Welcome

by Mark Tyrer, Chairman of Cementitious Materials Group

Cementitious Materials Group

The cementitious materials group seeks to provide support and educational activities for those who have an interest in the science and technology of traditional and specialist cements and concrete. Our intention is to provide a link between industry and academia and to provide a forum on which the two communities meet. To this end, we host an annual conference the “Cement and Concrete Science Conference” and the next meeting will be in Portsmouth in September (see Events Diary, on page 7). In addition, we organise other events, often in co-operation with other organisations and are always pleased to receive suggestions for future activities. This year we are pleased to co-promote the annual “Young Researchers’ Forum”, organised this year by our colleagues at the Institute of Concrete Technology and hosted in London by University College London (UCL).

Please let us know what sort of events you would like to see organised by the group.

Mark Tyrer

The Institute of Materials, Minerals and Mining

The Institute of Materials, Minerals and Mining (IOM3) is a major UK engineering institution whose activities encompass the whole materials cycle, from exploration and extraction, through characterisation, processing, forming, finishing and application, to product recycling and reuse. It exists to promote and develop all aspects of materials science and engineering, geology, mining and associated technologies, mineral and petroleum engineering and extraction metallurgy, as a leading authority in the worldwide materials and mining community.

● Membership

IOM3 has a membership of over 18,000, and represents a combination of scientific, technical and human resources which links industry, government, education, research and the academic world.

● Member benefits

Members benefit from reduced rates for the Institute’s many books, journals and conferences and from access to the Institute’s Information Services.

● Educational activities

The Institute provides a range of activities and initiatives to benefit the materials and minerals community. The Institute’s educational activities aim to promote the materials discipline to younger generations by allowing access, through the Schools Affiliate Scheme, to a range of educational resources and materials.

● Information services

The Materials Information Service is a division of the Institute which has been giving advice to industry on the selection and use of materials since 1988. This is now part of the Institute’s Information Services which include technical enquiry and library services for the materials, minerals and mining sectors, an information help desk, regionally based advisors and related services.
Aims and objectives of the group

The mission of the group is: "To provide support and educational activities for those who have an interest in the science and technology of traditional and specialist cements and concretes". The committee that runs the group draws its membership from UK industry and academia. It organises the annual 'Cement and Concrete Science Conference'.

Honorary Editorial Board

- **Prof. Mark Tyrer**
  Mark Tyrer is an independent scientist, specialising in geomaterials, especially low temperature interactions between groundwater, rock, cement and wastes, as they relate to environmental protection and resource efficiency. With interests in mineral processing technologies (refining and synthesis in molten oxides and salts, pulsed ultrasonics and electrokinetic processing of solids) and in computational thermodynamics, he works with MIRO as project manager is a visiting professor at Coventry and Hon. Senior Research Fellow at Imperial.

- **Dr. Leon Black**
  Dr. Leon Black is senior lecturer in Civil Engineering Materials in University of Leeds. He is a surface analytical and materials' chemist, with emphasis on inorganic analysis. His research interests include characterisation of building materials, particularly cement and concrete, and their degradation mechanisms, e.g. carbonation and sulphation reactions.

- **Dr. Yun Bai**
  Dr. Yun Bai is a Senior Lecturer in materials in the Department of Civil, Environmental & Geomatic Engineering in UCL. He is currently leading the Advanced and Innovative Materials (AIM) Group in UCL. His current research interests include novel cementitious materials, durability of concrete structures, nuclear waste immobilisation using cement systems.

Student Editorial Board

- **Shi Shi**
  Shi Shi is a PhD student in the Department of Civil, Environmental and Geomatic Engineering, at University College London. She is now a member of Advanced & Innovative Materials (AIM) Group led by Dr Yun Bai in UCL. Her PhD research is on the Development of Microwave Heating Techniques for Manufacturing Alkali Activated Fly Ash (AAFA) Cementitious Materials, in which a microwave technique is applied to accelerate the reaction process of AAFA in order to obtain this greener cement with better performance, lower energy consumption and less greenhouse gas emission.

- **Jonathon Backus**
  Having graduated from Queen’s with a BEng in Civil Engineering, before continuing onto a Master’s in Durability of Structures, Jonathon is currently in the final year of his PhD in "Monitoring the interaction of combined mechanisms in the deterioration of concrete" studying the effects of combined chloride and carbonation, and chloride and sulfate.

- **Yanfei Yue**
  Yanfei Yue is currently doing her PhD studies in the Department of Civil, Environmental and Geomatic Engineering in UCL, under supervision of Dr. Yun Bai. She is also a member of the Advanced & Innovative Materials (AIM) Group in UCL. Her PhD project is to develop a Raman spectroscopy based optical fibre monitoring system which can be used for on-site monitoring of concrete durability.

Lafarge completes industrial-scale trial of new clinker for low carbon cement

Lafarge has announced the completion of an industrial trial for Aether®, a new generation of clinker for lower carbon cements. The 10-day trial took place at the company’s Le Teil plant in France, involving around 100 people. During the trial, 10000t of Aether® clinker was produced, indicating that it is viable on an industrial scale.

The new clinker follows a research and development project carried out by Lafarge over several years, which was supported by the European Union as part of its LIFE+ programme, a financial instrument for environmental projects. The clinker has a new chemical composition that could reduce CO₂ emissions by 25 – 30%. This is due to the fact that there is less limestone in the raw mix, grinding is easier thus reducing energy consumption, and the burning process takes place at a lower temperature of approximately 1300 °C.

Aether® cements possess properties similar to those of ordinary Portland cement and can also be produced in traditional cement plants following small process adjustments. The first products from this new range are due to be launched in 2014.

The project is in line with Lafarge’s ‘Sustainability Ambitions 2020’, which include cutting emissions by 33%/t of cement.


World cement 16/01/2013

**New property-enhancing cement additive discovered by Spanish research team**

A research team made up of six lecturers from the Department of Chemistry and Soil Science at the University of Navarra, Spain, has detected a biodegradable additive that enhances the properties of cement. The discovery has given rise to a patent, registered with the World Intellectual Property Organisation under the title, ‘Use of carboxymethyl chitosans as additives in conglomerate compositions’.

One of the participants in the research, lecturer José Álvarez, explained that, “In systems with cement (mortars and concretes), the additive increases the viscosity of the mixture and accelerates its setting. What it does is to avoid the segregation of the components of mortars and concretes and facilitate their application in reducing the hardening time.”

As he also points out, “some of these additives have shown good efficacy simultaneously in the retention of toxic metals, such as lead, zinc and chromium.”

In environmental terms, “The additive turns out to be a more favorable alternative to cellulose derivatives, and is useful for blocking heavy metals and their toxic effects,” said Álvarez.

*World cement 21/01/2013*


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**Co-processing in cement kilns is viable option for recycling glass fibre composites**

The European Composites Industry Association (EuCIA) has encouraged the recycling of composites through co-processing in cement kilns in its document ‘Composites Recycling Made Easy’. The document describes how three recycling technologies for glass fibre reinforced thermosets have been studied – i.e. material recycling, chemical recycling and co-processing – and co-processing in cement kilns was found to be the best option. It is cost-effective, generates valuable materials and improves the cement industry’s environmental footprint.

**16% reduction in CO₂ possible**

Already, co-processing is becoming increasingly popular across Europe. The glass fibre thermoset composite parts are cut up and processed into small chunks, called ‘composite regrind’. This regrind then acts as both a raw material and a fuel in the kiln, replacing valuable mineral resources and energy. The document cites Holcim’s study into the CO₂-reduction value of the process, which estimates that if 25% composite regrind was used, a 5.3% reduction in the plant’s carbon footprint could be achieved. At 75% composite regrind use, that figure reaches 16%.

**Compliant with EU legislation**

The EuCIA document states: ‘Recycling through co-processing in cement kilns is fully compliant with the European Waste Framework Directive (WFD) 2008/98/EC providing viable waste management route for the composites industry. Co-processing is both recycling and energy recovery.’

One example of the kind of composite that could be recycled in this manner is wind turbine blades, which are shown in the EuCIA document being sawed and ground into composite regrind.

*World cement 11/02/2013*


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**Beijing Government suggests banning new cement plants**

Following reports of particularly high pollution levels in China this month, when several regions experienced dense smog and low visibility, the Beijing Government has announced draft legislation aimed at tackling the problem. According to Bloomberg, the draft was put up on the Government’s website recently and sought public comment. It suggests banning the construction of new steel and cement plants, as well as shutting down sites when pollution reaches a certain level. Industrial facilities and power plants would need to provide information about their emissions and could face fines for not adhering to the new rules. The draft regulations also suggest limiting the use of vehicles when there are high levels of smog and fining drivers whose vehicles exceed emissions limits.

*World cement 21/01/2013*

UK Energy Bill – What does it mean for cement?

As the government reveals its ‘Energy Bill’, it has made clear that energy intensive industries such as the cement sector may well be exempt from the ‘contracts for difference’, subject to state-aid approval that energy providers themselves will face.

There has been no comment yet on just which sectors will be exempt, but the initial outlook at least, is positive; the government has acknowledged the important role that the cement industry has to play in the creation of the UK’s ‘low-carbon economy’. Such exemptions would be put in place to ensure that the UK’s industrial markets remain globally competitive. These measures, if not implemented, could well see energy intensive businesses relocating overseas once current licences expire.

At its core, the Energy Bill aims to remove the current dependency on fossil fuels for energy production, and integrate a greater array of alternative energy sources, such as wind, nuclear and biomass. In order to meet emissions targets, the government hopes that enabling energy companies to charge more for its operations, whilst continuing with emissions reduction schemes that are already in place, such as fuel substitution for kiln firing.

In short, a greener cement industry is achievable without resorting to the kind of penalisation that could see the UK’s cement producers moving on to greener pastures. Time will tell.

World cement 30/11/2012


UK Cement Industry Sets the Pace by Becoming the First to Publish a National Greenhouse Gas Reduction Strategy to 2050

The Mineral Products Association (MPA), representing UK cement producers, today became the first national cement industry body to publish its greenhouse gas (GHG) reduction plans to 2050. Outlining an ambitious target of -62% GHG emissions by 2050 (against 1990, the Kyoto Protocol baseline year), the UK cement industry has set out for what is likely to be a global vision, but we want to participate fully in this effort and have shown what can be achieved with a combined effort from industry and others.

“We have recently heard calls from the European and UK Parliaments for industrial sectors to come forward with their GHG reduction plans out to 2050” said Dr Pal Chana, Executive Director of MPA. “I am delighted to say that the UK cement industry was well ahead of these initiatives and has been working on its own plans. The document we are publishing today shows that by building on the considerable efforts we have already made and by capitalising on breakthrough technology in carbon capture and storage as and when it becomes available and economically viable, we believe we can deliver significant GHG reductions. Ours is a small contribution towards what has to be a global vision, but we want to participate fully in this effort and have shown what can be achieved with a combined effort from industry and others.”

The UK’s GHG reduction plans will be met through a series of measures:

- greater use of waste derived fuels instead of virgin fossil fuels;
- biomass fuels that are carbon neutral;
- lower carbon cements that contain less ‘embodied’ CO2;
- reducing levels of cement clinker in finished cements with lower carbon substitutes;
- the decarbonisation of the electricity sector;
- reduced transport emissions;
- plant efficiency; and crucially-
- deployment of carbon capture and storage when it is technically and economically available.

Some of these carbon reducing measures are already within the capability of the UK cement companies, but others like the decarbonisation of the electricity sector and carbon capture and storage are not in the industry’s control and we have to rely on others, including the Government, to play their roles. —Without effort on those elements that are out of our control, we still anticipate being able to reduce our GHG footprint by 62% against a 1990 baseline if the market and investment conditions allow, added Pal Chana.

—These are ambitious but achievable targets. The industry will look to use every means possible, within strict environmental controls and technical standards requirements, to meet their goals, said Dr Chana.

A copy of the MPA’s UK cement industry 2050 GHG reduction strategy can be accessed here.

http://www.mineralproducts.org/13-release03.htm
Engineering & Maintenance Manager - Daniels Smalley Partnership

Managing all aspects of the Engineering department, you will ensure that the existing preventative maintenance system is maintained & enhanced whilst planning work priorities and providing high level technical support. You will also lead the organisation in improving processes for the provision of breakdown maintenance on all process plant equipment/services to ensure safe operation and continued availability.

You will also develop design concepts for production facilities and will manage the design/ manufacture process for new plant, including budgets and cost controls, sub-contractors and project management for Capex, as well as overseeing modifications to existing plant, equipment and production facilities.

Recruiter: Daniels Smalley Partnership
Contact name: David Smalley
Contact email: david@danielssmalley.co.uk
Website: www.danielssmalley.co.uk

Material Analyst - Element Six (two vacancies)

We are looking for a Material Analyst with extensive experience in microstructural and chemical analysis as well as an understanding of mechanical testing. The ideal candidate has relevant industrial experience in physics, chemistry, or materials engineering and a thorough knowledge of analysis methods relevant to ceramic materials. This includes characterization methods for raw material powder, polymer additive decomposition, sintering behaviour, microstructure, and mechanical properties, including fracture toughness measurement.

We particularly value SEM experience and knowledge in TEM and surface analysis methods such as XPS is also beneficial. In this role, you will be expected to actively drive the company's analytical capabilities forward by improving our in-house competencies, as well as building an external network of partners and service providers in industry and academia. As a key resource for materials development, it is essential that you have the ability to efficiently plan and execute work packages for several projects and to communicate and explain findings in a clear and concise manner.

For more information on Element Six and full descriptions on each of these roles please visit our Careers Page on: www.e6.com

How to apply for this post:
If you feel you have the abilities and drive to fulfil one of these positions, please send your CV, covering letter stating your current salary and proof of your eligibility to work in the UK for the attention of Marva Harper-Smith, HR Business Partner – Innovation, email: gbgic.recruitment@e6.com

Recruiter: Element Six
Contact name: Marva Harper-Smith, HR Business Partner – Innovation
Contact email: gbgic.recruitment@e6.com
Website: www.e6.com

Engineering Manager x 3 - Ibstock Brick Ltd

We are looking for experienced Engineering Managers to lead, motivate and develop a team of experienced fitters and engineers at our brick manufacturing facilities. The maintenance teams are vital to ensure that the plant and machinery are maintained to run at optimum efficiency, whilst continually looking for opportunities to improve and develop our manufacturing facilities. Candidates must have a recognised Engineering qualification, a proven track record in a similar role and sound knowledge of the brick making process. You must also have experience with computer controlled automated control systems, planned preventative maintenance systems and be a highly competent IT user who is able to analyse and interpret machine related data to identify problems. We utilise a variety of lean manufacturing tools including machine failure analysis, mistake proofing and downtime analysis.

Recruiter: Ibstock Brick Ltd
Contact name: R Deegan
Contact email: r.deegan@ibstock.co.uk
Website: http://www.ibstock.com/vacancies.asp
Brmca Technical Officer, MPA

The Mineral Products Association (MPA) is the Trade Association for the aggregate, asphalt, cement, concrete, lime, mortar and silica sand industries. It represents 445 members in the UK who supply over £9 billion worth of materials which underpin the UK’s £120 billion construction sector. For more information visit: www.mineralproducts.org

The Job

The role is to:

- Provide technical and market support for the British Ready-Mixed Concrete Association, (BRMCA), the Ready-Mixed Concrete Product Group within MPA,
- Represent BRMCA members on key UK and European standards committees,
- Provide technical support to members,
- Assist in the promotion of ready mixed concrete, screed and mortar as sustainable construction materials of choice, via published articles and presentations to the wider construction audience,
- Support other MPA Product Groups as required.

The Person

The appointed individual should have a technical background in the construction or ready-mixed concrete industry, with a degree in science or engineering. Experience of the ready-mixed concrete industry is desirable. Previous experience of Standards committee work in the UK and Europe is desirable together with sound technical knowledge, communication and interpersonal skills.

Recent graduates or post graduates are welcome to apply as appropriate training can be provided.

The Working Arrangements

Our preference is for the role to be located at our London Victoria office but flexible working arrangements may be possible. The work requires travel throughout the UK and Europe.

Applications

Please apply in writing with a CV to Dr Pal Chana, Executive Director, Mineral Products Association.
Gillingham House, 38-44 Gillingham Street, London SW1V 1HU or e mail to pal.chana@mineralproducts.org. Deadline: 15 April 2013

We regret we cannot accept applications from people who do not already have the right to live and work in the UK. No agencies please.

Got something that you’d like to share? Know of any vacancies that you’d like advertised?

We’d welcome any contributions to the newsletter and encourage readers to send in letters for consideration for the newsletter. Send them into cmg.iom3.newsletter@gmail.com
International Conference on Calcium Aluminates  
May 18-21, 2014,  
Avignon  
http://cancements.com/  

The International Conference on Concrete Sustainability (ICCS13)  
May 27–29, 2013 Tokyo, Japan  
www.jci-iccs13.jp/  

3rd Annual International Conference on Civil Engineering  
June 10-13, 2013  
Athens, Greece  
http://www.atiner.gr/2013/CALL-CIV.htm  

Minerals for life conference  
June 17-19, 2013  
Edinburgh, UK  
http://www.minersoc.org/minerals-for-life.html  

Sustainable Construction Materials and Technologies (SCMT)  
August 18-22, 2013  
Kyoto, Japan  
http://www.scmt.org.uk/  

International Porous and Powder Materials Symposium and Exhibition (PPM 2013) September 3-6, 2013 Cesme Izmir, TURKEY  
http://www.ppm2013.org/  

Water Transport in Cementitious Materials  
November 3-6, 2013  
Guildford, Surrey, United Kingdom  
http://www.nanocem.org/index.php?id=396  

33rd Cement and Concrete Science Conference 2013  
Monday 2nd and Tuesday 3rd September  
University of Portsmouth  
http://www.port.ac.uk/departments/academic/scses/ccs2013/  

The conference will provide an opportunity for academic researchers, students and industrialists to meet and discuss their research on topics in: Cement hydration and microstructure, Alternative binders, Concrete durability, Waste re-use and encapsulation using cements and Sustainability issues.  
The deadline for submission of abstracts was 15th March 2013, but posters may still be accepted. For further information please visit the website.  

UK-Japan Workshop on Composites  
25 Mar 2013, Bristol, UK  
Cosponsored by the Institute Materials, Minerals and Mining  
Sponsored by EPSRC Building Global Engagement in Research (BGER) award and supported by the British Composites Society, ACCIS will be hosting a UK-Japan International Composites Research Workshop at 10am on 25 March 2013, which is open to all to attend.  
Leading experts from top Japanese universities along with Imperial College, the Universities of Nottingham and Bristol will be giving lectures centred on key research strengths such as Self-Healing, Morphing, Multi-Scale Modelling, High Performance Composites, Manufacturing Process Monitoring.  
Organiser details: University of Bristol  
Contact Name: Michael Wisnom  

Young Researchers’ Forum 2013  
organised this year by our colleagues at the Institute of Concrete Technology and hosted in London by UCL.  
Coming soon……
Dr Stephanie Barnett

- **Current position and place of work**
  Senior lecturer at the School of Civil Engineering & Surveying at the University of Portsmouth in England, Committee member of the Cementitious Materials group, Institute of Materials, Minerals and Mining

- **Main field of interest**
  High performance concrete, fibre reinforced concrete, low carbon concrete, cement chemistry and materials characterization

- **Self-introduction**
  Dr Stephanie Barnett is a Senior Lecturer in civil engineering materials in the School of Civil Engineering and Surveying at the University of Portsmouth. She is an experienced researcher with expertise in concrete technology and cement chemistry. She previously worked as a research associate and research fellow at the Universities of Aberdeen and Liverpool. Her recent research has been focussed on ultra high performance fibre reinforced concrete, in particular in relation to its blast and impact resistance as well the effect of fresh concrete flow on fibre distribution and orientation in UHPFRC and the subsequent effect on mechanical properties of the material. She also has research interests in alternative binders and in durability issues.

  Contact: Stephanie.barnett@port.ac.uk

Mr. Jun Ren

Mr Jun Ren, PhD student supervised by Dr Yun Bai (Advanced & Innovative Materials (AIM) Group, Department of Civil, Environmental and Geomatic Engineering, University College London), has received the Sir Joseph Bazalgette Award for the Best Paper presented at the 2012 SCI Construction Materials Young Researchers’ Forum last week. Currently, he is working on the PhD project of “Development of New Generation of Superplasticiser in Alkali-activated Slags”. The aim of this project to develop novel superplasticisers to improve the workability of alkali-activated slag (AAS), providing a potential industrial application of AAS. Mr Ren has his first degree as BEng in Chemical Engineering and BA in Project Management from Tianjin University in China. He also holds a MSc with distinction in Polymer Technology from Loughborough University, UK.

Contact: jun.ren.11@ucl.ac.uk
Monthly websites

More information on the Cement and Concrete Group, with a comprehensive links page, can be found at:
http://www.iom3.org/CMC

Engineering Council
http://www.engc.org.uk/

Venue Hire

The Institute offers a range of venue hire options at both its headquarters in London's West End and its new state-of-the-art centre in Grantham.

The Boilerhouse has been transformed by IOM3 with the use of cutting-edge materials into one of the most striking buildings outside London. Located 5 minutes from the A1, the venue features unique spaces, offering different facilities for a wide range of uses including meetings, workshops, conferences and exhibitions.

See the Boilerhouse website for full details of rooms, rates and capacities.

1 Carlton House Terrace offers a range of rooms suitable for board meetings for a dozen people, right up to dinners, conferences and receptions accommodating up to 120. 

Full room layouts, capacities and rates.

Disclaimer

This newsletter is a compilation of items sent by subscribers or obtained from reliable sources. It is assumed that the information sources are accurate, and neither Editorial Board nor the IOM3 bear responsibility for the accuracy of this newsletter.

We are all inventors, each sailing out on a voyage of discovery, guided each by a private chart, of which there is no duplicate. The world is all gates, all opportunities.

Ralph Waldo Emerson
The following is a selection of recent literature as selected by the editors, incorporated into the titles are hyperlinks to the papers. The editors take no responsibility for the content nor availability of the papers. We welcome contributions, especially of conference proceedings.

**Structures and buildings (ICE proceedings)**

Prediction of service life of concrete structures using corrosion rate model, pp. 95–108 165 (2)
R. Vedalakshmi
DOI: 10.1680/stbu.2012.165.2.95

Influence of self-compacting concrete on the lateral pressure on formwork, pp. 127–138 165 (3)
Michael J. McCarthy; Ravinda K. Dhir; Sinan Caliskan; M. Kashif Ashraf
DOI: 10.1680/stbu.2012.165.3.127

**Magazine of concrete research**

Effect of temperature on the thixotropic behaviour of self-consolidating concrete, pp. 52–62, 65 (1),
Yannick Vanhove; Benjamin Helnan-Moussa; Eric Wirquin
DOI: 10.1680/macr.12.00016

Particle shape analysis of fine aggregate using a simplified digital image processing method. pp. 27–36, 65 (1),
Luiz Roberto Prudêncio; Denis Fernandes Weidmann; Alexandre Lima de Oliveira; Gabriela Ferreira Damo,
DOI: 10.1680/macr.11.00199

Book review: Understanding the Rheology of Concrete, pp. 137–137, 65 (2)
Long-yuan Li
DOI: 10.1680/macr.12.00122,

High-temperature mechanical properties and microscopic analysis of hybrid-fibre-reinforced high-performance concrete, pp. 139–147, 65 (3),
Lan Yan; Yong Ming Xing; Ji Jun Li
DOI: 10.1680/macr.12.00034,

Effect of nanosilica and silica fume content on the bond properties of macro-synthetic fibre in cement-based composites, pp. 148–157, 65 (3),
Chang-Gi Park; Jeong-Woo Lee
DOI: 10.1680/macr.12.00036,

A three-phase model for predicting the effective chloride migration coefficient of ITZ in cement-based materials, pp. 193–201, 65 (3),
Chung-Chia Yang; Shih-Han Weng
DOI: 10.1680/macr.12.00052,
Interfacial interaction between comb-like copolymer dispersants and tricalcium silicate, pp. 202–208, 65 (3),
Yinhu Yu; Jiaping Liu; Qianping Ran; Min Qiao; Nanxiao Gao
DOI: 10.1680/macr.12.00058,

Drying shrinkage cracking characteristics of ultra-high-performance fibre reinforced concrete with expansive and shrinkage reducing agents, pp. 248–256, 65 (4),
Jung-Jun Park; Doo-Yeol Yoo; Sung-Wook Kim; Young-Soo Yoon
DOI: 10.1680/macr.12.00069,

The risk of alkali–silica reaction in concrete made with non-conforming cement, pp. 377–385, 65 (6),
Anthony Jones; Robert Cather
DOI:10.1680/macr.12.00120

Journal of materials in civil engineering (ASCE)

Synthesis, Characterization, and Application Properties of Aminosulfonate-Phenol-Salicylic Acid-Formaldehyde (AH) Polymer in Concrete
Hui Zhao and Min Deng

Stress-Strain Behavior and Statistical Continuous Damage Model of Cement Mortar under High Strain Rates
Jikai Zhou and Xudong Chen
J. Mater. Civ. Eng. 25(1), 120-130 (2013); http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000570

Properties and Applications of Cement-Treated Sand-Expanded Polystyrene Bead Lightweight Fill
Linchang Miao, Fei Wang, Jie Han, Weihua Lv, and Jing Li
J. Mater. Civ. Eng. 25(1), 86-93 (2013); http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000556

Fractional Characteristics of Coal Fly Ash for Beneficial Use
Zhenwei Zhu, Xiqing Wang, Sheng Dai, Baoshan Huang, and Qiang He
J. Mater. Civ. Eng. 25(1), 63-69 (2013); http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000550

Concrete Deterioration Mechanisms under Combined Sulfate Attack and Flexural Loading
Rundong Gao, Qingbin Li, and Shunbo Zhao

Prediction of Early Age Normal Concrete Compressive Strength Based on Dynamic Shear Modulus Measurements
Giri Venkiteela, Zhihui Sun, and Husam Najm
J. Mater. Civ. Eng. 25(1), 30-38 (2013); http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000528

Construction and building materials

Compressive strength of fly ash magnesium oxychloride cement containing granite wastes, Pages 1-7,
Ying Li, Hongfa Yu, Lina Zheng, Jing Wen, Chengyou Wu, Yongshan Tan

Characteristics of cement pastes containing sulphaaluminate and belite prepared from nano-materials, Pages 14-21,
H. El-Didamony, Mohamed Heikal, Kh.A. Khalil

Characterization of a mortar made with cement and slag vitrified from a MSWI ash-mix and CMP sludge, Pages 22-30,
Ping-Yu Shih, Po-Hua Lee, Kai-Jie Nian, Tzen-Chin Lee
The effects of pozzolanic binders and polypropylene fibers on durability of SCC to magnesium sulfate attack, Pages 64-71, Kiachehr Behfarnia, Omid Farshadfar

Influence of using slag cement on the microstructure and durability related properties of cement grouts for micropiles, Pages 84-93, J.M. Ortega, A. Albaladejo, J.L. Pastor, I. Sánchez, M.A. Climent

Mechanical, microstructure and rheological characteristics of high performance self-compacting cement pastes and concrete containing ground clay bricks, Pages 101-109, Mohamed Heikal, K.M. Zohdy, M. Abdelkreem


Corrosion behavior of reinforcement bars embedded in mortar specimens containing ladle furnace slag in partial substitution of aggregate and cement, Pages 188-194, M.I. Prieto, A. Cobo, A. Rodríguez, V. Calderón

Polymer-modified mortar with a gradient polymer distribution: Preparation, permeability, and mechanical behaviour, Pages 195-203, Xiang-Ming Kong, Chun-Chao Wu, Yan-Rong Zhang, Jiao-Li Li

Effects of adding brass byproduct on the basic properties of concrete, Pages 236-241, Radhi Al Zubaidi, Samer Barakat, Salah Altoubat

A study of the mechanical properties of ground ceramic powder concrete incorporating nano-SiO2 particles, Pages 255-264, Ali Heidari, Davoud Tavakoli

Rheological properties and chemical analysis of nanoclay and carbon microfiber modified asphalt with Fourier transform infrared spectroscopy, Pages 327-337, Hui Yao, Zhanping You, Liang Li, Shu Wei Goh, Chee Huei Lee, Yoke Khin Yap, Xianming Shi

Mechanical performance, durability, qualitative and quantitative analysis of microstructure of fly ash and Metakaolin mortar at elevated temperatures, Pages 338-347, Abid Nadeem, Shazim Ali Memon, Tommy Yiu Lo

Effect of different sand grading on strength properties of cement grout, Pages 348-355, Siong Kang Lim, Cher Siang Tan, Kah Pin Chen, Min Lee Lee, Wah Peng Lee

Petrography and mineralogy of Roman mortars from buildings of the ancient city of Jerash, Jordan, Pages 465-471, Ibrahim Ahmad Bany Yaseen, Hani Al-Amoush, Mohammad Al-Farajat, Abdulraouf Mayyas

Experimental study on rehabilitation of corrosion-damaged reinforced concrete beams with carbon fiber reinforced polymer, Pages 708-716, Jian-he Xie, Ruo-lin Hu

Qualitative and quantitative analysis and identification of flaws in the microstructure of fly ash and metakaolin blended high performance concrete after exposure to elevated temperatures, Pages 731-741, Abid Nadeem, Shazim Ali Memon, Tommy Yiu Lo
Optimization of fibre reinforcement for waste aggregate cement composite, Pages 790-795, Jacek Katzer, Jacek Domski

Effect of free lime content on properties of cement–fly ash mixtures, Pages 829-836, Krittiya Kaewmanee, Pitisan Krammart, Taweechai Sumranwanich, Pongsak Choktaweekarn, Somnuk Tangtermsirikul

**Materials and structures**

The effect of drying method on ordinary Portland cement surfaces during the early stages of hydration, J. M. Makar, T. Sato

Effects of particle size of treated CRT funnel glass on properties of cement mortar, Tung-Chai Ling, Chi-Sun Poon

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Special issue of Advances in Cement Research contains a selection of articles arising from the 31st Cement and Concrete Science Conference, held at Imperial College, London, in September 2011.

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The effect of prehydration on the engineering properties of CEM I Portland cement
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On a new hydraulic binder from stainless steel converter slag
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Behaviour of radionuclides in the presence of superplasticiser
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Aspects of replacing gypsum with other calcium salts in Portland cement
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