Technology, China; Lange, D.A., Newmark Civil Engineering Laboratory, University of Illinois, USA

Modelling of guest-ion incorporation in alite and belite and the hydroxylation of their surfaces by peridoic density functional theory calculations

Jansang, B. and Skibsted, J., Instrument Centre for Solid-State NMR Spectroscopy, Department of Chemistry, and Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Denmark

First principles calculations of anhydrous cement clinker phases

Pisch, A. and Wattez, T., Lafarge Centre de Recherche (LCR), France; Pasturel, A., Laboratoire Science et Ingénierie des Matériaux et des Procédés (SIMAP), France

Molecular understanding of directional surface and interface tensions of gypsum and calcium sulfate hemihydrate

Mishra, R. and Heinz, H., Department of Polymer Engineering, University of Akron, USA; Flatt, R., Sika Technology AG, Switzerland

Colloquia (8 minutes)**Flow simulation of fiber reinforced self compacting concrete using lattice boltzmann method**

Švec, O., Škoček, J., Stang, H., Olesen, J. and Poulsen, P.N., Technical University of Denmark, Department of Civil Engineering, Denmark

Modeling of flow of particles in a non-newtonian fluid using lattice boltzmann method

Škoček, J., Švec, O., Spangenberg, J., Stang, H. and Geiker, M., Technical University of Denmark, Denmark; Rousell, N., Université Paris Est, Laboratoire Central des Ponts et Chaussées, France; Hattel, J., Technical University of Denmark, Department of Mechanical Engineering, Denmark

Atomistic simulation of portlandite

Galmarini, S. and Bowen, P., Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Parker, S.C., University of Bath, UK



Understanding the reactivity of clinker phases at the atomic scale

Durgun, E., Manzano, H., Pellenq, R. and Grossman, J.C., Massachusetts Institute of Technology, USA

Non-invasive assessment and modelling of cement micro-structures

Valentini, L., Dalconi, M.C., Parisatto, M., Cruciani, G. and Artioli, G., University of Padua, Italy

Reconstruction of three-dimensional spatial image of hardened cement paste

Kurumisawa, K., Aoyama, T. and Nawa, T., Hokkaido University, Faculty of engineering, Hokkaido, Japan

Colloquia (8 minutes)

Friday, 8th July

09:00 – 09:45

Keynote lectures

Area 8: Concrete durability

Chairpersons: M. Alexander and A. Bertron

Guest speakers:

Carmen Andrade, Cisdem (CSIC-UPM), Spain

Neal Bercke, Grace

09:45 – 10:30

Short Presentations

Area 8: Concrete durability

Chairpersons: M. Alexander and A. Bertron

Investigation of alkali-silica reaction in concretes with biomass fly ash

Rajamma, R., Esteves, T.C., Labrincha, J.A. and Ferreira, V.M., University of Aveiro, Portugal; Soares, D. and Silva, A.S., National Laboratory for Civil Engineering (LNEC), Materials Department, Portugal

Poster on the screen 1 at 10:35

The influence of crushed sand particle shape in alcali-aggregate reaction

Schankoski, R., Federal University of Santa Catarina – Civil Engineering Department, Brazil; Gava, G., Western of Parana State University, Civil Engineering Course, Brazil; Mancino, J., Itaipu Binational, Concrete Laboratory, Foz do Iguacu, Brazil

Poster on the screen 2 at 10:35

Mechanisms of degradation of concrete by external sulfate ions under laboratory and field conditions

Chabrelié, A., Saint-Gobain Recherche, Physique et Chimie des Plâtres et Ciments, France; Müller, U., Bundesanstalt für Materialforschung und –prüfung, Baustoffe, Germany and Scrivener, K.L., Ecole Polytechnique Fédérale de Lausanne, Laboratoire des Matériaux de Construction, Switzerland

Poster on the screen 3 at 10:35



Efficiency of slag in sulphate resistance of cement

Tsibouki, Z. and Karagiannis, J., Heracles General Cement Co – EKET, Greece

Poster on the screen 4 at 10:35

Evolution to carbonated compounds of phases developed on ternary systems materials

Fernández, L.J., Torrens, D. and Morales, L.M., Departamento de Construcciones Arquitectónicas I (UPC), Spain; Martínez-Ramírez, S., Instituto de estructura de la Materia (CSIC), Spain; Fernández, P., Departamento de Ingeniería Civil: Ordenación del Territorio, Urbanismo y Medio Ambiente. (UPM), Spain

Poster on the screen 6 at 10:35

Deterioration of cement paste exposed to potassium acetate solution

Thomas, M. and Hayman, S., University of New Brunswick, Canada; Drimalas, T. and Folliard, K., University of Texas, U.S.A.

Poster on the screen 7 at 10:35

Performance study of slovak natural zeolite – containing cement compositions

Janotka, I. and Osacký, M., Building Testing and Research Institute (TSUS), Slovakia; Križma, M. and Bágel, L., Institute of Construction and Architecture, Slovak Academy of Sciences, Slovakia

Poster on the screen 8 at 10:35

Gas relative permeability of damaged concrete: effect of hydrostatic stress and water saturation

M'Jahad, S., Chen, W., Davy, C.A. and Skoczylas, F., Univ. Lille Nord de France, France; Bourbon, X., France

Poster on the screen 9 at 10:35

Chloride threshold for starting corrosion process – relationship between laboratory and field experiments

Meira, G.R., Federal Institute of Education, Science and Technology of Paraíba, Brazil; Andrade, C. and Alonso, M.C., Research Centre in Safety and Durability of Structures and Materials (CISDEM, UPM-CSIC), Spain

Poster on the screen 10 at 10:35

Durability and poro-elastic properties of a leached oil-well cement paste under high temperature and confinement

Yurtdas, I., Civil Engineering Laboratory, Université de Reims Champagne-Ardennes, France; Xie, S., Davy, C.A., Secq, J., Burlion, N., Skoczylas, F. and Shao, J.F., Univ Lille Nord de France, France; St Marc, J., Total Exploration & Production, France

Poster on the screen 1 at 10:45

10:30 – 11:00

Posters from Short Presentations Area 8: Concrete durability
Coffee break.



11:00 – 13:00

Parallel Sessions 22, 23 and 24

Session 22 - Area 7: Properties of fresh and hardened concrete

Room José Calleja

Chairpersons: J. Provis and Miguel Ángel Climent

Assessing the bulk density of concrete by variation the concentrations of compounds and their influence on the compressive strength

Bezerra, U.T., Civil Construction (IFPB), Brasil; Barbosa, N.P., Dept. of Civil Engineering Civil (UFPB), Brasil; Teixeira, E.C., Dept. of Materials Science and Engineering (UFCG), Brasil; Viegas, L.S., Dept. of Urban Engineering and Environmental (UFPB), Brasil

Monitoring by resistivity and ultrasonic velocity of the effect of the w/c ratio on setting and hydration evolution

Andrade, C. and Rebolledo, N., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Power-ultrasound – an efficient method to accelerate setting and early strength development of concrete

Rößler, C., Stöckigt, M., Peters, S. and Ludwig, H.M., F.A. Finger-Institute for Building Materials Science, Bauhaus-University Weimar, Germany

Performance of concrete in precast products due to heat curing

García Calvo, J.L. and Alonso Alonso, M.C., Centro de Investigación en Seguridad y Durabilidad Estructural y de Materiales (CISDEM-CSIC), Spain; Robles Velasco, M., Ormazabal, Spain; Fernández Luco, INTECIN-Universidad de Buenos Aires, Argentina

The influence of temperature dependency of hydration of blast-furnace slag on the adiabatic temperature rise of concrete with blast-furnace slag blended cement

Nito, N. and Koibuchi, K., DC Corporation, Japan; Hanehara, S. and Oyamda, T., Iwate University, Japan; Sakai, E., Tokyo Institute of Technology, Japan

Colloquia (8 minutes)

Evaluation of adiabatic temperature rise in concrete with various mix proportions by adiabatic calorimeter used for small mortar sample

Misumi, H., Maruya, E., Takahashi, T., Technical Development Center, Cement & Construction Materials Company, Ube Industries, Ltd., Cement Development Dept., Japan

Development of an accurate methodology for measuring the pore fluid pH of low-pH cementitious materials

Alonso Alonso, M.C. and García Calvo, J.L., Research Centre on Safety and Durability of Structures and Materials (CISDEM-CSIC), Spain; Petterson, S., Svensk Kärnbränslehantering AB, (SKB), Sweden; Cuñado Peralta, M.A., Empresa Nacional de



Residuos Radiactivos (ENRESA), Spain; Vuorio, M., Posiva, Finland; Weber, H., Nationale Genossenschaft für die Lagerung radioaktiver Abfälle (NAGRA), Switzerland; Ueda, H., Nuclear Waste Management Organization of Japan (NUMO), Japan; Naito, M. and Walker, C., Japan Atomic Energy Agency (JAEA), Japan

Characterizing the microstructure of UHPCC with high-volume fly ash addition by nanoindentation

Sun, W. and Zhao, S., Southeast University, School of Material Science and Engineering, Nanjing, China

The effect of phyllosilicates in by-products aggregates on the rheological behaviour of experimental cement based formulations

Vola, G., Allevi, S., Segata, M. and Alfani, R., CTG Italcementi Group, Laboratories Department, Italy; Herve, S., Regnaud, L. and Vichot, A., CTG Italcementi Group, France

Thaumasite form of sulphate attack in a tropical climate weather

Torres, S.M., Vieira, A.A.P. and Barbosa, N.P., Federal University of Paraiba, Brazil and Leal, A.F., Federal University of Campina Grande, Brazil

Colloquia (8 minutes)

11:00 – 13:00

Session 23 - Area 8: Concrete durability

Auditorium

Chairpersons: W. Kurdowski and M^a Teresa Blanco-Varela

A case study of thaumasite formation in an Austrian tunnel

Tritthart, J., Klammer, D., Mittermayr, F. and Brunnsteiner, A., University of Technology, Graz, Austria

Investigation of thaumasite formation in mortar with limestone aggregate

Nomura, H., Sekihiro, M., Yamashita, S. and Inokawa, H., Cement Concrete Research Laboratory, Sumitomo Osaka Cement Co.Ltd, Japan

Thermal behaviour of thaumasite

Blanco-Varela, M.T. and Martínez-Ramírez, S., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain; Rubio, F.I. Instituto de Cerámica y Vidrio (CSIC), Spain; Aranda, M.A.G. and De la Torre, M.A., Departamento de Química Inorgánica (Universidad de Málaga), Spain

Characterisation of slag blends and correlation with their sulphate resistance in static and semi-dynamic conditions

Fernández-Altable, V., Yu, C., Le Saoût, G. and Scrivener, K. École Polytechnique Fédérale de Lausanne, Laboratory of Construction Materials, Switzerland



Effect of phases and microstructural development on expansion and damage by sulfate attack
Müllauer, W., Beddoe, E.R., Hilbig, H. and Heinz, D., CBM Centre for Building Materials, Department of Mineral Engineering (Technische Universität München) Germany

Colloquia (8 minutes)

Microstructural changes in self-compacting concrete by sulphuric acid attack
Cizer, Ö., Elsen, J., Heirman, G., Vandewalle, L. and Van Gemert, D., K.U.Leuven, Department of Civil Engineering, Belgium; Feys, D., Université de Sherbrooke, Département du Génie Civil, Canada; Desmet, B. and Vantomme, J., Royal Military Academy, Department of Civil and Materials Engineering, Belgium; De Schutter, G., Ghent University, Department of Structural Engineering, Belgium

Sulfate attack on portland limestone cements manufactured with low C₃A portland clinker
Irassar, E.F., Bonavetti, V.L. and Trezza, M.A., Facultad de Ingeniería, Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina

Mineral additions for the inhibition of delayed ettringite formation in concrete: the role of limestone filler

Santos Silva, A., Soares, D., Matos, L., Salta, M.I., Gonçalves, A. and Bettencourt Ribeiro, A., National Laboratory for Civil Engineering (LNEC), Materials Department, Portugal; Pavoine, A. and Divet, L., Laboratoire Central des Ponts et Chaussées (LCPC), Materials Department, France

The effect of mineral admixtures on the sulfate resistance of limestone cement concrete
Skaropoulou, A., Sotiriadis, K., Kakali, G. and Tsvivilis, S., National Technical University of Athens, School of Chemical Engineering, Athens, Greece

Physico-chemical investigation of CEM I cement paste degradation in carbonated water with a controlled CO₂ partial pressure (1.3 10⁻² ATM) at 50°C
Chomat, L., Le Bescop, P. and Trepay, N., CEA, DEN, DPC, SCCME, Laboratoire d'Etude du Comportement des Bétons et des Argiles, France; Galle, C. and Bourbon, X., France

Colloquia (8 minutes)

11:00 – 13:00

Session 24 - Area 8: Concrete durability

Room Tomás Vázquez

Chairpersons: M^a Ángeles G. de la Torre and Rafael Talero

A comparative assessment of the effect of cement type on concrete durability
Demis, S., Patras Science Park, Greece; Papadakis, V.G., University of Western Greece, Greece

Influence of environmental conditions on the mechanical properties and durability-related characteristics of slag and fly ash cement mortars

Ortega Álvarez, J.M., Sánchez Martín, I. and Climent Llorca, M.A., Universitat d'Alacant, Spain



Time-dependent variation of chloride ion diffusion coefficients in concretes with various phase compositions and pore structures using a different type of cement

Hosokawa, Y. and Takahashi, H., Taiheiyō Cement Corporation, Japan; Yamada, K., Taiheiyō Consultant Co. Ltd, Japan

Transfer properties in cement- based porous materials: part 2-pore network model for predicting water sorption-desorption isotherms

Ranaivomanana, H., Sellier, A. and Verdier, J., Université de Toulouse; UPS, INSA, LMDC (Laboratoire Matériaux et Durabilité des Constructions), France; Bourbon, X., Andra, France

Dissolution of dolomite in alkaline cementitious media

Mittermayr, F., Klammer, D., Köhler, S., Höllen, D. and Dietzel, M., Graz University of Technology, Institute of Applied Geosciences, Austria; Leis, A., Joanneum Research, Institute for Water, Energy and Sustainability, Austria

Colloquia (8 minutes)

Long-term investigation of autoclaved aerated concrete produced from fluidized fly ash

Drabik, M. and Balkovic, S., Institute of Inorganic Chemistry SASci, Slovakia; Peteja, M., Orfix Ltd., Slovakia

Organic acids' attack on cementitious materials: aggressiveness and degradation mechanisms

Bertron, A.U., Larreur-Cayol, S. and Escadeillas, G., Université de Toulouse; UPS, INSA; LMDC (Laboratoire Matériaux et Durabilité des Constructions), France

Analysis of sulfuric acid induced deterioration of hardened calcium aluminate cement with blast furnace slag

Sugiyama, T. and Sakai, E., Tokyo Institute of Technology, Department of Metallurgy & Ceramics Science, Japan; Tabara, K., Yamamoto, K. and Morioka, M., Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Fresh and hardened characterization of air-entrained cement pastes

Romano, R.C.O., Takahashi, M.M., Liberato, C. and Pileggi, R.G., Escola Politécnica, Department of Construction Engineering, University of São Paulo, Brazil

Colloquia (8 minutes)

13:15 – 14:00

Parallel Sessions 25, 26 and 27

Session 25 - Area 8: Concrete durability

Auditorium

Chairpersons: Jordi Payá and Marta Castellote



Zeta potential of cementitious materials through electroosmotic and electrophoretic experiments in decontamination: a critical analysis

Castellote, M., Botija, S. and Andrade, C., Centro de Seguridad y Durabilidad Estructural y de Materiales-CISDEM-(CSIC), Spain

Stress corrosion cracking of high strength steels. new mechanism

Sánchez, J., Fulla, J. and Andrade, C., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

New low-nickel stainless steel passivity in simulated concrete pore solution. The effect of chlorides

Fajardo, S., Bastidas, D.M. and Criado, M., National Centre for Metallurgical Research (CENIM), CSIC, Spain; Matres, M.V. and Romero, M., Acerinox S.A., Spain; La Iglesia, A., Institute of Econonomical Geology, CSIC, Faculty of Geological Sciences, Spain; Bastidas, J.M., National Centre for Metallurgical Research (CENIM), CSIC, Spain

Degradation of reinforced concretes from industrial buildings caused by combined sulphate-phosphate attack

Secco, M., Maritan, L., Artioli, G. and Mazzoli, C., University of Padova, Italy; Lampronti, G., University of Bologna, Italy

Effect of pore volume change on the transport and poro-elastic properties of a heat-treated mortar

Chen, X.T., EDF R&D, France; Caratini, G., LMSGC, ENPC, France; Davy, C.A., Skoczylas, F. and Shao, J.F. Univ Lille Nord de France

Colloquia (5 minutes)

13:15 – 14:00

Session 26 - Area 8: Concrete durability

Room Tomás Vázquez

Chairpersons: J. B. D'Espinose and Juan Charquero

What do stable isotopes tell us about deterioration of concrete?

Dietzel, M., Mittermayr, F., Klammer, D., Höllen, D. and Köhler, S., Graz University of Technology, Institute of Applied Geosciences, Austria; Böttcher, M., Leibniz Institute for Baltic Sea Research Warnemünde (IOW), Germany; Leis, A., Joanneum Research, Resources - Institute for Water, Energy and Sustainability, Austria

Experimental study of the effects of high temperatures on the mechanical properties of a cement

Caratini, G. and Dormieux, L., Université Paris-Est, UR Navier, Ecole des Ponts ParisTech, France; Skoczylas, F., Laboratoire de Mécanique de Lille (LML), France

Microstructure and durability of cements containing red mud

Álvarez, L., Cabeza, M. and Nóvoa, X.R., Encomat Group, ETSEIM, Universidade de Vigo, Spain; Climent, M.A., Ortega, J.M. and Sánchez, I., Universitat d'Alacant, Spain



Influence of different CAC reactivity on the mechanical performances of a self-leveller: a case
Lo Presti, A., Cerulli, T., Salvioni, D., De Santis, M. and Carrà, S., Mapei S.p.A. R & D, Italy

Comparison on the durability of different portland cements after five years exposure to sulfate and to sea water attack

López Sánchez, P., Intemac (Department of Chemical and Materials Technology), Spain; Fernández Gómez, J. and Moragues Terrades, A., E.T.S.I de Caminos, Canales y Puertos - UPM (Department of Civil Engineering: Construction), Spain

13:15 – 14:00

Session 27 - Area 8: Concrete durability

Room José Calleja

Chairpersons: F. Winnefeld and L. M. Ordóñez

Modelling the carbonation of concrete using performance based tests: proposition of a conceptual framework

Salvoldi, B., Beushausen, H. and Alexander, M., University of Cape Town, Department of Civil Engineering, Concrete Materials and Structural Integrity Research Unit, South Africa

Session
27

Controlling alkali silica reaction by understanding alkali immobilization in C-S-H by SCMS
Chappex, T. and Scrivener, K., Laboratory of construction materials, Ecole Polytechnique Fédérale De Lausanne (EPFL) Lausanne, Switzerland

Unknown reactions of aggregate with pore solution in concrete

Kurdowski, W. and Szelag, H., Institute of Ceramics and Building Materials, Poland; Grzeszczyk, S., Opole Technical University, Poland

A new approach for evaluating the effectiveness of pozzolanic and blastfurnace cements against alkali-silica reaction in concrete

Costa, U., Gallo, A., Ioni, G.P., Migheli, A., Minoia, A., Paolini, A.E., Santinelli, F., Vola, G., Zanardi, G. and Zenone, F., Unicemento-Association of the Italian cement producers for standardization, WG"ASR", Italy; Mangialardi, T., University of Rome "La Sapienza", Dept. Chemical Environment Materials Engineering, Italy

The mechanisms of ASR in concrete exposed to deicers and its preventive measures by pozzolans

Andrade, O. Graduate School of Natural Science & Technology, Kanazawa University, Japan; Torii, K., College of Science & Engineering, Dep. of Environmental Design, Kanazawa University, Japan

14:00

Closing session



General posters

General Posters Session 1

Tuesday, 5th July from 15:00 to 16:45 h.

Coordinators: Shane Donatello, Olga Maltseva, Noelia Granizo and Patricia Rivilla

Although all posters will be available in all screens to be examined by delegates at anytime, during General posters sessions, delegates will be able to ask authors for more information.

Authors are requested to be available on those dates next to the assigned screen.

Screen 1

Modification of lime saturation factor in presence of minor elements

Sorrentino, F., Mineral Research Processing Company Meyzieu, France.

Use of bauxite residue as a source of Al_2O_3 and Fe_2O_3 in the preparation of portland cement clinker

Lourenço, R.R., Rodrigues, J.A. and Fortes, G., Federal University of São Carlos, Department of Materials Engineering, Brazil; Montini, M. and Gallo, J.B., Alcoa Alumínio S.A., Brazil

Effects of MgO on the formation kinetics of portland cement clinker

Zhou, Z., Wang, C. and Cheng, X., Engineering Research Center of Advanced Building Materials, Ministry of Education, University of Jinan, China; Liu, C., Shandong National Technician College, China

Exploratory studies on the utilisation of high sulphate bearing lime stones in clinker making

Medhe, M., Kumar, N., Kuchya, M., Kuchya, M., Sadangi, A., Pandey, S.P., Chowdhury, S., Central R&D, Grasim Industries Ltd., India; Chatterjee, A.K., Conmat Technologies (P) Ltd., India

Screen 2

First step towards bio-superplasticizers

Crepy, L., Petit, J.Y., Joly, N., Wirquin, E. and Martin, P., Univ. Lille Nord France, France

Use of granite sawing wastes in functional cement based mortars: colour and photocatalytic

Sugrañez, R., Cruz-Yusta, M., Morales, J. and Sánchez, L., Universidad de Córdoba, Dpto. Química Inorgánica, Córdoba, Spain; Mármol, I., Grupo Puma, Spain



Feasibility of waelz slag as an additive in portland cement CEM II/A-L

Alejandro Sánchez, F.J., Martín del Río, J.J., García Soria, M.V. and Blasco López, F.J., University of Seville, Spain

Evaluation of calcined clayey soils as supplementary cementitious material

Castillo Lara, R., Department of Civil Engineering, Central University of Las Villas, Santa Clara, Cuba; Martirena Hernández, J.F., Cidem, Central University of Las Villas, Cuba; Scrivener, K. and Laboratory of Construction Materials, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Carbonate looping for the de-carbonization of cement plant

Pathi, S.K., Friberg Andersen, M., Lin, W., Illerup, J.B. and Dam-Johansen, K., CHEC Research Centre, Department of Chemical and Bio-Chemical Engineering, DTU, Denmark; Hjuler, K. FLSmidth A/S, Research and Development, Denmark

The effect of high calcium fly ash on the formation of cement properties with its participation

Gołaszewski, J., Giergiczny, Z., Dziuk, D. and Cygan, G., Faculty of Civil Engineering Silesian University of Technology

Screen 3

Inertization of a waste material produced by extraction of TiO₂ from ilmenite and added to a common portland cement

García Soria, M.V. and Orta Cuevas, M.M., University of Seville, Spain; Márquez Martínez, G., University of Huelva, Spain; García Pérez, R., Cebasa, Spain

Durability of high-performance concrete with addition of rice husk ash and rubber tire

Akasaki, J.L., Vasconcelos, A.R.B., Melges, J.L. and Fioriti, C.F. and Assi, D.R.O., Faculdade de Engenharia, UNESP – Univ Estadual Paulista, Brazil; Paya Bernabeu, J.J., Borrachero Rosado, M.V. and Tashima, M.M., Universidad Politécnica de Valencia, Instituto de Ciencia y Tecnología Del Hormigón, Spain

Effects of lino 3 in alkali-silica reaction and comparison with the effects of fly ash

Akasaki, J.L., Silva, D.J.F., Fazzan, J.V., Bernardes, H.M., Melges, J.L.P. and Caetano, L., Faculdade de Engenharia, UNESP – Univ Estadual Paulista, Brazil; Tashima, M.M., Payá Bernabeu, J.J. and Borrachero Rosado, M.V., Universidad Politécnica de Valencia, Instituto de Ciencia y Tecnología Del Hormigón, Spain

Characterization of cementitious granular materials produced from contaminated soils

Parisatto, M., Artioli, G., Gerarduzzi, M. and Mazzoli, C., Dipartimento di Geoscienze, Università degli Studi di Padova, Italy and Collina, A. and Pella, R., Mapintec S.r.l., Italy



Properties of multifunctional high volume fluidized bed fly ash binders

Gawlicki, M. and Mróz, R., AGH University of Science and Technology, Faculty of Materials Science & Ceramics, Department of Building Materials Technology, Poland

Improvement of cement production sustainability using nano raw materials

García-Sanfélix, S., Ordóñez-Belloc, L.M., López-Tendero, M.J. and López-Buendía, A., Materials Research Technical Unit, AIDICO, Technological Institute of Construction, Spain

Screen 4

New contributions to the portland cement-sewage sludge ash system

Payá Bernabeu, J., Monzó Balbuena, J., Borrachero Rosado, M.V., Soriano Martínez, L., Bonilla Salvador, M., Mellado Romero, A., Universitat Politècnica de València. ICITECH, Instituto de Ciencia y Tecnología del Hormigón, Garcés Terradillos, P. and Saval, J.M., Universidad de Alicante, Dpto de Ingeniería de la Construcción Obras Públicas e Infraestructura Urbana, Spain; Reig, L., Universitat Jaume I de Castelló, Departamento de Ingeniería Mecánica y Construcción EMC, Spain

Study on carbonation of paper sludge-steel slag composites

Chang, J., Wu, H. and Zhao, H., Department of Materials Science and Engineering, University of Jinan, China

Metakaolin - reactive pozzolana from serbian clays

Mitrovic, A. and Milicic, L.J., Institute for testing of materials, R&D Manager, Serbia; Jevtic, D., Faculty of Civil Engineering, The Chair of Materials and Structures, Serbia

The effect of MgO admixture on cement pastes and mortars

Salli Bideci, O. and Bideci, A., Kirklareli University, Faculty of Technical Education, Department of Construction Education, Turkey; Oymael, S., Trakya University, Faculty of Engineering & Architecture, Department of Architecture, Turkey

Pozzolanic activity of metakaolin and ultramarine blue pigment

Giraldo Tores, C., Cementos Argos S.A., Grupo del Cemento y Materiales de Construcción, Colombia; Mendoza Reales, O., Tobón, J. and Restrepo, J.C., Universidad Nacional de Colombia, Grupo del Cemento y Materiales de Construcción, Colombia

Screen 5

Influence of the use of sewage sludge ash (SSA) as cementitious materials on mortar and concrete properties

Etxeberria, M. and Valls, S., Department of Construction Engineering, Universitat Politècnica de Catalunya, Spain



Wastepaper sludge ash: a new type of supplementary cementitious material used in concrete
Xie, A., Laldji, S., Mikanovic, N. and Tagnit-Hamou, A., Université de Sherbrooke, Canada

Pozzolanic activity of selected mineral admixtures at different grind sizes
Flores, Y.C., Tavares, L.M. and Toledo Filho, D.R., Universidade Federal do Rio de Janeiro, Brazil; Cordeiro, C.G., Laboratory of Civil Engineering, Universidade Estadual do Norte Fluminense Darcy Ribeiro, Brazil

Evaluation of Cr (VI) mobility in cement pastes
Grivé, M., Colás, E. and García, D., Amphos 21, Spain; Pérez, G., Morillo, D. and Valiente, M., Centre GTS, Unitat de Química Analítica, Departament de Química, Universitat Autònoma de Barcelona, Facultat de Ciències, Spain; Cara, G., Propamsa, S.A., Spain

Some properties of plasticized compositions of portland cement- granulated blast furnace slag
Petrova, T. and Smirnova, O., St. Petersburg State Transport University, Department of Building materials and technology, Russia; Shabiev, R., St. Petersburg State Technological University of Plant Polymers, Faculty of Process Engineering, Russia

Screen 6

Mixing of steel slag with granite sawing waste as admixture to cement clinker. Preliminary studies

Arrivabene, L.F. and Oliveira, J.R., Instituto Federal do Espírito Santo (IFES), Brazil; Calmon, J.L. and Tenório, J.A.S., Universidade Federal do Espírito Santo (UFES), Brazil

Microstructure of roman cements used for architectural restoration

Gosselin, C., Scrivener, K.L. and Feldman S.B., Swiss Federal Institute of Technology, Laboratory of Construction Materials, Switzerland

Effect of size fraction and glass structure of siliceous fly ashes on cement hydration

Tkaczewska, E., AGH University of Science and Technology, Faculty of Materials Science & Ceramics, Department of Building-Materials Technology, Poland

Reactivity and microstructure of ternary cementitious pastes

Østnor, T., De Weerd, K. and Justnes, H., SINTEF Building and Infrastructure, Norway; Bjøntegaard, Ø., Norwegian Public Roads Administration, Norway

Monitoring the hydration of mortar containing metakaolin using electrical impedance spectroscopy

Fita, I.C. and Cruz, J.M., Departamento de Física Aplicada. Universidad Politécnica de Valencia, Spain; Payá, J., Borrachero, M.V. and Soriano, L., Instituto de Ciencia y Tecnología del Hormigón, Universidad Politécnica de Valencia, Spain



Screen 7

Topological models of stone structures on the base of the different bindings with powder fillers
Rakhimov, R. and Rakhimova, N., Kazan State University of Architecture and Engineering, Department of the building materials, Russian Federation

Influence of multiwalled carbon nanotubes on the microstructure of CSH-phases
Weitzel, B., Hansen, M.R., Kowald, T.L. and Müller, T., Institute for Building and Materials Chemistry (University of Siegen) Siegen, Germany; Spiess, H.W. and Trettin, H.F.R., Max Planck Institute for Polymer Research, Germany

Preparation and characterization of mk-blended cement mortar having various water/binder ratios
Khater, H., Housing and Building National Research Centre (HBNRC), Egypt

Screen 8

Effect on slag hydration of blast-furnace slag cement in different curing conditions
Iyoda, T. and Inokuchi, K., Department of Civil Engineering, Shibaura Institute of Technology, Japan; Uomoto, T., Public Works Research Institute, Japan

Phase identification and semi-quantitative analysis of hardened portland cement as a function of time
Ruíz-Mérida, F. and Haurie Ibarra, L., Universidad Politécnica de Catalunya, Departamento de Construcciones Arquitectónicas II, Spain; Estop Graells, E., Universidad Autónoma de Barcelona, Departamento de Geología, Spain

Effects of additives on the hydration of cement paste with large water cement ratio (w/c=1) and the microstructure of the hardened cement paste
Asaga, K., Shirakawa, Y. and Yamada, R., Teikyo University of Science and Technology, Department of Environmental Science, Japan; Sakamoto, M., Clion Co., Ltd., Japan

Modification of cement matrixes of carbon nanotubes
Yakovlev, G., Lushnikova, A. and Pervushin, G., Izhevsk State Technical University, Russia; Khasanov, O., Tomsk Polytechnic University, Russia

Studies on the interactions between superplasticizers and hydrating OPC
Jansen, D., Goetz-Neunhoeffler, F. and Neubauer, J., Geozentrum Nordbayern, Mineralogy, University of Erlangen-Nuernberg, Germany; Hergeth, W.D. and Haerzschel, R., Wacker Chemie AG, Germany

Influences of nano-particles made from aluminosilicate hydrates on hydrating cement pastes
Shui, Z., Yu, R., Dong, J. and Sun, T., School of Materials Science and Engineering, Wuhan University of Technology, China



Screen 9

Influence the hydration of calciumsulphate-hemihydrate

Pritzel, C. and Trettin, R., Institute for building and materials chemistry; University of Siegen, Germany

Stability of ettringite in the presence of superplasticizers

Chen, C. and Chou, W., Department of Construction Engineering, National Taiwan University of Science and Technology, Taiwan

Mapping of mechanical properties of cement paste microstructures

Howind, T., Hughes, J.J. and Zhu, W., University of the West of Scotland, UK; Puertas, F., Goñi, S., Hernández, M.S. and Guerrero, A., Eduardo Torroja Institute for Construction Science (IETcc), Spain; Palacios, M., Instituto de Cerámica y Vidrio, Spanish National Research Council (CSIC), Spain; Dolado, J.S., Labein-Tecnalia, Spain

Effect of superplasticizer on silica fume pozzolanic cement

Magdy, A. and El Aziz, A., Associate prof. of Structural Eng., Faculty of Eng., Fayoum University, Egypt

Gluconate effect on thorium immobilization

Colàs, E., Grivé, M. and Duro, L., Amphos 21, Spain; Rojo, I., CTM Centre Tecnològic, Spain

Hydration behaviors of modified steel slag

Li, J.X., Yu, Q.J., Wei, J.X. and Zhong, G., School of Materials Science and Engineering, South China University of Technology, China

General Posters Session 2

Thursday, 7th July from 15:00 to 16:00 h.

Coordinators: Shane Donatello, Olga Maltseva, Noelia Granizo and Patricia Rivilla

Although all posters will be available in all screens to be examined by delegates at anytime, during General posters sessions, delegates will be able to ask authors for more information.

Authors are requested to be available on those dates next to the assigned screen.



Screen 1

Hydrating behaviour of activated belite sulfoaluminate cements

Aranda, M.A.G., Cuberos, A.J.M., Cuesta, A., Álvarez- Pinazo, G. and e la Torre, A.G., Departamento de Química Inorgánica, Cristalografía y Mineralogía, University of Malaga, Spain; Schollbach, K. and Pöllmann, H., Institut für Geologische Wissenschaften und Geiseltalmuseum, Germany

Special cements on base sulphoaluminate clinker

Kouznetsova, T. V. and Krivoborodov, Y.R., Mendeleev University of Chemical Technology, Moscow, Russia; Samchenko, S.V., Department of Moscow Civil Engineering Academy, Russia; Burlov, I.Y. Research Center of JSC "Podolsk-Cement", Russia

Comparative study of the adhesion of rubber particles to calcium sulfoaluminate or portland cement mortars

Diouri, A., Idrissi, M. and Khachani, N., Laboratoire de Chimie du Solide Appliquée, Faculté des Sciences, Maroc; Yaich, S. and Mehrez, K., Institut Supérieur des Etudes Technologiques de Sfax, Tunisie; Damidot, D., Civil and Environmental Engineering Department, Ecole des Mines de Douai, France

Properties and structure formation of a stone of compositional slag alkaline bindings with siliceous mineral additives

Rakhimova, N. and Rakhimov, R.; Kazan State University of Architecture and Engineering, Department of the building materials, Russian Federation

Quantitative characterization of fly ash reactivity for use in geopolymer cements

Gustashaw, K., The University of Texas at Austin, USA; Chancey, R., Nelson Architectural Engineers, USA; Stutzman, P., National Institute of Standards and Technology, USA; Juenger, M., The University of Texas at Austin, USA

Behavior of fly ash geopolymers at elevated temperatures compared to that of cement mortars

Asprogerakas, A., Panagiotopoulou, C., Kakali, G. and Tsvilis, S., National Technical University of Athens, School of Chemical Engineering, Athens, Greece

Screen 2

Researches of the mechanism of influence of mineral and chemical admixtures on the process of anhydrite binding hardening

Khaliullin, M.I. and Rakhimov, R., Kazan State University of Architecture and Engineering (KSUAE), Department of building materials, Russia

Modelling the performances of alkaline activated fly ash mixtures

Capelli, L., Canonico, F., Bianchi, M., Gastaldi, D. and Pelucchi, M. Buzzi Unicem S.p.A., Italy



Composition design of alkali activated fly ash binders using taguchi method

Panagiotopoulou, C., Kakali, G. and Tsvillis, S., National Technical University of Athens (NTUA), School of Chemical Engineering, Athens, Greece

Formation of C-S-H, C-A-S-H and N-A-S-H gels in alkali activated fly ash binders

Deja, J., Golek, Ł., Kołodziej, Ł., Borowiec, P. and Bytnar, M., University of Science and Technology, Faculty of Materials Science and Technology, Department of Building Materials Technology, Poland

The effect of ultrafine red clay brick pozzolan on the microstructure of cement paste and its correlation with non-destructive engineering properties

Vieira, A.A.P., Torres, S.M., De Barros, S.R. and Barbosa, N.P., Federal University of Paraíba, Brazil

Mechanical properties of geopolymer with iron rich precursors

Gomes, K.C., Torres, S.M., De Barros, S.R. and Barbosa, N.P., Federal University of Paraíba, Brazil; Vasconcelos, I.F., Federal University of Ceara, Brazil

Screen 3

Research of producing belite-calcium barium sulphoaluminate cement by high silica modulus

Lu, L., Wang, H., Wang, S. and Guo, X., University of Jinan, China

Influence of magnesium chloride content and phosphoric acid on the physico-mechanical of magnesium oxychloride cement pastes

Kandeel, A.M., Raw Building Materials Technology and Processing Research Institute Housing and Building National Research Center, Egypt

Synthesis and characterization of geopolymers from clinoptilolite tuff

Chávez-García, M.L. and García, T.A., Facultad de Química, Departamento de Química Inorgánica y Nuclear, Universidad Nacional Autónoma de México, México; De Pablo, L., Instituto de Geología, Universidad Nacional Autónoma de México, México

Alkaline activation of blended fly ash and cement kiln dust

Cabrera-Fuentes, A.B., Fernández-Jiménez, A. and Palomo, A., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Determination of Ca²⁺ and OH⁻ ions at very early stage of hydrating cement paste

Hošková, Š., Tichá, P., Svěshnikov, A. and Rollová J., Department of Physics, Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic



Photocatalytic activity of TiO₂ in different types of cements and mortars

Vila Gómez, J., Lloris Cormano, J.M., López-Tendero, M.J., CaleroRodríguez, P., Sanjuán García, S. and García-Sanfélix, S., Unidad Técnica de Investigación de Materiales, Instituto Tecnológico de la Construcción (Aidico), Spain; Cruz-Yusta, M., Departamento de Química Inorgánica e Ingeniería Química, Universidad de Córdoba, Spain; Mayayo, J.I. and Díaz Flores, E., Obrascón Huarte Lain, S.A., Spain

Screen 4

Monitoring the strength properties of cement clinker on the basis of measurements of electrical resistivity

Stackelberg, D., Wilge, B. and Boiko, S., Concretec Ltd., Israel; Martauz, P. and Strigac, J., Považská cementáreň plant, Slovakia

Evaluation of compressive strength and durability on portland cement blended with nanosilica

Tobón, J.I. and Restrepo, O.J., Grupo del Cemento y Materiales de Construcción, Universidad Nacional de Colombia; Borrachero, M.V., Instituto de Ciencia y Tecnología del Hormigón (ICITECH) – Universidad Politécnica de Valencia, Spain; Payá, J.J., Instituto de Ciencia y Tecnología del Hormigón (ICITECH) – Universidad Politécnica de Valencia, Spain

Preliminary rheological characterisation of cementitious systems by the viskomat rotational

Allevi, S., Lezzi, G. and Alfani, R.C., CTG Italcementi Group, Laboratories Department, Italy; Vichot, A., CTG Italcementi Group, Les Technodes, France; Grizzuti, N., University of Naples Federico II, Italy

Influence of thickening agents on the adhesive and rheological properties of mortars

Phan, V.T., Laboratoire de Mécanique et Technologie – Cachan, France; Bouchelaghem, F., Chaouche, M., Kaci, A., Université de Cergy-Pontoise, France; Andréani, P.A., Centre d'Innovation de ParexLanko, France

Evaluation of the quality of concrete at early age by ultrasonic measurements

Belakrouf, A., Toukal, A. and Si-chaib, M.O., Université M'Hamed Bougara, Algérie

Microstructural analysis of and thermal analysis geopolymers with flue dust

Nobre, T.R.S., Vargas, A.S.C., Masuero, A. B., Dal Molin, D.C.C. and Vilela, A.C.F., Federal University of Rio Grande do Sul, Brazil



Screen 5

Influence of zinc salts on properties and hardening of inorganic binders

Voicu, G., Badanoiu, A. and Georgescu, M., Politehnica University, Applied Chemistry and Materials Science Faculty, Science and Engineering of Oxide Materials and Nanomaterials Department, Romania

The effects of silica fume and superplasticizer on cement hydration under low water cement ratio

Umemura, Y., Sato, M., Koizumi, K. and Tsuyuki, N., Nihon University, College of Science and Technology, Japan

Effects of calcium chloride, aluminum hydroxide and aluminum sulfate on setting time and durability characteristics of portland cement mortars

Rahimi, S., Golchin, A., Mortazavi, S.J. and Ghods, A.S., Department of Civil Engineering, Mashhad Branch, Islamic Azad University, Iran

New concretes incorporating recycled ceramic aggregates

Medina Martínez, C., Juan Valdés, A., Morán del Pozo, J.M. and Guerra Romero, M.I., Universidad de León, Spain; Frías Rojas, M., Sánchez de Rojas, M.I., Carballosa de Miguel, P., Revuelta Crespo, D., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain

Insight into cementing problems related to the blowout on BP'S Macando #1 well in the Gulf of Mexico

Plank, J., Technische Universität München, Germany

Screen 6

Use of electrical resistivity as complementary tool for controlling the concrete production

Andrade, C., Instituto Eduardo Torroja de Ciencias de la Construcción (CSIC), Spain; D'Andrea, R. and López, J.C., Instituto español del cemento y sus aplicaciones (IECA), Spain; Cienfuegos-Jovellano, A. and Álvarez, C., Consejería de Bienestar Social y Vivienda del Gobierno de Asturias, Spain; Álvarez, J.M., Xunta de Galicia, Spain; Millán, J.M., Galaicontrol, Spain

Impact of marble powder combined with limestone of CEM II on concrete durability

Chaïd, R., Laboratory of Mineral & Composite Materials, University of Boumerdes, Algeria; Rendell, F., Independent Researcher, France; Jauberthie, R., Laboratory of Civil Engineering and Mechanical Engineering, France

Microstructural development in fire damaged concrete - a case study

Chatterjee, V.P., Ali, M.M. and Gupta, S.K., Centre for Cement Research and Independent Testing National Council for Cement and Building Materials, Ballabgarh, Haryana, India



Sulfate attack: co-precipitation of rapid and slow forming ettringite. consequence: expansive synergic effect

Talero, R., Instituto de C.C. "Eduardo Torroja" (CSIC), Spain

Acetic acid attack of cement matrix: evaluation of durability parameters

Oueslati, O. and Duchesne, J., Université Laval, Centre de Recherche sur les Infrastructures en Béton (CRIB), Canada

Study on non-steady-state chloride diffusion coefficient of cement- based materials

Yuan, Q. and Deng, D., School of Civil Engineering and Architecture, Central South University, China; Shi, C., College of Civil Engineering, Hunan University, China; De Schutter, G., Magnel Laboratory for Concrete Research, Ghent University, Belgium

Screen 7

Pyrrhotite oxidation kinetics: host rock influence and the effect of aggregate size on a concrete

Oliveira, I. and Aguado, A., Universidad Politécnica de Catalunya, Spain; Chinchón-Payá, S. and Chinchón, S., Universidad de Alicante, Spain

Study of the damage evolution of the concrete under freeze-thaw cycles using traditional and non-traditional techniques

Romero, H.L. and Gálvez, J.C., E.T.S. de Ingenieros de Caminos, Canales y Puertos, (UPM), Spain; Casati, M.J., E.U.I.T. (UPM), Aeronáutica, Spain; Molero, M., Centro de Acústica y Evaluación Destructiva, CAEND, (CSIC-UPM), Spain; Segura, I., Centro de Acústica y Centro Tecnológico CARTIF, Spain

Transfer properties in cement- based porous materials: Part 1. Evolution of fluid transfers in crack healing

Ranaivomanana, H., Verdier, J. and Sellier, A., Université de Toulouse; UPS -,INSA,; LMDC (Laboratoire Matériaux et Durabilité des Constructions), France; Bourbon, X., Andra, France

Physico-chemical changes in plain and fly ash modified concretes exposed to different deicing

Jain, J., Janusz, A. and Olek, J., Purdue University, School of Civil Engineering, West Lafayette, IN, USA; Jozwiak-Niedzwiedzka, D., Institute of Fundamental Technological Research (IFTR), Polish Academy of Sciences, Poland

Characterization cement pastes degraded in laboratory solutions and physiochemical parameters employed for modeling the process

Antón Fuentes, R., Moragues Terrades, A. and Sánchez Espinosa, E., Universidad Politécnica de Madrid, Spain



Screen 8

Dissolution of portlandite

Galán, I., Andrade, C. and Baza, D., Eduardo Torroja Institute IETcc-CSIC, Spain; Glasser, F.P., University of Aberdeen, Chemistry Department, UK

Concrete mix design for wind power turbine foundations exposed to aggressive environment

Gajewski, R. C., Cemex Polska, Poland; Gawlicki, M., AGH University of Science and Technology, Faculty of Material Science and Ceramics, Poland; Glinicki, M.A., Institute of Fundamental Technological Research, Polish Academy of Sciences, Poland

New findings of asr degradation in Japan

Yamada, K., Central R&D Center, Taiheiyo Cement Corp., Japan; Hirono, S., Taiheiyo Consultant Co. Ltd., Japan; Miyagawa, T., Department of Civil Engineering, Kyoto University, Japan

Interactions between chloride ingress and carbonation in cementitious materials

Saillo, M., Baroghel-Bouny, V. and Platret, G., Paris-Est Univ.-Laboratoire Central des Ponts et Chaussées (LCPC) Paris, France; Barberon, F. and Gégout, P., Bouygues Travaux Publics, Pôle Ingénierie et Matériaux (PIM) Magny les Hameaux, France

Behaviour of limestone cement concrete in combined chloride and sulphate environment. The role of mineral admixtures

Sotiriadis, K., Nikolopoulou, E. and Tsvivilis, S., National Technical University of Athens, School of Chemical Engineering, Greece; Pavlou, K. and Chaniotakis, E., Titan Cement Company, Research and Quality Department, Greece; Swamy, R.N., The University of Sheffield, Department of Mechanical Engineering, UK

Comparison between expansion and microstructural changes in sulfate resistance tests

Yu, C. and Scrivener, K., Ecole Polytechnique Fédérale de Lausanne (EPFL), Laboratory of construction materials, Switzerland

Screen 9

Evaluation of low-Ph cement degradation in the framework of performance assessment of deep geological repositories for nuclear waste storage

Grandia, F., Galíndez, J.M., Arcos, D. and Molinero, J., Amphos 21 Consulting, Spain

Durability design using levels of verification

Andrade, C., Tanner, P. and Prieto, M., Institute of Construction Sciences "Eduardo Torroja", CSIC, Spain; D'Andrea, R., The Spanish Institute of cement and its Applications, Spain



Relationship between microstructure and properties of silicate composites on the basis of activated lime-silica binder

Lutskin, E. and Shinkevich, E., Odessa State Academy of Construction and Architecture, Ukraine

Kinetic-mathematical model of hydration of lime-silica binder, which activated together with a fine-grained filler

Shinkevich, E., Odessa State Academy of Construction and Architecture, Ukraine

Prediction of endogenous shrinkage of portland cement pastes

Brahma, A., Faculté des Sciences de l'ingénieur, Université Saâd Dahlab, Algérie

Nucleation of portlandite: a theoretical study

Sveshnikov, A. and Demo, P., Institute of Physics AS CR, Czech Republic; Hošková, Š. and Tichá, P., Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

Screen 10

Quantitative study and simulation of the intersection and connectivity of fibers and cracks in cementitious composites

Yuan, H.F., Chen, H.S. and Lv, Z., Jiangsu Key Laboratory of Construction Materials, School of Materials Science and Engineering, Southeast University, China

Agent-based model for the effect of curing temperature on cement hydration

Cerro-Prada, E., Vázquez-Gallo, M.J., Alonso-Trigueros, J. and Romera-Zarza, A.L., Escuela Universitaria de Ingeniería Técnica de Obras Públicas (UPM), Spain

The mechanism of self-healing in high performance concrete

Huang, H. and Ye, G., Faculty of Civil Engineering and Geosciences, Delft University of Technology, Netherlands

An approach to determine the size of representative volume element (RVE) for microstructural parameters of cementitious composites

Chen, H. and Sun, W., Jiangsu Key Laboratory of Construction Materials, School of Materials Science & Engineering, Southeast University, China; Stroeven, P. and Sluys, L.J., Faculty of Civil Engineering and Geoscience, Delft University of Technology, The Netherlands



Technical visits

Tuesday, July 5th

BASF site in Mejorada del Campo (Madrid)

09:15 h Departure by bus from the Congress venue, Palacio de Congresos.

During the visit to the BASF Site in Mejorada, which is one of the main production centres of concrete and mortar additives that Construction Chemicals operates in Europe, it will be possible to visit manufacturing, warehousing and shipping areas, as well as some of the laboratories.

13:00 h Return by bus to the Congress venue, Palacio de Congresos.

Wednesday, July 6th

“El Alto”, Cementos Portland Valderrivas,
Morata de Tajuña (Madrid)

09:15 h Departure by bus from the Congress venue, Palacio de Congresos.

“El Alto” cement plant, settled in the town of Morata de Tajuña, Madrid, started trading in 1972 as expansion of Vicalvaro plant existing from the early twentieth century in Madrid and now dismantled.



The plant has its own limestone quarry, crushing plant of 1,500 t/hour, two production lines of gray cement both with a production capacity of 3,500 t/day, and a line of white cement with a capacity of 1,000 t/day. Each line has specific grinding and bagging facilities for cement.

During the last years the plant has supplied cement to emblematic works like the Museo de Colecciones Reales of Madrid, Barajas and Ciudad Real airports and the Tercer Milenio bridge in Zaragoza.

13:00 h Return by bus to the Congress venue, Palacio de Congresos.



Social programme

Monday, July 4th

21:00 h

Welcome Cocktail at Santiago Bernabéu stadium

Venue: Real Café Bernabéu, Santiago Bernabéu stadium.

Access: gate number 30, Concha Espina, 1.

Walking distance from the Palacio de Congresos.

Dress code: smart casual.



The Welcome reception of the 13th International Congress on the Chemistry of Cement will take place in "Real Café Bernabéu" this name for the football fans is quite well known. In its fantastic Terrace on the "Bernabéu " the participants on the 13th ICCC will enjoy a drink in a relaxing atmosphere.

The Stadium Santiago Bernabéu was inaugurated on 14 December 1947 and is owned by Real Madrid C.F. It has a current capacity of 80.354 spectators all seated.

El Bernabéu re-named in honour of its former president Santiago Bernabéu Yeste is one of the world's most famous and prestigious football venues. It has hosted the European Cup final on three occasions, years 1957, 1969 and 1980. UEFA Champions League final in 2010. The finals for the 1964 European Nation's cup and the 1982 World cup.

Real Café Bernabéu location.





Thursday, July 7th

20:30 h

Congress Dinner "Spanish Fiesta"

A stroll across the Spanish cooking.

Venue: "Castillo de Viñuelas"

Bus departure from Palacio de Congresos at 20:30 h.

Dress code: smart casual

Spanish flamenco show will welcome to the participats.

A stroll across the Spanish gastronomy.

Our cooking is very rich and varied. A display of the rich cooking from the north of Spain bathed by the Cantabrian sea, its green mountains and the abundant rains give us splendid dishes, and a wide range of cheese. The excellent sweet and sour taste of the cider, the desserts: "the Santiago cake", the apostle delights and the "Quesada Pasiega" (cheese cake).



In the cellar, our wines have rested for many years, producing the exquisite wines from Rioja, Valdepeñas, Ribera del Duero. In the lively Andalucía you will find "Manzanilla Wine", olive oil, the homemade pickled olives, small casseroles with bull tail, prawn with garlic sauce. Extremadura, its meadows give us the richness of its sausages, its ham, the pork loin, the "chorizo" (sausage seasoned with red pepper). The Castilian Plateau dishes sober and delicious. We recommend you the veal from Avila, small casseroles of "Pisto Manchego" and "Migas de Pastor". Without forgetting our delicious Spanish omelet. In the warm Mediterranean Coast we combine from Levante the best paellas and rice, with all kinds of Catalonian sausages with its famous "Cava". the "xaguet fish", the anchovy "escalibada", the vegetable "cocas" and the "butifarra" (special Catalonian sausage). Not forgetting the desserts: "ensaimadas" from Mallorca, the "Catalonian custard".

We hope you enjoy our courses and the way we cook them. If they do not please you, remember that we have put all our love, pledge and effort to obtain the best taste of Spain.



Special mentions

Tomás Vázquez Moreno, friend and mentor. In memoriam

Tomás Vázquez Moreno met his death in Madrid on 28 February 2011, at the age of 73. Tomás was born in and received his university training at Oviedo, although he earned his PhD. in chemistry from the Complutense University of Madrid in 1975. In 1967 he began to work at the Eduardo Torroja Institute for Construction Science (IETcc), where he was later awarded a research professorship by the National Research Council.

Foremost among Tomás' contributions to the chemistry of cement were his findings on calcium aluminate cement (CAC), its hydration, the conversion of its hydrates, its stabilisation via thermal treatment or carbonation, and its alkaline hydrolysis-induced decay. As early as the nineteen seventies, he conducted scientific research that explained the behaviour of the material and solved many of the problems related to its use in unsuitable conditions. His work in the field stands as an example of the application of scientific knowledge to the solution of social problems.

Prof. Vazquez was a scientist with a rigorous, flexible and open mind, able to adopt new trends in science organisation and management. He championed multidisciplinary before the idea came into vogue and the word itself became a cliché; he was also an advocate of knowledge transfer from public research bodies to private enterprise and of turning technological research to value as a means of furthering a country's development. Driven by these ideas, but without ever interrupting his research activity, in the nineteen eighties he organised the National Research Council's first Technology Transfer Office and became involved in scientific policy as Private Research Project Manager of Spain's former Advisory Committee for Scientific and Technical Research (CAICIT).

Tomás was surrounded by a circle of young researchers whom he taught not only the scientific method, but also to work together with no expectation of any reward other than learning, and to help newcomers move comfortably forward to improve the team's position. His generosity in that respect, one of his trademarks, served as a constant stimulus for those who worked under him, for it enabled us to earn a position in the international scientific community with great ease.

In the nineteen nineties, Tomás Vazquez fathered the creation of a Research Department at the IETcc to address the durability and sustainability of traditional Portland cements as well as the development of so-called alkaline cements. That department, which in the interim has grown and diversified, is presently in possession of reputed research potential.

This may well be the ideal forum in which to acknowledge Tomás' outstanding work as editor-in-chief of *Materiales de Construcción* (1985-1995). Finally, Tomás will also be remembered for his staunch defence of Spanish as a language for the transfer of



scientific knowledge, a challenge that was a mainstay of both his relationship with the journal and his scientific career as a whole.

Tomás, who was involved in the organisation of the 13th ICCC from the outset, put all his energy and know-how into ensuring the prestige of this event with initiatives and ideas that we're benefiting from today, despite the anonymity of their author. Prof. Vazquez participated as an active member of the 13th ICCC local committee for as long as his energy allowed. Tomas Vazquez passed in February last and although he will not be present in the scientific debate in Madrid, his remembrance forms an indivisible part of the history of this congress.

To a friend and mentor, Pepe Calleja, in memoriam

Prof. José Calleja Carrete's departure on 5 August 2010 left a void that his friends, colleagues and disciples will find hard to fill. Pepe was a national and international mainstay of research in the chemistry of cement in Spain. He wrote excellent papers on the subject with scientific brilliance, intelligent humour and an artful and pithy pen that clearly reflected what he wanted to say.

He began his research career in what was the cradle of today's Eduardo Torroja Institute for Construction Science (IETcc, a Spanish National Research Council body). In 1948, one year after its creation by the Spanish National Research Council (CSIC), the Juan de la Cierva Trust awarded him a grant to conduct studies on cement at the Cement Institute, at 47 Velázquez Street in Madrid. That same year he interned at Cementos Rezola. In 1949 the Cement Institute merged with the Construction Engineering Institute, both headed by Eduardo Torroja, to form the Institute for Construction and Cement Engineering. Prof. José Calleja was still training in that year, at the Montcada (ASLAND) and Olazagutía (Cementos Portland) plants and the Army Engineering Laboratory.

In 1951 he designed a "Training course for cement quality control laboratory technicians", which was very highly esteemed by the cement industry throughout the second half of the twentieth century.

During his term at the Eduardo Torroja Institute, Pepe Calleja wrote three research reviews, six IETcc manuals, ten IETcc monographs and countless congress papers and articles for scientific journals.

Pepe Calleja was regarded to be one of the founding fathers of the chemistry of cement in Spain, in addition to pioneering national research on corrosion in concrete



reinforcement (IETcc Monograph No. 256, *Corrosión de armaduras en los hormigones armados y pretensados*). Another important landmark in his career was the early promotion and defence of additioned cements.

As scientific and technical advisor to the Instituto Español del Cemento y sus Aplicaciones (IECA), he devoted the last 25 years of his professional life to providing unconditional support for cement plant engineers and architects. He also found time to chair AEN/CTN-80 Subcommittee No. 3, "Definitions, terminology and specifications", from which he contributed immensely to the development and approval of the first harmonised standard in the area of European construction materials, EN 197-1:2000, Cement (Part 1).

After attending the Third International Symposium on the Chemistry of Cement held in London in 1952, he never missed a single edition of what was to become the International Congress on the Chemistry of Cement. And in fact, Pepe Calleja was the keynote speaker at the ICCC held in Paris, where he addressed the issue of the durability of cementitious materials.



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The Organizing Committee wishes to express its deepest appreciation and thanks to all sponsors and exhibits who have contributed to the success of the 13th International Congress on the Chemistry of Cement.

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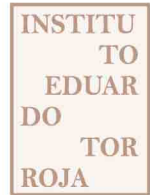
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