



East African Student Seminar
on
**Materials technologies for
sustainable construction**

With

Prof. Karen Scrivener, EPFL, Lausanne, Switzerland

Dr. Dipl.-Ing. Wolfram Schmidt, BAM, Berlin, Germany

Dr. Kolawole Adisa Olonade, University of Lagos, Nigeria

Dr. Daniela Ciancio, formerly UWA, Perth, Australia

Monday, 3. February 2020 to Tuesday 4. February

University of Dar es Salaam, College of Engineering and Technology

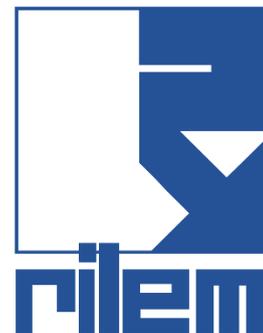
9:00 – 16:30

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About the seminar

Civil engineering demands for enormous amounts of materials. The most important material used in civil engineering construction is concrete. It is ubiquitous in the world. It makes out about 50% by mass of everything that is produced in the world, and it is responsible for about 10% of the global carbon emissions. No other mass material has a lower carbon footprint and a lower energy demand, yet the increasing global demand for concrete along with dramatically changing boundary framework require for more conscious usage of cement and concrete technologies.

This means, civil engineers in the future have to become more conscious in the use of construction materials, and ways have to be developed how less materials are used in general. For concrete this means, using less Portland cement and using the cement in concrete more efficiently, for example by replacing cement by supplementary cementitious materials and by minimizing the water content by using rheology controlling admixtures. And, it means, using concrete only where its outstanding properties can be activated, and avoiding concrete where materials with lower carbon footprint can also be used, for example soil.

The lectures are given by international experts in their fields, who will give detailed insight into materials backgrounds and technologies on nano and micro scale with relevance for the macro scale.

Besides the courses, the seminar is also thought to bring students from East African countries together to network among themselves and to have opportunities to get in direct contact with experts in the area. The seminar and the mobility for East African students is organized within the framework of the Local-Care project, which was awarded the German-African Innovation Incentive Award 2018, funded by the German Ministry for Education and Research. The RILEM Mishikaki Night is sponsored by RILEM.

Programme

Day 1 - 3. February 2020			
09:00	-	09:30	Dr. Fatma Mohamed <i>University of Dar es Salaam</i> Welcome
09:30	-	09:45	Dr. Wolfram Schmidt <i>Federal Institute for Materials Research and Testing (BAM)</i> Introduction to Local-Care and sustainable construction needs
09:45	-	10:00	Dr. Daniela Ciancio <i>RILEM</i> Introduction to RILEM
10:00	-	10:30	All students and speakers Introduction of speakers and audience
10:30	-	11:30	Prof. Karen Scrivener <i>Ecole Polytechnique de Lausanne</i> Cement chemistry and sustainable cement based technologies
11:30	-	12:00	Coffee Break
12:00	-	13:00	Prof. Karen Scrivener <i>Ecole Polytechnique de Lausanne</i> Cement chemistry and sustainable cement based technologies
13:00	-	14:00	Lunch Break
14:00	-	15:00	Dr. Wolfram Schmidt <i>Federal Institute for Materials Research and Testing (BAM)</i> Rheology of concrete and bio-based rheology modifying agents
15:00	-	15:30	Coffee Break
15:30	-	16:00	Dr. Wolfram Schmidt <i>Federal Institute for Materials Research and Testing (BAM)</i> Rheology of concrete and bio-based rheology modifying agents
16:00	-	16:30	Question and answers, discussion and Closure
17:00	-	Open end	RILEM Mishikaki Night, Meet and Greet between students and lecturers

Programme

Day 2 - 4. February 2020			
08:45	-	09:00	Dr. Fatma Mohamed <i>University of Dar es Salaam</i> Welcome
09:00	-	10:00	Dr. Kolawole Olonade <i>University of Lagos</i> Bio-based binder and cement replacement options
10:00	-	10:30	Coffee Break
10:30	-	11:30	Dr. Kolawole Olonade <i>University of Lagos</i> Bio-based binder and cement replacement options
11:30	-	12:00	Lunch Break
12:00	-	13:00	Dr. Daniela Ciancio <i>RILEM</i> Rammed earth construction
13:00	-	13:30	Coffee Break
13:30	-	14:30	Dr. Daniela Ciancio <i>RILEM</i> Rammed earth construction
14:30	-	15:00	Question and answers, discussion and Closure

After the seminar:

Return of the students to their East African home destinations.

Cement chemistry and sustainable cement based technologies



Karen Scrivener, was born in England, she graduated from University of Cambridge in 1979 in Materials Science. She went on to do a PhD on « The Microstructural Development during the Hydration of Portland Cement » at Imperial College, remaining there until 1995 as Royal Society Research Fellow and then lecturer.

In 1995 she joined the Central Research Laboratories of Lafarge near Lyon in France. In March 2001 she appointed as Professor and head of the Laboratory of Construction Materials, Department of Materials at EPFL, Ecole Polytechnique Fédérale de Lausanne, Switzerland. The work of this laboratory is focussed on improving the sustainability of cementitious building materials.

She is the founder and co-ordinator of Nanocem, a Network of industry and academia for fundamental research on cementitious material and Editor in Chief of Cement and Concrete Research, the leading academic journal in the field.

Rheology of concrete and bio-based rheology modifying agents



Wolfram Schmidt received a diploma in structural engineering at the RWTH Aachen in Germany and holds a PhD in civil engineering from the Eindhoven University of Technology in the Netherlands.

He has been working at the Bundesanstalt für Materialforschung und -prüfung (BAM) in the department "Safety of Structures" since 2005. His research focus is on admixtures, rheology, and high performance concrete as well as bio-based raw materials as chemical admixtures or supplementary cementitious materials for high-performance concrete applications. Since 2018 he is also secretary of the German Rheological Society DRG.

He is co-founder of the Pan-African Cement Proficiency Testing Scheme (PACE-PTS) and co-initiator of the conference series "Advances in Cement and Concrete Technology in Africa" (ACCTA). In 2017 he received the German-African Innovation Incentive Award. He is member of RILEM and fib technical committees and member of the RILEM Educational Activities Committee.

Bio-based binder and cement replacement options



Kolawole Olonade is a structure and cement-based materials expert with focus on utilisation of various wastes (agricultural and industrial) for the production of high performance concrete. He had his undergraduate study in Civil Engineering from the Federal University of Technology, Nigeria; Masters in Civil Engineering from the University of Ibadan, Nigeria, while he obtained his PhD degree in Civil and Environmental Engineering with bias in structures and materials from the University of Lagos. He started his teaching and research career with the Federal Polytechnic Ilaro and then joined Obafemi Awolowo University, Ile-Ife in 2010. Currently, he is a Senior Lecturer in the Department of Civil and Environmental Engineering of the University of Lagos. He is a chartered engineer by the Council for the Regulation of Engineering in Nigeria (COREN). He is equally a member of the Nigerian Society of Engineers, Nigerian Institution of Civil Engineers as well as a senior member of RILEM. Dr. Olonade is an active member of the Technical Committee of RILEM: TC 251-Sulphate Testing Resistance, TC 281- Carbonation of Concrete with Supplementary Cementitious Materials and TC AMC- Use of Agro-Based Materials as Cementitious Additions in Concrete and Cement-Based Materials. He is a recipient of a number of awards and grants, which include the distinguished German-African Innovation Incentive Award.

Rammed earth construction



Daniela Ciancio obtained her doctoral degree from the University of Catania, Italy in 2002. She developed most of her PhD studies at the Polytechnic University of Catalonia (UPC), Spain, and at Colorado University, CO, USA. She spent a short period as post-doctoral fellow at UPC before joining the University of Western Australia (UWA) in Perth in 2007 as Assistant Professor. She was promoted Senior Lecturer in 2014. Her doctoral and post-doctoral studies were on the implementation of zero-thickness interface elements for the numerical simulation of cracks in quasi-brittle materials. At UWA she worked on earthen-based material (predominantly rammed earth). She also worked on fibre-reinforced shotcrete and its use in underground mining sites. She organised the "First International Conference on Rammed Earth" in 2014.

Since 2019, Dr Ciancio has worked as consultant for RILEM occupying the role of implementation manager (RIM). Her engagement with RILEM is to help in key actions planned for the future, including bringing in young members, establishing better links with the industry, leveraging open access publication strategy, having a more effective website, and facilitating better RILEM promotion and follow up.