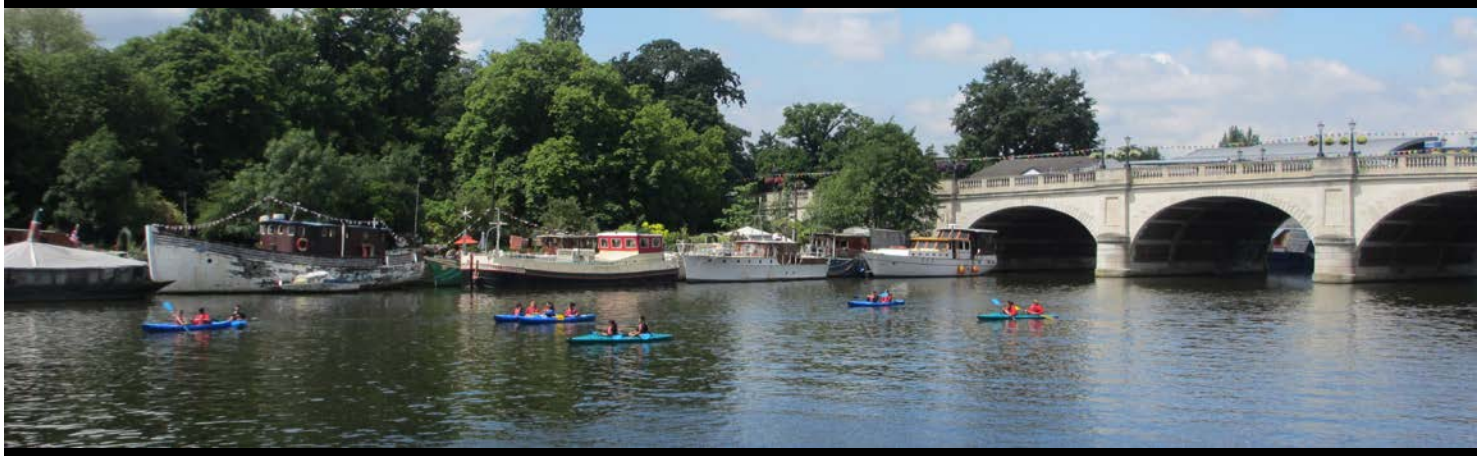
Kingston University London

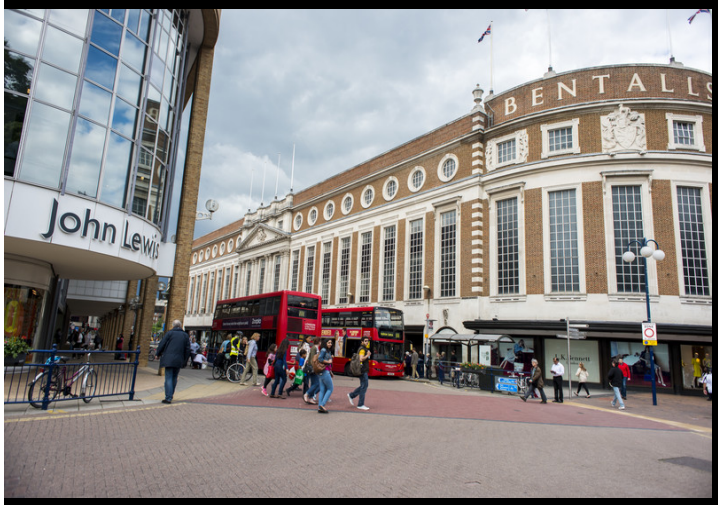
in partnership with Coventry University

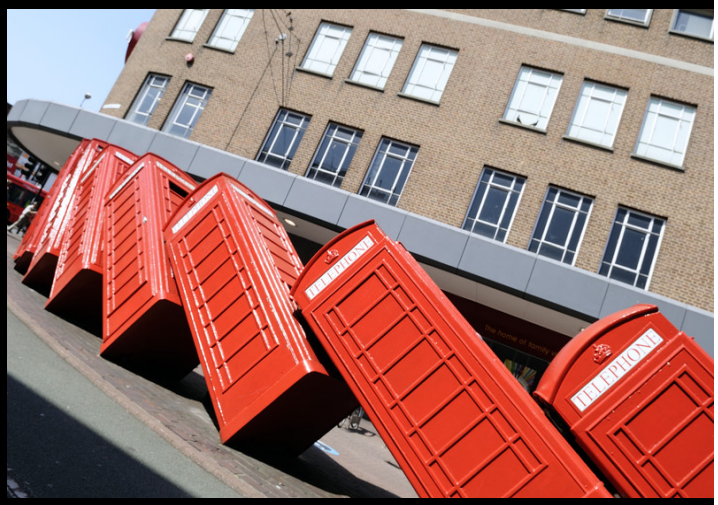
5th International Conference on Sustainable Construction Materials and Technologies (SCMT5)

Kingston University London, UK | 14 – 17 July 2019



CONFERENCE PROGRAMME





*subject to change **

PREFACE

Welcome to Kingston, London and SCMT5

On behalf of the SCMT5 committees and supporting institutions. It gives us great pleasure and is an honour to welcome you to Kingston University_London.

The SCMT5 scientific program features the latest research and development in different construction materials with emphasis on durability and testing, sustainability, and constituent materials. Over the next three days, nearly 200 papers, from 38 countries will be presented. These papers have been carefully selected and peer-reviewed to meet the strict standards of the SCMT conference series.

The conference honours Professors Christian Grosse (Germany), Tim Ibell (UK) and Chris Cheeseman (UK) for their many years of intellectual and professional contributions to the field of construction materials and technologies. Whilst Dr Antonin Fabbri will be representing RILEM 274- TCE: Testing and Characterisation of earth-based building materials and elements work in this field. These will give be keynote presentations in the plenary sessions and invited colleagues will give papers in six special sessions in their honour.

The awards committee for the conference has selected papers to be considered for publication in special editions of the ASCE journal of Materials in Civil Engineering and the ICE Construction Materials journal. The awarded papers will be announced in the conference banquet.

We express our sincerer thanks to the conference presenters, honourees, organisers of the honouree sessions, members of the international, scientific, award and local committees, and numerous reviewers for their contributions, support, advice and assistance.

Professor Eshmaiel Ganjian

Professor Peter Claisse

Professor Mukesh Limbachiya

SCMT5 Organising committee

COMMITTEES

International scientific and technical committee

Alan Maries	UK
Ali Akbar Ramezanianpour	Iran
Antonio Nanni	USA
Antonio Telesca	Italy
Bruce W. Ramme	USA
Charles Weiss	USA
Chris Cheesman	UK
Chun Qing Li	Australia
Gai-Fei Peng	China
Harald Justnes	Norway
Hiroshi Yokota	Japan
Jamal Khatib	UK
Jean-Claude Morel	UK
John Forth	UK
Julia Stegman	UK
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Konstantin Kovler	Israel
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Pietro Lura	Switzerland
Sunny Nwaubani,	South Africa
Syed Faiz Ahmad	Saudi Arabia
Theofanis Krevaikas	China
Tony Parry	UK
Muhammad K Rahman	Saudi Arabia
Kunal Kansara	UK
Tim Ibell	UK

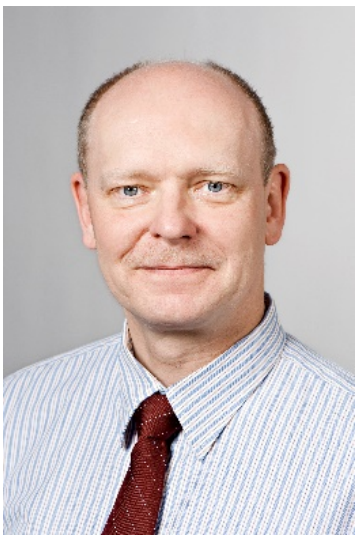
Organising committee

Eshmaiel Ganjian	UK
Mukesh Limbachiya	UK
Peter Claisse	UK

Award committee

Antonio Nanni	USA
Eshmaiel Ganjian	UK
Mukesh Limbachiya	UK
Nader Ghafoori	USA
Peter Claisse	UK
Syed Faiz Ahmad	Saudi Arabia
Tim Ibell	UK

HONOUREES



Professor Christian U. Grosse

Professor **Christian U. Grosse** studied Geophysics at the University of Karlsruhe and earned his Ph.D. in 1996 in Civil Engineering at the University of Stuttgart. This was followed by his Habilitation in 2005 and the "Venia Legendi" in Materials Testing at the same place. In 2005/2006 he spent a year as a visiting research scholar at the University of California in Berkeley, USA. He was University lecturer at the University of Stuttgart and finally Director at the Material Testing Institute MPA before he became Professor and Chair of Non-destructive Testing at the Technical University of Munich in 2010. This position is a joint appointment in two departments: Civil and Mechanical Engineering. He is member of the board of directors of the Center for Building Materials (cbm) and since 2015 part-time working for the company WTM Engineers GmbH in Munich where he is scientific director of the "Diagnostics" division.

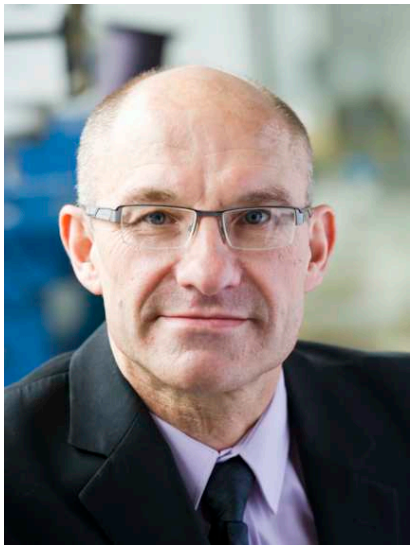
Prof. Grosse has published 47 monographs, books and book chapters, 85 papers in peer-reviewed scientific journals and conference proceedings, 256 papers in refereed conference proceedings, has 4 patents, and has written numerous research reports and other publications. He also is a member of many national and international technical committees and organizations specializing in NDT. His research interests include the application and development of non-destructive testing (ultrasound, acoustic emission, impact-echo, vibration analysis, radar, infrared thermography, computed-tomography) for both individual inspections and continuous long-term structural health monitoring. Applications in Civil Engineering includes mortar, steel-reinforced and pre-stressed concrete construction as well as quality control of fresh concrete. In the field of Mechanical Engineering he works with automotive and aeronautical companies as well as academic institutions on topics related to quality control of lightweight construction, in particular glass-, carbon-fiber reinforced polymers and hybrid materials as well as, more recently, on quality control of metal parts from additive manufacturing. Another research focus is on conventional and wind turbines, particular on the detection of deterioration and the determination of the residual service life. He works with engineering geologists and geophysicists on measurement techniques to reveal fracture mechanisms in stone, and with biomedical engineers (orthopedics) evaluating the fracture of bones. Another main topic is the application of non-destructive testing techniques in the field of archaeology, forensic archaeology (together with the State Bureau of Investigation and police departments) and the investigation of objects of our cultural heritage (with museums).

Professor Tim Ibell

Tim Ibell graduated with a BSc(Eng)(Civil) degree from the University of Cape Town in 1988, and then with a PhD in Structural Engineering from the University of Cambridge in 1992. He then spent two years in industry before completing postdoctoral research back at the University of Cambridge. He joined the Department of Architecture & Civil Engineering at the University of Bath in 1997. In 2002, Tim spent a year in the United States on a Fulbright Distinguished Scholar Award.

He was promoted to Professor in 2003 and held the role of Head of Department from 2005 to 2008, and again from 2010 to 2013. Tim was Associate Dean (Graduate Studies) in the Faculty of Engineering and Design from 2008 to 2013, followed by Associate Dean (Research) from 2013 to 2017. After a year at Cambridge as the Sir Kirby Laing Professor of Civil Engineering, he returned to Bath in 2018. He is presently Associate Dean (Learning and Teaching) for Engineering and Design. He will sit on the REF2021 sub-panel for Engineering, and he is Chair-Elect of the Joint Board of Moderators which accredits civil engineering degrees across the UK. Tim was President of the Institution of Structural Engineers in 2015, and he is a Fellow of the Royal Academy of Engineering.

Tim's research interests include the use of FRP to reinforce or strengthen concrete structures, the use of fabric to form innovative concrete structures, and the efficient use of structural materials in buildings. He and his team have received six best journal-paper awards, including three each from the Institution of Structural Engineers and Institution of Civil Engineers.



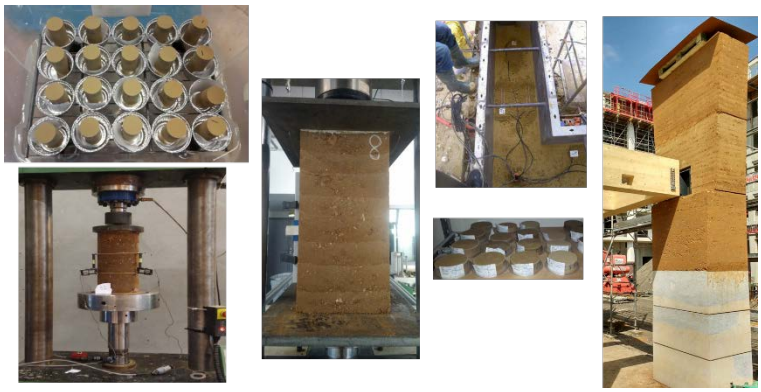
Professor Christopher Cheeseman

Christopher Cheeseman is Professor of Materials Resources Engineering in the Department of Civil and Environmental Engineering at Imperial College London. He is Head of the Materials Section and the Director of the newly formed Centre for Infrastructure Materials at Imperial. This has been funded by EPSRC and UKCRIC and provides a unique facility specifically dedicated to fundamental and applied research focussed on infrastructure materials.

Chris originally trained as a materials scientist, originally studying at Warwick University and then at the University of Oxford where his PhD research was on high temperature properties of ceramics. Following a period working in industry as the Technical Manager of a manufacturing company he joined Imperial in 1990 where he has remained to this day.

As a materials scientist, based in the Environmental Engineering Section of a leading Civil and Environmental Engineering Department Chris has had a unique opportunity to be involved in a wide range of materials related research associated with waste management, resource efficiency, industrial symbiosis, the circular economy, low carbon materials and increasingly in greenhouse gas removal technologies. He has been closely involved in the Environmental Engineering MSc course as Course Director and he is currently leading the development of a new MSc course on Advanced Materials for Sustainable Infrastructure. He has supervised over 120 MSc and PhD projects to completion and has published over 220 papers in international journals and conference proceedings.

Innovation has formed an important driver for much of his research and this has led to involvement in a number of spin-out companies including Novacem, who developed novel low-carbon MgO cements, Aeropowder, who are developing beneficial reuse applications for waste feathers, and Permea, a new spin-out developing non-clogging permeable pavements.



274-TCE: Testing and characterisation of earth-based building materials and elements

Chair: Professor Jean-Claude MOREL

Co-chair: Dr Antonin FABBRI

The activity started in 2016, ending in 2021

Earth-based building materials have the potential to reduce the carbon footprint of buildings but are currently only a niche market. The promotion of those techniques requires producing guidelines, that are currently not available, for engineers, architects and practitioners.

Actually, earth is a non-standard construction material. It is characterised by significant complexities in behaviour and large variabilities in intrinsic parameters because earth is basically a soil locally variable. Logically, experimentally obtained values of performance parameters from several earthen construction projects are usually quite scattered. That is why the ability of a soil to be used as a building material should be determined by its performances specific to the intended use and not restrained to its composition.

The aims of the 274-TCE are to define dedicated testing procedures for unstabilized earth in the form of rammed earth, cob, compressed earth blocks, etc. and to encourage the transfer of TC's findings to practitioners through the publication of guidelines and the organisation of the dedicated workshop.

The first objective is to define the minimal number of laboratory tests needed to provide an accurate assessment of the mechanical, thermal and hygroscopic performances of the material through existing and newly developed experimental tests. The second objective is to validate the accuracy of the tests by comparing laboratory and on-site data. The used earth samples will come from existing construction sites that will be properly instrumented.

CONFERENCE SCHEDULE *(subject to change)*

Sunday 14th July 2019

To be held at Kingston University's Penrhyn Road campus, KT1 2EE

18:00 - 21:00 ***Registration*** *Main reception, Penryhn Road campus*

18:00 - 21:00 ***Welcome Reception*** *The Picton Room Restaurant (onsite)*

Monday 15th July 2019

08:30 - 10:00 ***Registration*** *Rose Theatre, Kingston upon Thames, KT1 1HL*

10:00 - 11:40 ***Opening Plenary Session*** *Rose Theatre, Kingston upon Thames, KT1 1HL*

Chair: Professor M Limbachiya, Conference Chairman and Co-Organiser

Welcome and Opening Addresses

- ***Professor Peter Claisse***, *SCMT5 Conference Co-Organiser*
- ***Dr David Mackintosh***, *Pro-Vice Chancellor and Executive Dean, Faculty of Science, Engineering & Computing, Kingston University*

Keynote Addresses

- Monitoring of Inspection Techniques Supporting a Digital Twin Concept in Civil Engineering
  Professor Christian Grosse, Technical University of Munich, Germany
- Enough is Enough! Concrete waste is building design
  Professor Tim Ibell, University of Bath, UK

12:00 - 13:30 Lunch Reception The Guildhall, Kingston upon Thames, KT1 1EU

14:00 - 15:30 5 x Parallel Technical Sessions Kingston University Penrhyn Road campus

Session 1 **HONOUREE FOR PROFESSOR GROSSE** **CHAIR: RUDI KRAUS** **Room: JG0001**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5167	Material characterization via contact-free detection of surface waves using an optical microphone *Wolfgang Rohringer, Ryan Sommerhuber, Lukas Csaszar, Nils Panzer, Sebastian Wald, Balthasar Fischer, Harald Garrecht,Friedrich Grüner, Jürgen Frick*
IDSCMT5127	Insight into the application of computed tomography to building materials research *Christiane Hadlich, Andrea Osburg, Franziska Vogt*
IDSCMT5134	Reactivity of modified iron silicate slag as sustainable alternative binder *Pithchai Pandian Sivakumar, Elke Gruyaert, Nele De Belie, Stijn Matthys*
IDSCMT5155	Next Generation Building Diagnostics – Corrosion Detection *Ralf W. Arndt*
IDSCMT5182	Non-destructive Inspection and Monitoring of Fractures in Concrete with Self-Healing Properties *Fabian Malm, Fabian Diewald, Katja Pinkert*

Session 2	**CONCRETE STRUCTURE AND CONSTRUCTION**	**CHAIR: ESSIE GANJIAN**	**ROOM: JG0002**
PAPER ID	**PAPER TITLE & *AUTHORS***		
IDSCMT5170	Flexural characteristics of reinforced concrete beams containing lightweight aggregate in the tensile zone *Jamal Khatib, Ali jahami, Ossama Baalbaki*		
IDSCMT5002	Applicable Use of Lightweight Foam Concrete Composite Sandwich Panels as a Flooring System *Hisham Alabduljabbar, Rayed Alyousef, Y. H. Mugahed Amran*		
IDSCMT5046	Shear strengthening of thick concrete slabs accounting for loading during strengthening *Frédéric Bédard, Mathieu Fiset, Josée Bastien, Denis Mitchell*		
IDSCMT5003	Effects on Flexural Strength of Concrete Beams using Waste Polythene Bags as Partial Fine Aggregate Replacement *Richie. I. Umasabor*		
IDSCMT5145	UT Inspection Practice for Anchor Bolts to Assure Structure Reliability *Ali Abdullah Al-Shehry*		

Session 3	**CONCRETE DURABILITY AND TESTING**	**CHAIR: JUAN MARRIAGA**	**ROOM: JG0003**
PAPER ID	**PAPER TITLE & *AUTHORS***		
IDSCMT5023	Sulfate Resistance of Portland Cement Mortars: A Comparison of Nano and Micro Silica *Nader Ghafoori, Iani Batilov,P. E. and Meysam Najimi*		
IDSCMT5052	Improving the sulfate attack resistance of portland-limestone cement through sulfate optimization: a calorimetry-based approach *Md Manjur A Elahi and Christopher R. Shearer*		
IDSCMT5069	Sulfate Resistance of Sustainable Geopolymer Mortars *Yurdakul Aygörmez, Orhan Canpolat, Mukhallad M Al-Mashhadani, Mucteba Uysal, and Furkan Sahin*		
IDSCMT5110	Sulphate attack in slag-blended cementitious materials hydrated with sodium sulphate *Li Chuang, Tomohiro Kajio, Eiji Owaki, Yuka Morinaga, Yogarajah Elakeswaran, and Toyoharu Nawa*		

Session 4	**SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION**	**CHAIR: TIM IBELL**	**ROOM JG2008**
PAPER ID	**PAPER TITLE & *AUTHORS***		
IDSCMT5133	Sustainability of Construction Materials and Buildings: An overview *B. V. Venkatarama Reddy*		
IDSCMT5171	New set up for tensile test performed on thin bamboo *Silvia Greco, Luisa Molari*		
IDSCMT5039	A Sustainable Process for Mass Customization in the Wood working Industry *Stehling, Miguel Pereira and Ruschel, Regina Coeli*		
IDSCMT5176	Performance Evaluation of Industrial By-Products as Sustainable Practice against Exploitation of Virgin Materials *U. Johnson Alengaram*		

Session 5	**CONCRETE CONSTITUENTS / MATERIALS**	**CHAIR: MARK TYRER**	**ROOM: JG1008**
PAPER ID	**PAPER TITLE & AUTHORS**		
IDSCMT5185	Experimental Investigation on the Behaviour of Recycled Aggregate Concrete *Robert Kovacs, Rabee Shamass, Vireen Limbachiya, Mahmood Datoo*		
IDSCMT5012	The Use of Steel Fibers to enhance the Performance of Concrete made with Recycled Aggregate *Nancy Kachouh, Hilal El-Hassan, and Tamer El Maaddawy*		
IDSCMT5015	Recycling of Concrete Made with Brick Aggregate: An Extended Study		

	Tarek U. Mohammed, Kazi I. Hossain, Mohidul I. Anik, Imtiaz H. Miraz, Tanvir Ahmed, and Mohammed A. Awal
IDSCMT5078	Use of recycled concrete aggregates in structural concrete *Khan A. R, Fareed S. and Khan, M. S*
IDSCMT5141	Influence of plastic recycled aggregates in the hardened properties of concretes *E. Hernández a , M. Etxeberriab*

15:30 - 16:00 Mid-afternoon Tea/ Coffee — Penrhyn Road campus

16:00 - 17:30 5 x Parallel Technical Sessions — Penrhyn Road campus

Session 1 **HONOUREE FOR PROFESSOR TIM IBELL** **CHAIR: PETER CLAISSE** **ROOM JG0001**

PAPER ID	PAPER TITLE & AUTHORS
IDSCMT5166	A Practical Approach to Fabric-Formed Concrete *Kaloyana Kostova, Tim Ibell, Antony Darby, and Mark Evernden*
IDSCMT5140	Impact of sustainable building design on occupant experience: a human centered approach *Antony Darby, Sukumar Natarajan, David Coley, Dan Maskell, Ian Walker, James Brownjohn*
IDSCMT5188	Conflicts in Design for Strengthening of Concrete Structures using Fibre-reinforced Polymer Composites *Kunal D Kansara and Tim J Ibell*

Session 2 **CONCRETE STRUCTURE AND CONSTRUCTION** **CHAIR: NADER GHAFOORI** **ROOM: JG0002**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5055	Finite Element Analysis of RC Beams Subjected to Non-Uniform Corrosion of Steel Bars *R. K. Biswas, M. Iwanami, N. Chijiwa, and K. Uno*
IDSCMT5152	Characterizing the performance of transversely confined multi-culm bamboo to steel connections *Nischal P. N. Pradhan, Elias G. Dimitrakopoulos, Themelina S. Paraskeva*
IDSCMT5104	Push-out experimental evaluation of pultruded FRP-concrete composites *Offiong Etim, Alfred Kofi Gand, Messaoud Saidani, Okon Eta Ekpo and Pam Fom*
IDSCMT5147	Quality Control Methodology for Composite FRP Rebars *Leire Echeverria, Alvaro Ruiz Emparanza, Antonio Nanni, Francisco De Caso y Basalo*

Session 3 **CONCRETE DURABILITY AND TESTING** **CHAIR: ROBERT LEWIS** **ROOM JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5111	Comparison of industrial and natural pozzolans for ASR mitigation Nader Ghafoori, Arash Kian, Ariful Hasnat and Stanley Tat
IDSCMT5130	The Influence of Properties as Admixture for Concrete on The Preservation State of The Modified Fly Ash Cake by The Floatation Method Kento Onomoto, Koji Takasu, Hidehiro Koyamada, Hiroki Suyama
IDSCMT5151	Improved Durability of Concrete Using Supplementary Cementitious Materials Banti A. Gedam, Suvir Singh, Akhil Upadhyay, N. M. Bhandari
IDSCMT5178	Properties of concrete incorporating metakaolin, flyash and recycled concrete aggregates Shailja Bawa, M. Singh
IDSCMT5125	Corrosion Performance of Seawater Concrete with Fly Ash under Impressed Current Cheryl Lyne C. Roxas, Bernardo A. Lejano and Jason Maximino C. Ongpeng

Session 4 **SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION** **CHAIR: MUKESH LIMBACHIYA** **ROOM: JG2008**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5135	*A Proposed Performance Based Approach for Life Cycle Assessment of Reinforced Blended Cement Concrete* *Hisham Hafez, Wai Ming Cheung, Brabha Nagaratnam and Rawaz Kurda*
IDSCMT5108	Environmental assessment in the building materials industry: How are the results of Life-Cycle-Assessment (LCA) for concrete influenced by technology and regulations? *Ronny Meglin and Susanne Kytzia*
IDSCMT5043	Antifragile Windows - How to improve the sustainability of the building sector through the description of the technical elements *Emilio Antoniol, MariaAntonia Barucco*

Session 5 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: ESSIE GANJIAN** **ROOM: JG1008**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5042	Effect of Rice husk ash and Marble powder on mechanical behaviour of concrete Maria Idrees, Shimza Jamil
IDSCMT5049	The Effect of Using Basic Oxygen Slag with By-Product and Non-Hazard Waste Materials to Produce Paving Blocks Ghassan Jalull and Eshmaiel Ganjian
IDSCMT5089	Influence of the sand particle size on the bond of cement matrix-alkali treated jute fibers Yasmim Gabriela dos Santos Mendonça, Bartosz Zukowski, Romildo Dias Toledo Filho
IDSCMT5098	Effect of palm fibers addition on absorption characteristics and mechanical properties of concrete Hassan Ghanem, Meheddene Machaka, Jamal Khatib, Adel Elkordi, Oussama Baalbaki

Tuesday 16th July 2019

07:30 - 08:30 **Speakers' Breakfast** Penrhyn Road campus

09:00 - 10:30 4 x Parallel Technical Sessions Penrhyn Road campus

Session 1 **HONOUREE SESSION FOR PROFESSOR C GROSSE (PART 2)** **CHAIR: RUDI KRAUS** **ROOM: JG0001**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5059	Inert material with binding rim by reactive milling Frank Schmidt-Döhl, Gabriel Glück and David Schulenberg
IDSCMT5087	Ultralight mineral foams for sustainable insulation applications Albrecht Gilka-Bötzow, Sha Yang, Eduardus A.B. Koenders
IDSCMT5131	Characterization of fresh cementitious media through wave dispersion Sokratis Iliopoulos, Dimitrios G. Aggelis
IDSCMT5160	Sensitivity of the various parameters in the prediction of the voids ratio of mixes with fine and coarse particles according to Dewar's model S.Q. Liu, P. Minne, J. Li, E. Gruyaert
IDSCMT5184	Air-coupled Impact-Echo Scanner: Fast and Contactless Non-destructive Testing of Concrete Pavements Robin Groschup and Rudolph N. Kraus

Session 2 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: NADER GHAFOORI** **ROOM: JG0002**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5019	Sustainable use of supplementary cementitious materials from agricultural wastes – A Review

	Oluwadamilola, Fadele and Mike, Otieno
IDSCMT5020	Effect of electrostatic repulsion induced by superplasticizers on the flow behaviour of fly ash pastes *Chenman Wang, Obada Kayali, Jong-Leng Liow*
IDSCMT5034	A preliminary study - fiber reinforced cement mixes with partial replacement of waste fly ash *Samer Abou Kheir, Jad Wakim, and Elie Awwad*
IDSCMT5035	Utilization of waste Quarry Dust and Marble Powder in Concrete *Maria Idrees, Aalia Faiz*
IDSCMT5045	Properties of Composite Prepared by Stabilizing Soil with Molten Post-Consumer Plastic Waste Bottles *Pranshoo Solanki and Samikaran Bhattarai*

Session 3 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: TIM IBELL** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5183	Characterization of Sewage Sludge Ash as affected by different Incineration Temperature and Time *Siham AlShanti, Amr S. El-Dieb, Munjed A. Maraqa*
IDSCMT5177	Feasibility Study on Production of Fiber Cement Board Using Mortar Reinforced by Fiberglass Net and *Polypropylene Fibres* *Ali Younesian, Mahmoud Nili, Alireza Azarioon*
IDSCMT5175	Formulation of hydraulic cement from Nigeria seashell and staple crop husk powders *Oyejobi, Damilola O, Raji Sabur A and Alabi Olaitan*
IDSCMT5148	Durability of Mechanical Properties of GFRP Rebars Exposed to Seawater *Alvaro Ruiz Emparanza, Francisco De Caso Y Basalo, Raphael Kampmann, Pedro Rodrigues de Castro Jalles, Antonio Nanni*

Session 4 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: VENKAT REDDY** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5001	Durability index of dry sludge incorporated concrete when used as sand replacement *B.D Ikotun, R.P Mathye, G.C Fanourakis*
IDSCMT5073	Use of Oil Palm Broom Fibres for Eco-friendly Concrete *Emmanuel Owoichoechi Momoh, Adelaja Israel Osofero*
IDSCMT5077	Brick Fine Aggregate and Ladle Furnace slag as Alternative to Natural River Sand *Tarek U. Mohammed, Md. Mahafizul Hassan, Md Nafiur Rahman, Shibly Mostafiz Apurbo*
IDSCMT5090	Compatibilization of natural fibers as reinforcement of polymeric matrices *P. Luna, J. Lizarazo-Marriaga, A. Mariño*
IDSCMT5085	Effect of degree of refining on flexural response of fibre cement boards reinforced with Guadua Angustifolia KUNTH bamboo *Luz Adriana Sánchez Echeverri, Jorge Alberto Medina Perilla, Germán Quintana, Jorge Hernán Sánchez Toro, Eshmaiel Ganjian*

10:30 - 11:00 Mid-morning tea & coffee Penrhyn Road campus

11:00 - 12:30 5 x Parallel Technical Sessions Penrhyn Road campus

Session 1	HONOUREE RILEM	CHAIR: JEAN-CLAUDE MOREL	ROOM: JG0001

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5157	ALLUVIUM: Earthen construction in future urban area *Julia Tourtelot, Loren Masson, Myriam Duc, Jeanne-Sylvine Guedon, Laurent Brochard, Matthieu Vandamme, Robert Le Roy, Erwan Hamard, Chloé Fourdrin, Thomas Barré, Jean-Didier Mertz, Ann Bourgès, Emmanuel Keita*
IDSCMT5165	Sustainable bio-based earth mortar with self-healing capacity *Abbie Romano, Hazha Mohammed, Veronica Torres, Ana Bras*
IDSCMT5179	Effect on quick firing on the hygro-mechanical behaviour of earth bricks *Celine Perlot, Domenico Gallipoli, Agostino Walter Bruno*
IDSCMT5159	Cement stabilization effect on mechanical and hygric properties of compacted earth *Noha Al Haffar, Antonin Fabbri, Fionn McGregor, Horacio Colina*

Session 2	CONCRETE STRUCTURE AND CONSTRUCTION	CHAIR: SUNNY NWAUBANI	ROOM: JG0002

PAPER ID	PAPER TITLE & AUTHORS
IDSCMT5112	Properties of Ultra-High-Performance Concrete *Ariful Hasnat, Arash Kian, Nader Ghafoori*
IDSCMT5117	Effect of Recycled Concrete Aggregate on the Shear behavior of Reinforced Concrete Panels *Huan Zhang, Katie Kuder, Dawn Lehman, Paolo Calvi, and Charles Roeder*
IDSCMT5138	Ultra high performance fiber reinforced concrete as strengthening material *Spyridon A. Paschalis*
IDSCMT5154	Effect of Longitudinal Reinforcement Ratio on the Shear Behaviour of RC Beams made with Recycled Aggregates *Nariman Khalil and Roger Makhoul*
IDSCMT5096	Fracture toughness evaluation of fiber-reinforced concrete manufactured with siderurgic aggregates *Ortega-López V., Revilla-Cuesta, V, Skaf M., Fiol F, Santamaría A, García-Llona A, Piñero I.*

Session 3	CONCRETE DURABILITY AND TESTING	CHAIR: CHRISTIAN GROSSE	ROOM: JG0003

TIME	PAPER TITLE & AUTHORS
IDSCMT5024	The Sorption and Porosity of GGBS-PFA Ternary Blended Cement Concrete *Cheah Chee Ban and Chow Wee Kang*
IDSCMT5025	Long-term carbonation performance of the concrete covered with the elastic paint with heat deterioration *Masashi SUGIYAMA*
IDSCMT5029	Biogenic treatment improves the durability of steel slag amended mortar structures *M. Sudhakara Reddy, Prabhdeep Kaur, Sumit Joshi, Omkar A Shinde*
IDSCMT5036	Durability of Oil well Cement in CO2-rich Environments *Mohammadreza Bagheri, Seyed M. Shariatipour, Eshmaiel Ganjian*
IDSCMT5061	The Effects of Formwork Types and Curing Period on the Concrete Surface Quality *Akari Shibuya, Shinya Kitagawa and Takeshi Iyoda*

Session 4	SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION	CHAIR: JUAN MARRIAGA	ROOM: JG2008

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5008	Building Information Modelling (BIM): An Evaluation of BIM Application on Achieving Sustainable Design *Dunya Abdulazeez G. Aldhaher*
IDSCMT5021	Long-term monitoring of an earth masonry shell house in Johannesburg, South Africa: Thermal performance

	Ryan Bradley, Mitchell Gohnert & Anne Fitchett
IDSCMT5053	Feasibility of Cross-Laminated Secondary Timber *Colin M. Rose and Julia A. Stegemann*
IDSCMT5064	Sustainable utilization of biopolymers and biocement in aggregation of granular materials *Asha Ramachandran, Navdeep Kaur Dhami and Abhijit Mukherjee*

Session 5: CONCRETE CONSTITUENTS / MATERIALS CHAIR: JAMAL KHATIB ROOM: JG2007

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5071	Fly Ash Based Geopolymer Composites Partially Replaced with Silica Fume: An Experimental Investigation *Orhan Canpolat, Mukhallad M. Al-mashhadani, Yurdakul Aygörmez, and Mucteba Uysal, Furkan Sahin*
IDSCMT5102	Effect of partial Portland cement replacement on properties of fly ash based geopolymer concrete *Lateef N. Assi, Rafal Anay, Vafa Soltangharaei, Paul Ziehl*
IDSCMT5132	Effect of the nature of chemical activator on the compressive strength of calcined clay geopolymer mortar *A. S. Bature, M. Khorami, E. Ganjian and M. Tyrer*
IDSCMT5116	Synthesis and characterization of belite calcium sulfoaluminate cements produced by oxyfuel combustion residues *A. Telesca, M. Marroccoli, N. Ibris, T. R., Naik, C. Lupiáñez, L. I. Díez, L. M. Romeo, and F. Montagnaro*

12:30 - 14:00	Lunch/Exhibition	Penrhyn Road campus
14:00 - 15:30	5 x Parallel Technical Sessions	Penrhyn Road campus

Session 1 CONCRETE CONSTITUENTS / MATERIALS CHAIR: NADER GHAFOORI ROOM: JG0001

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5099	Selected properties of concrete containing Municipal Solid Waste Incineration Bottom Ash (MSWI-BA) *Meheddene Machaka, Jamal Khatib, Adel Elkordi, Hassan Ghanem, Oussama Baalbaki*
IDSCMT5100	Optimisation of secondary waste gypsum for mechanical stability in road (base) and foundation *Kande Bure Bai Kamara, Eshmaiel Ganjian and Morteza Khorami*
IDSCMT5101	Preliminary studies of sustainable concrete incorporating ceramic hybrid binders *Amir Al Arab, Bilal Hamad, Ghassan Chehab*
IDSCMT5107	Consideration on Appearance Limitations of Fly Ash Blended within Concrete *Yosuke Mitani, Koji Takasu, Hidehiro Koyamada, Hiroki Suyama*
IDSCMT5114	Recycling of Single-Stream Waste Glass in Flowable Fill *Pranshoo Solanki, Thomas Bierma, and Guang Jin*

Session 2 CONCRETE STRUCTURE AND CONSTRUCTION CHAIR: PRANSHOO SOLANKI ROOM: JG0002

PAPER ID	PAPER TITLE & AUTHORS
IDSCMT5013	Design Method for Renewal from Reinforced Concrete Slab to Precast Prestressed Concrete Slab *Hideaki Sakai*
IDSCMT5030	A Method for Assessing the Cross-Sectional Stiffness of Buried Reinforced-Concrete Pipe *M. Hyodo, K. Ooyama, M. Ishii, T. Hatanaka, And H. Ogata*

IDSCMT5065	Effective bridge maintenance based on load-bearing performance simple evaluation *Hitoshi Ito, Toshiaki Mizobuchi*
IDSCMT5014	Mechanical properties, shrinkage, abrasion resistance and carbonation of concrete containing recycled coarse aggregate of different size range *Rakesh Kumar*

Session 3 **CONCRETE DURABILITY AND TESTING** **CHAIR: KATJA PINKERT** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5058	Evaluation of Salt Resistance of Concrete Combined with Chloride-Ion Immobilizer and Expansive additive *Shinya Ito, Akihiro Hori, Takeshi Iyoda*
IDSCMT5062	Development and verification of neutralization depth and chloride ion penetration depth measurement method using fiberscope *Shunsei Tanaka, Yuya Sakai*
IDSCMT5103	Assessment of the Effectiveness of Butler-Volmer Equation to Predict Corrosion Rate in Cathodically Protected Structures *Arpit Goyal, Homayoon Sadeghi Pouya, Eshmaiel Ganjian*
IDSCMT5124	Reinforced alkali-activated concrete with induced corrosion *Ongpeng, Jason Maximino, Roxas, Cheryl Lyne, Rubinos, Iona Trisha, Escleto, Andrew Teus, Tan, Sherie Joy, Bolivar, Erica Mae, Kalaw, Martin Ernesto, Promentilla, Michael Angelo*
IDSCMT5068	Influence of interfacial tradition zone at aggregate surface caused by bleeding on permeability *Megumi Araki, Takeshi Iyoda*

Session 4 **SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION** **CHAIR: CHRIS CHEESEMAN** **ROOM: JG2008**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5040	Ethiopian Vernacular Bamboo Architecture and its Potentials for Adaptation in Modern Urban Housing: A case study *A.D. Dalbiso & D.A. Nuramo*
IDSCMT5033	Innovative Nanoparticle-Based Admixture for Sustainable Construction Materials and Technologies *Van Bui, Chris Eagon, Steve Schaef & Paul Seiler*
IDSCMT5097	The use of electric arc furnace slag in bituminous pavements *Marta Skaf, Juan Manuel Manso, José Antonio Chica, Amaia Santamaría, Emiliano Pasquini and Vanesa Ortega-López.*
IDSCMT5169	Construction practices for first ever wheat straw reinforced concrete pavement for light traffic *Muhammad Usman Farooqi,Majid Ali*
IDSCMT5120	Preparation for green high performance steam-cured concrete *Youjun Xie, Lou Chen, Keren Zheng, Guangcheng Long, Cong Ma, Jin Zhou, Ye Shi*

Session 5 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: MARK TYRER** **ROOM: JG2007**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5113	Study on Creep Properties of the Concrete Combined with Recycled Aggregate and Fly Ash *Shunsuke Hayashi, Koji Takasu, Hidehiro Koyamada, Hiroki Suyama*
IDSCMT5119	Mechanical behavior of natural fiber textile reinforced mortar sheets *P. Luna, J. Lizarazo-Marriaga, L. Luna, J. Ortiz, D. Mayorga*

IDSCMT5122	Fly ashes from fluidized bed combustion of peat and wood as a cement replacement material *Jouni Rissanen, Katja Ohenoja, Mirco Marcellini and Mirja Illikainen*
IDSCMT5126	A study on influence of physical properties of crushed sand with adjusted particle size distribution for fluidity of mortar *Daijiro Tokunaga, Koji Takasu, Hidehiro Koyamada, Hiroki Suyama*
IDSCMT548	Ladle furnace slag as cement replacement in mortar mixes *Amaia Santamariaa, Vanesa Ortega-Lopez, Marta Skafc, Veronica Garcíad, Juan J. Gaiterod, Jose T. San-Josee, Javier J. Gonzáleze*

15:30 - 16:00 Mid-afternoon tea & coffee — Penrhyn Road campus

16:00 - 17:30 5 x Parallel Technical Sessions — Penrhyn Road campus

Session 1 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: PRANSHOO SOLANKI** **ROOM: JG0001**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5037	Characterization of Enhanced Pozzolanic Biomass Ash *Eman H. Elbuaishi and P.S.Mangat*
IDSCMT5060	Pozzolanic activity of flint powder *Lennart Osterhus, Florian Ditz, Frank Schmidt-Döhl*
IDSCMT5128	A Study on Wet Classification Method of Fly Ash and Physical Property of Classified Fly Ash *Ayano Endo, Koji Takasu, Hidehiro Koyamada and Hiroki Suyama*
IDSCMT5174	Study of optimum compressive strength of palm kernel shell - quarry dust aggregates concrete *Damilola Oyejobi, Alao A Jimoh and Kehinde Abdulsalam Elelu*

Session 2 **CONCRETE STRUCTURE AND CONSTRUCTION** **CHAIR: JAMAL KHATIB** **ROOM: JG0002**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5180	Electrical resistivity used for liquid imbibition monitoring in cement-based materials: comparison between experience and simulation *Mohamed Abdou Ibro, Jérôme Verdier, Sandrine Geoffroy, Hugo Cagnon*
IDSCMT5181	Textile-reinforced mortar external strengthening of corroded reinforced concrete beams *Charles K.S. Moy and Silas Oluwadahunsi*
IDSCMT5156	Effect of water and alkali content on setting time of cement pastes with electric arc furnace dust (EAFD) *Margareth da Silva Magalhães, Flora Faleschini, Carlo Pellegrino, Katya Brunelli*
IDSCMT5153	An Evaluation on Anti-corrosion Performance of Galvanized (Zinc-coated) Rebar in Concrete by Galvanostatic Technique *Hongbok-Choe, Manabu Kanematsu and Yuhei Nishio*
IDSCMT5018	Estimation on Deterioration Process Model of Concrete Structure received Chloride induced Damage with considering Repeated Repairing *Manabu Matsushima, Hiroyuki Nakagawa*

Session 3 **CONCRETE DURABILITY AND TESTING** **CHAIR: KATJA PINKERT** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5032	Pull-out Resistance of Post-installed Anchors with Cracks Repaired by Epoxy Resin *Noritaka Morohashi*

IDSCMT5054	Performance of Nano-Modified Concrete under Freezing and Low Temperatures *A. Yasien, A. Abayou and M. T. Bassuoni*
IDSCMT5063	Development of a Prediction System for the Initiation of Spalling of Cover Concrete Based on Visual Clues for Reinforced Concrete Bridges in Service *Takuma KADONO, Shuntaro TODOROKI, and Toshiya TADOKORO*
IDSCMT5144	Evaluation of Electrical Conductivity as a Technique for Assessing the Efficacy of Surface-Treated Concrete *Sunday Onyebuchi Nwaubani*

Session 4 **SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION** **CHAIR: NADER GHAFOORI** **ROOM: JG2008**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5186	Exploring Challenges of Adopting Sustainability Assessment: Methods in UAE - Perspectives of Project Professionals *Amna I. Shibieka, Tasneem B. Abdel Raheem, Batoul Y. Hittini*
IDSCMT5091	Technical-financial viability of the sustainable guidelines implementation related to water & energy for schools *Amanda Francielle do Nascimento,Maria Julia Pereira, Rúbia Bernadete Pereira dos Santos*
IDSCMT5086	Sustainability Patterns and Tradeoffs through a Graphical Sustainability Index *Rita Awwad and Karim El Khoury*
IDSCMT5044	Improving the Recycling Rate of the Construction Industry *K. Grigoriadis, M. Whittaker, M. Soutsos, W. Sha, L. Napolano, A. Klinge, S. Paganoni, M. Casado, L. Brander, M. Prieto Rabade, U. Mueller, M. Mousavi, O. During, M. Scullin, R. Correia, T. Zerbi, I. Merli, I. Ingrosso, A. Attanasio and A. Largo*

Session 5 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: VENKAT REDDY** **ROOM: JG2007**

PAPER ID	PAPER TITLE & AUTHORS
IDSCMT5004	Evaluation of Rice Husk Ash Blended Concrete using Response Surface Methodology *Richie. I. Umasabor and Henry C. Odunze*
IDSCMT5005	Utilisation of wood ash for environmentally friendly concrete production *Sevket Can Bostanci*
IDSCMT5006	Laboratory Study to Evaluate the Effect of Waste Toner on Dynamic Creep of Asphalt Concrete Mixtures *Taisir S. Khedaywi*
IDSCMT5010	Tailor- Made Blended Cement for Sustainable Concrete in Ghana *Mark Bediako, Eric Opoku Amankwah, John Solomon Ankrah*
IDSCMT5016	Multiple Blend supplementry cementitious materials (Recovered Mineral Components), benefit sustainability through innovative concrete design *Eckart R. Bühler & Robert C. Lewis*

19:30 – 23:00 **CONFERENCE BANQUET** Raven's Ait Island, Kingston upon Thames KT6 4HN

Wednesday 17th July 2019

07:30 - 08:30	**Speakers' Breakfast**	Penrhyn Road campus
09:00 - 10:30	**3 x Parallel Technical Sessions**	Penrhyn Road campus

Session 1 **HONOUREE RILEM** **CHAIR: ESSIE GANJIAN** **ROOM: JG0001**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5158	Influence of compacted earth topography on water droplet damping *T.Mauffré, F.McGregor, E.Contraires, A.Fabbri*
IDSCMT5164	Gypsum and lime stabilised earth-rice husk composite *Ana Bras, Ana Antunes, Paulina Faria*
IDSCMT5163	Bio-fibre earth composite mortar: a structural and hygrothermal assessment *Abbie Romano, Ana Bras, Sotirios Grammatikos, Andy Shaw and Mike Riley*

Session 2 **CONCRETE CONSTITUENTS / MATERIALS** **CHAIR: JEAN-CLAUDE MOREL** **ROOM: JG0002**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5106	Pozzolanic reactions in ultra-high performance concrete containing silica fume and fly ash *Padmaja Krishnan, Min-Hong Zhang and J Y Richard Liew*
IDSCMT5105	The effect of seeding of synthesized C-S-H with different C/S on early hydration reaction of alite *Yumetoki Abe, Yuka Morinaga, Yogarajah Elakneswaran, Toyoharu Nawa*
IDSCMT5050	Nano-modified Cementitious Composites with high volume Supplementary Cementitious Materials Incorporating Basalt Fiber Pellets *A.Azzam, M.T. Bassuoni, and A. Shalaby*
IDSCMT5139	Effects on strength of concrete from incremental rubber aggregate replacement by volume *Istvan Pocklington, Hsein Kew*

Session 3 **SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION** **CHAIR: CHRIS CHEESEMAN** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5081	Tyres an Envrionmentally Sustainable Resource *Tedge Sagoo, Chris Sawden and Noel Peart*
IDSCMT5142	Smart Biofacades; An Innovative Living Construction Technology *F. Fadli, S. Zaina, P. Bahrami*
IDSCMT5143	More sustainable constructions using Limestone Calcined Clay Cement (LC3) *Karen Scrivener, François Avet, Franco Zunino, Julien Ston*
IDSCMT5136	Sustainable Construction Materials Based On Recycled Asbestos Cement Wastes *I. Farina, F.Fraternali, N. Singh, R.Cioffi, F. Colangelo*
IDSCMT5137	Clay-Burnt Coarse Aggregate: Production and Utilization in Concrete *Tarek U. Mohammed, Aziz H. Mahmood, Syed S. Ahmed, and Mosabbir Pasha*

10:30 - 11:00 Mid-morning tea & coffee Penrhyn Road campus

11:00 - 12:30 4 x Parallel Technical Sessions 8 Penrhyn Road campus

Session 1 **HONOUREE SESSION FOR PROFESSOR CHRIS CHEESEMAN** **CHAIR: ALAN MARIES** **ROOM: JG0001**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5123	The influence of Ca source on the preparation of geopolymer using circulating fluidized bed fly ash *Xiu-chen Qiao*

IDSCMT5080	Low-energy CO2-activated self-pulverising cement for sustainable concrete construction *Alan Maries, Colin D. Hills, Paula Carey*
IDSCMT5189	Thermodynamic modelling of cement chemistry at high temperature *Mark Tyrer*

Session 2 **CONCRETE STRUCTURE AND CONSTRUCTION** **CHAIR: SUNNY NWAUBANI** **ROOM: JG0002**

PAPER ID	PAPER TITLE *& AUTHORS*
IDSCMT5026	Experimental and Analytical Studies on Cracking due to Corrosion in Reinforced Concrete Slab *Hiroyuki Nakagawa, Hiroki Yamaguchi, Manabu Matsushima*
IDSCMT5057	Study on Various Factors Related to Evaluation of Thermal Cracking Probability of Mass Concrete Structures *Ryoichi Ashizawa, Toshiaki Mizobuchi, and Hiroki Izumi*
IDSCMT5149	Effect of natural fibrous plaster on lateral resistance of mortarless interlocking wall *Furqan Qamar, Terrence Thomas and Majid Ali*
IDSCMT5056	Effects of Drying Shrinkage of Concrete on Shear Behavior of Reinforced Concrete Beams without Shear Reinforcement *Hikotsugu Hyodo, Ryoichi Sato, Kenji Kawai and Ken-ichiro Nakarai*

Session 3 **CONCRETE DURABILITY AND TESTING** **CHAIR: ROBERT LEWIS** **ROOM: JG0003**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5067	Investigation of carbonation rate coefficient in mortars with blast furnace slag high content Junya Nakamura, Takeshi Iyoda, Seishi Goto
IDSCMT5072	Investigation of mechanism on progress for strength and air permeability of concrete using c-s-h hardening accelerator *Takeshi IYODA, Tomomi SUGIYAMA*
IDSCMT5079	Rehabilitation of Transportation Infrastructure in West Virginia with FRP Wraps Wael Zatar and Hai Nguyen
IDSCMT5118	Influence of CaCO3 whiskers, steel fibers and basalt fibers hybridization on flexural toughness of concrete *Mehran Khan, Mingli Cao, Majid Ali*
IDSCMT5115	Chloride Migration Coefficient and Resistivity of Concrete Containing Supplementary Cementitious Materials *Eisuke Nakamura, Kensuke Mito, Masahiro Suzuki, and Hirohisa Koga*

Session 4 **SUSTAINABILITY OF BUILDINGS/ CONSTRUCTION** **CHAIR: PETER CLAISSE** **ROOM: JG2008**

PAPER ID	PAPER TITLE & *AUTHORS*
IDSCMT5070	Using Different Types of Aggregates Including Waste Concrete in the Production of Geopolymer Mortars *Furkan Şahin, Mucteba Uysal, Orhan Canpolat, Mukhallad M. Al-Mashhadani and Yurdakul Aygörmez*
IDSCMT5074	Metabolism of metals from co-processing of Energy from Waste Air Pollution Control residue in cement kilns *Marchand, L., Van Ewijk, S., Stegemann, J. A.*
IDSCMT5076	Demonstration of using low carbon precast concrete products for an energy efficient built environment *T. E. McGrath, J. Kwasny, T.A. Aiken, S. Cox, M. Soutsos, J.F. Chen, J. Mariotti, W. Sha, R. Correia*

IDSCMT5161	Investigations into the high temperature behaviour of unstabilised rammed earth *Christopher Beckett, Kyriacos Kazamias and Angus Law*
IDSCMT5176	Performance Evaluation of Industrial By-Products as Sustainable Practice against Exploitation of Virgin Materials *U. Johnson Alengaram*

12:30 - 14:00 **Lunch/Exhibition** Penrhyn Road campus

14:00 - 15:30 **Closing PlenarySession** Penrhyn Road campus

Chair: Professor E Ganjian

Keynote Addresses

- *Title to be confirmed*
  Professor Chris Cheeseman, Imperial College London
- The Performance testing of earthen materials: Challenges and Future Developments
  Dr Antonin Fabbri*, University of Lyon-France and* ***Professor Jean-Claude Morel****, Coventry University- UK*

Closing Remarks by Professor M Limbachiya

Conference Ends

Supporting Organisations

Exhibitor