Program

Alkali Activated Materials and Geopolymers: Versatile Materials Offering High Performance and Low Emissions

May 27 - June 1, 2018
Hotel Dos Templarios, Tomar, Portugal

Conference Chairs

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University of Sheffield, United Kingdom

Waltraud M. Kriven
University of Illinois at Urbana-Champaign, USA

Cristina Leonelli
University of Modena and Reggio Emilia, Italy

Aldo Boccaccini
University of Erlangen-Nuremberg, Germany

Arie Van Riessen
Curtin University, Australia

Engineering Conferences International
32 Broadway, Suite 314 - New York, NY 10004, USA
Phone: 1 - 212 - 514 – 6760
www.engconfintl.org – info@engconfintl.org
Hotel Dos Templarios
Largo Candido do Reis, 1
Tomar, Portugal
T: +351-249-310-100; F: +351-249-322-191
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Geopolymers
May 24-29, 2015
Herrnstein, Austria
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The American Ceramic Society
Sunday, May 27, 2018

17:00 – 19:00  Conference Check-in

19:30 – 21:30  Reception and Dinner

**Room locations and notes**

- General Sessions will be in Infante II.
- Poster Sessions will be the Convento Room.
- Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.
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Monday, May 28, 2018

07:30 - 09:00 Breakfast Buffet

Invited Keynote

09:00 - 09:40 Looking back to guide us on how to move forward for geopolymers
Arie van Riessen, Curtin University, Australia

09:40 - 10:00 Investigation of the relationship between the condensed structure and the chemically bonded water content in the network of geopolymer cements
Herve Tchakoute Kouamo, University of Yaounde I, Cameroon

10:00 - 10:20 Real soils versus fake soils: Does something other than clay minerals influence geopolymerisation behavior in real soils?
Alastair Marsh, University of Bath, United Kingdom

10:20 - 10:50 Coffee Break

10:50 - 11:10 Hydration of clinker phases in alkaline conditions
María Jose Sánchez-Herrero, Eduardo Torroja Institute, CSIC, Spain

11:10 - 11:30 Molecular model of geopolymers with increasing level of disorder in the atomic structure
Francesca Lolli, Newcastle University, United Kingdom

11:30 - 11:50 Aluminosilicate network formation during geopolymerization followed by in-situ $^{27}$Al nutation NMR
Virginie Benavent, Laboratoire des Sciences et Ingénierie de la Matière Molle, France

11:50 - 12:10 Experimental study and numerical simulation of the dissolution of blast furnace slag in alkaline solution
Yibing Zuo, Delft University of Technology, Netherlands

12:10 - 12:30 Synthetic glass with high alkali-reactivity and near-zero RM-$\text{CO}_2$ emissions
Paivo Kinnunen, University of Oulu, Finland

12:30 - 14:00 Lunch

14:00 - 14:20 Understanding the relationship between micro and macro-scale properties in sodium silicate activated slag-fly ash binders
Waltraud M. Kriven, University of Illinois at Urbana-Champaign, USA

14:20 - 14:40 Retardation in alkali-activated materials via zinc oxide: Mechanism and implications
Nishant Garg, Princeton University, USA
Monday, May 28, 2018 (continued)

14:40 - 15:00  Rheological behavior of fresh inorganic polymer paste: Polymer bridging effect of the alkali silicate solution
Glenn Beersaerts, KU Leuven, Belgium

15:00 - 15:20  Amorphous, self-healed, geopolymers (ASH-G and ceramics (ASH-C) made by the geopolymer processing route
Patrick F Keane, University of Illinois at Urbana-Champaign, USA

15:20 - 15:50  Coffee Break

15:50 - 16:10  Effect of chemical structure on the efficiency of shrinkage reducing admixtures in alkali activated systems
Lukas Kalina, Brno University of Technology, Czech Republic

16:10 - 16:30  Influence of different types of superplasticizers on one-part alkali-activated slag mortars
Elena Crotti, Università Degli Studi di Bergamo, Italy

16:30 - 16:50  Development of geopolymer composites reinforced with fiber felts using an industrial approach
Alberto Conte, University of Padova, Italy

16:50 - 17:10  Drying shrinkage behavior of metakaolin-based and bamboo fiber reinforced geopolymers
Ruy A. Sá Ribeiro, INPA-National Institute for Amazonian Research, Brazil

17:30 - 19:00  Poster Session

19:30 - 20:30  Dinner
Tuesday, May 29, 2018

07:30 - 09:00 Breakfast Buffet

Invited Keynote

09:00 - 09:40 Environmentally friendly immobilization of radioactive wastes in an alkali activated cement matrix
Pavel Krivenko, Kyiv National University of Construction and Architecture, Ukraine

09:40 - 10:00 Acid geopolymer materials based on different aluminosilicate sources
Sylvie Rossignol, IRCER, France

10:00 - 10:20 Study of geopolymerization mechanisms by $^{27}$Al-NMR and calorimetry correlation
Julien Aupoil, CEA Marcoule, France

10:20 - 10:50 Coffee Break

10:50 - 11:10 Use of soda lime glass waste as silica supplier in fly ash based geopolymers
Nicoletta Toniolo, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

11:10 - 11:30 Performance of sodium carbonate/silicate activated slag materials
Susan A. Bernal, John Provis, The University of Sheffield, United Kingdom

11:30 - 11:50 Effect of recycled geopolymer concrete aggregate on strength development and consistence of Portland cement concretes
Napoleana-Anna Chaliasou, University of Bath, United Kingdom

11:50 - 12:10 Factors influencing setting time of alkali activated blast furnace slag
Henk Nugteren, Delft University of Technology, Netherlands

12:10 - 12:30 Autogenous shrinkage induced stress of alkali activated slag and fly ash concrete under restraint condition
Zhenming Li, Delft University of Technology, Netherlands

12:30 - 14:00 Lunch

14:00 - 14:20 Ultra-high performance alkali activated material with silica fume and nanosilica
Alexander Wetzel, University of Kassel, Germany

14:20 - 14:40 Effect of geopolymer composition and curing conditions on efflorescence in lightweight porous geopolymers
Sujeong Lee, KIGAM, South Korea

14:40 - 15:00 Understanding the autogenous shrinkage in alkali-activated slag/fly-ash blends
Siva Uppalapati, KU Leuven, Belgium
Tuesday, May 29, 2018 (continued)

15:00 - 15:20  Combining chemical and mechanical foaming in geopolymer foam concretes
Ailar Hajimohammadi, The University of Melbourne, Australia

15:20 - 15:50  Coffee Break

15:50 - 16:10  Steel corrosion in different alkali-activated mortars
Nina Gartner, Slovenian National Building and Civil Engineering Institute (ZAG), Slovenia

16:10 - 16:30  Steel reinforcement corrosion in alkali-activated fly ash mortars
Petr Hlaváček, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany

16:30 - 16:50  On the acid resistance of alkali-activated cements: What role does magnesium play?
Juan Pablo Gevaudan, University of Colorado at Boulder, USA

16:50 – 17:10  Structure, acid-resistance and high-temperature behavior of silica-based one-part geopolymers and geopolymer-zeolite composites
Gregor J. G. Gluth, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany

17:30 - 19:00  Poster Session

19:30 - 20:30  Dinner
**Wednesday, May 30, 2018**

07:30 - 09:00  Breakfast Buffet

09:00 - 09:20  **Assessing the long-term structural changes of metakaolin geopolymers encapsulating strontium loaded ion-exchanger**  
Xinyuan Ke, The University of Sheffield, United Kingdom

09:20 - 09:40  **Synthesis of geopolymer foams for decontamination of liquid nuclear waste**  
Svetlana Petlitskaia, CEA, France

09:40 - 10:00  **Retention of Re in metakaolin based geopolymer in the presence of an organic reductant – an experimental study**  
Ofra Klein-BenDavid, Nuclear Research Center Negev, Israel

10:00 - 10:20  **Stabilization of sulphidic mine tailings with MgO activated blast furnace slag**  
Minna Sarkkinen, KUAS, Finland

10:20 - 10:50  Coffee Break

10:50 - 11:10  **MK-GGBS foams: Relation between mechanical parameters and morphological parameters**  
Martin Cyr, LMDC - Université de Toulouse, France

11:10 - 11:30  **Evaluation of alkali-activated binders suitability for the stabilization/solidification of tunnel boring muds**  
Thomas Wattez, Université de Toulouse, France

11:30 - 11:50  **Geopolymers for hazardous cations and anions inertization**  
Cristina Leonelli, University of Modena and Reggio Emilia, Italy

11:50 - 12:10  **Cesium incorporation in metakaolin-based K-geopolymer**  
Yuka Morinaga, Hokkaido University, Japan

12:15 - 13:45  Lunch

14:00 - 17:00  Excursion: Guided tour of Convento de Cristo and historic Tomar  
(Please meet in hotel lobby.)

17:00  Dinner on your own in Tomar  
(ECI will provide a list of restaurants)
Thursday, May 31, 2018

07:30 - 09:00 Breakfast Buffet

09:00 - 09:20 **Hybrid concrete: Alternative future**
Cyril Attwell, ARC Innovations, South Africa

09:20 - 09:40 **Development of alkali activated adhesive applicable for alkali activated panels**
Vilma Ducman, Slovenian National Building and Civil Engineering Institute, Slovenia

09:40 - 10:00 **30 cubic meters batching, delivering, and pouring of activated fly ash concrete**
Nawamonwan Sirima, Electricity Authority of Thailand, Thailand

10:00 - 10:20 **Geosil – ready to use alkaline activator solutions for geopolymers**
Martin Leute, Wöllner Austria GmbH, Austria

10:20 - 10:50 Coffee Break

10:50 - 11:10 **PQ Curesil™ - Alkaline silicate activators for geopolymers**
Abraham Araya, PQ Corporation, United Kingdom

11:10 - 11:30 **Practical approaches for the development of alkali activated concrete - a durability- and sustainability-driven optimization**
Katja Dombrowski-Daube, Technische Universität Bergakademie Freiberg, Germany

11:30 - 12:30 **Panel Discussion – Pathways to uptake of alkali-activation: how, where and when?**

12:30 - 14:00 Lunch

14:00 - 14:20 **Low-temperature alkaline activation of feldspathic solid solutions: Development of high strength geopolymers**
Elie Kamseu, MIPROMALO, Italy

14:20 - 14:40 **Development of a new alkali-activated binder incorporating dredged sediments**
Reine Karam, IMT Lille Douai, University of Lille, France

14:40 - 15:00 **Sustainable alkali binders: Waste activating wastes**
Ana Fernández-Jiménez, IETcc-CSIC, Spain

15:00 - 15:20 **Alkali activation of fly ashes, Part I: Mechanical pre-processing for the improvement of the fly ash reactivity**
Olga Maltseva, IETcc-CSIC, Spain

15:20 - 15:50 Coffee Break
15:50 - 16:10  Alkali-activated mineral wools
Juho Yliniemi, University of Oulu, Finland

16:10 - 16:30  Silica source for formation of C-S-H in waste sediment-steel slag mixtures
Kanako Toda, Hokkaido University, Japan

16:30 - 16:50  Lightweight foamed geopolymer
Oday Hussein, The University of Sheffield, United Kingdom

16:50 - 17:10  Study on surface degradation of LCFA-GGBF geopolymers by partial water absorption and silane impregnation techniques
Kazuo Ichimiya, National Institute of Technology, Oita College, Japan

17:30 - 19:00  Poster Session

19:30 - 21:00  Gala Dinner
Friday, June 1, 2018

07:30 - 09:00        Breakfast Buffet

09:00 – 09:20        Geopolymer-bound intumescent coatings for fire protection
                      Gregor J. G. Gluth, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany

09:20 - 09:40        Achievement and exploitation of porous geopolymer-based spheres
                      Elettra Papa, ISTEC-CNR, Institute of Science and Technology for Ceramics, Italy

09:40 - 10:00        Multi-scale analysis on soil improved by alkali activated fly ashes
                      Enza Vitale, University of Cassino and Southern Lazio, Italy

10:00 - 10:20        Immense potential of geopolymeric nanomaterials for sustainability applications
                      Dong-Kyun Seo, Arizona State University, USA

10:20 - 10:50        Coffee Break

10:50 - 11:10        Geopolymers as inorganic binder in 3D printing application in construction
                      Vera Voney, ETH Zurich, Switzerland

11:10 - 11:30        Investigation of lightweight geopolymer mortars as fireproofing coatings
                      Lorenza Carabba, University of Bologna, Italy

11:30 - 11:50        Lightweight insulating geopolymer material based on expanded perlite
                      Annalisa Natali Murri, National Research Council of Italy, Institute of Science and Technology for Ceramics (CNR-ISTEC), Italy

12:30 - 14:00        Lunch and conference closure
Poster Presentations

1. Behavior of shrinkage reducing admixtures based on polyether structure in various alkaline solutions
   Eva Bartonickova, Brno University of Technology, Czech Republic

2. New insights into the role of hydroxide ions and silicate species during geopolymerization
   Jean-Baptiste Champenois, CEA, France

3. Synthesis of geopolymer emulsions
   Arnaud Poulesquen, CEA Marcoule, France

4. Geopolymer-based bricks may be the next generation of bricks: A case study of MINEALITHE as an alkaline activator
   Nicolas Youssef, Centrale Lille, Université Libanaise, France

5. Geopolymers including CDW for application as a building material
   Matteo Panizza, CNR ICMATE, Italy

6. Geopolymers based on natural zeolite and metazeolite
   Henk W. Nugteren, Delft University of Technology, Netherlands

7. Alkali activation of MSWI bottom ash: Effects of the SiO\textsubscript{2}/Na\textsubscript{2}O ratio
   Boyu Chen, Delft University of Technology, Netherlands

8. PVA fiber/matrix interface characterization in alkali-activated slag/fly ash system: Effect of SiO\textsubscript{2}/Na\textsubscript{2}O ratio
   Shizhe Zhang, Delft University of Technology, Netherlands

9. Mechanical properties and creep behaviour of an alkali-activated concrete
   Albina Kostiuchenko, Delft University of Technology, Netherlands

10. Metakaolinite based geopolymers as soil stabilizers
    Dotan Gabber, Nuclear Research Center Negev, Israel

11. Investigation on microstructure and mechanical properties of FA/GGBS -based geopolymer after exposure at elevated temperature
    Apriany Saludung, Hiroshima University, Japan

12. Effect of microstructure on physical properties of blast furnace slag - fly ash based alkali activated materials
    Kenta Sasaki, Hokkaido University, Japan

13. Alkali activation of fly ashes part II: Mechanochemical pre-processing as way to optimize the reactivity
    Angel Palomo, IETcc-CSIC, Spain

14. Strength and elastic behavior of metakaolin-based and bamboo fiber reinforced geopolymers
    Ruy A. Sá Ribeiro, INPA-National Institute for Amazonian Research, Brazil

15. Geopolymer-zeolite composites for CO\textsubscript{2} adsorption
    Elettra Papa, ISTEC-CNR, Institute of Science and Technology for Ceramics, Italy
16. Geopolymer oxygen carriers for chemical-looping combustion  
     Annalisa Natali Murri, ISTEC-CNR, Institute of Science and Technology for Ceramics, Italy

17. Mixture optimization of an alkali-activated steel slag to maximize binder strength using optimal design of experiments  
     Pavel Leonardo Lopez Gonzalez, KU Leuven, Belgium

18. Impact of sodium aluminate on the hydration process of alkali-activated ground granulated blast furnace slag  
     Artur Kiiashko, LMT-Cachan, CNRS/Paris-Saclay University, France

19. Reinventing the structural fired clayey bricks through the geopolymerisation of laterites  
     Elie Kamseu, Local Materials Promotion Authority, Cameroon

20. Different fiber materials as reinforcement for geopolymer composite  
     Meital Cahana, NRCN, BGU, Israel

21. Effect of sulfides in the passive layer of steel reinforcement in alkali-activated slags  
     Susan A. Bernal, John Provis, The University of Sheffield, United Kingdom

22. Performance evaluation of metakaolin clay geopolymers synthesised with bamboo wood ash as an activator  
     Mary B. Ogundiran, University of Ibadan, Nigeria

23. Analcime geopolymers as sorbents in water treatment  
     Hanna Runtti, University of Oulu, Finland

24. Adsorption of copper and zinc with alkali-activated blast furnace slag from mine water  
     Johanna Kutuniva, University of Oulu, Finland

25. Zeolite-based ceramic components through hydrothermal dry synthesis  
     Alberto Conte, University of Padova, Italy

26. 3D printed geopolymeric lattices: Effect of different filler materials on mechanical properties  
     Paolo Scanferla, University of Padova, Italy

27. Electrochemical characterisation of cement hydration and properties by alternating current impedance spectroscopy  
     Aldo Fernando Sosa Gallardo, John Provis, University of Sheffield, United Kingdom

28. Effect of calcination method and clay purity on the performance of metakaolin-based geopolymers  
     Daniel Geddes, University of Sheffield, United Kingdom

29. Mechanical performance of alkali activated mixtures based on electric arc furnace slag  
     Nuno Cristelo, University of Trás-os-Montes e Alto Douro, Portugal

30. Potential of IGCC slag as an alkali activated material  
     Byoungkwan Kim, UST, South Korea

31. Benefits of adding calcium hydroxide to metakaolin-based geopolymers on fast setting and strength enhancement  
     Byoungkwan Kim, UST, South Korea
32. **Geopolymer ultrahigh performance concrete: Material and performance**  
Weiliang Gong, Catholic University of America, USA

33. **Geopolymer waste forms for radioactive wastes**  
Weiliang Gong, Catholic University of America, USA

34. **Freezing and thawing resistance of slag alkali activated concrete with different activators**  
Vlastimil Bilek, ZPSV a.s., VSB TU Ostrava, Czech Republic

35. **Geopolymer matrix for the inertization of gold mine tailings**  
Isabella Lancellotti, University of Modena and Reggio Emilia, Italy

36. **Geopolymer materials based on different aluminosilicate sources**  
Sylvie Rossignol, CEC IRCER, France

37. **Durability of lightweight geopolymers for passive fire protection: steel corrosion behavior in chloride-rich environment**  
Giulia Masi, University of Bologna, Italy

38. **Amorphous, Self-Healed (ASH-G) geopolymer and (ASH-C) ceramic composites**  
Patrick Keane, University of Illinois at Urbana-Champaign, USA

39. **The use of waste bricks and tiles as a precursor for alkali activated binders**  
Mark Whittaker, Queen's University Belfast, United Kingdom

40. **Mechanical and fracture performance of cellulose fibers based geopolymeric composite incorporating wastes**  
Gianmarco Taveri, Institute of Physics of Materials (IPM), Czech Republic