Systemization of concrete science and technology through multi-scale modeling

Date: July 13rd 2015
Venue: Tokyo, Toshi Center Hotel, 6 Floor, Room No.601
http://www.rihga.com/toshicenter_tokyo

Objective: Multi-scale view and concept have been a core discipline of concrete engineering on which codes of design for fresh, hardened and structural concrete have been based. Currently, the multi-scale prospect is being linked with coupled chemo-physics, and its scope is rapidly expanding to the gigantic mega-system consisting of structural concrete, soil foundation and global atmospheric circulation. It means that the multi-scale outlook not only systemizes the vast knowledge of concrete, but also may serve as a platform of design, planning and maintenance of concrete structures with respect to safety, durability and sustainability. So, it is a right time to discuss the direction of further development to meet the challenge on socio-human welfare and the way of contribution by concrete engineers. This symposium is held as a part of JCI 50th anniversary ceremonies, in which we look back the past and direct our attention to the next half of the century again.

Tentative Time Table	
8:30-8:40	**Opening Address　JCI President: Professor Hirozo Mihashi**
8:40-10:40	**[Session 1: Volume change]** (1) Folker H. Wittmann (Professor emeritus, ETH Zurich) *Shrinkage and Creep of Concrete: Mechanisms as Described on Different Structural Levels.* (2) Shashank Bishnoi (Assistant Professor, IIT Delhi) *Modelling creep and autogenous shrinkage in hydrating cement microstructures* (3) Miguel Azenha (University of Minho) *- Coupling developments of macro-scale testing with parameter estimation for multi-scale modelling: the case study of interaction between EMM-ARM and mic*

	(3) Miguel Azenha (University of Minho) *- COST Action TU1404 - Towards the next generation of standards for service life of cement-based materials and structures: Opportunities of interaction with JCI in the context of multi-scale modeling* (4) Ippei Maruyama (Associate Professor, Nagoya University) Understanding of concrete structure: multi-scale observations and modeling
10:40-11:20	**Discussion with coffee**
11:20-12:20	<< Lunch >>
12:20-13:50	**[Session 2: Durability]** (5) Kazuo Yamada (National Institute for Environmental Studies) and Hosokawa Yoshifumi (Taiheiyo Cement Corporation) *Concrete deterioration modelling by using thermodynamic equilibrium codes.* (6) Tetsuya Ishida (Professor, The University of Tokyo) *Multi-scale and Multi-chemo-physics modeling of structural concrete.* (7) Hikaru Nakamura (Professor, Nagoya University) *Modeling of crack and its impact to structures*
13:50-14:20	**Discussion with coffee**
14:20-15:50	**[Session 3: Toward generalized-knowledge-based application]** (8) Yann Le Pape (Oak Ridge National Laboratory) *Modeling of irradiated concrete through upscaling techniques* (9) Eddie Koenders (Professor, TU Darmstadt) *The Multiscale model of things.* (10) Koichi Maekawa (Professor, The University of Tokyo) *Multi-scale modeling for life-cycle infra-management.*
15:50-16:20	**Discussion with coffee**
16:20-17:20	**Discussion for future**
17:20-17:30	**Closing Address Professor Koichi Maekawa**