EuroTech – RILEM PhD School
Concrete Life Cycle:
From Cradle to Grave

Haifa, Israel, 12-15 January 2020

Teachers:
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EuroTech

The PhD School is organized jointly by three universities – members of the EuroTech alliance (http://eurotech-universities.eu/): the Technion – Israel Institute of Technology, Technical University of Denmark (DTU) and Eindhoven University of Technology (TU/e), in the form of 3-day intensive educational course for doctoral students. The EuroTech Universities alliance is a strategic partnership of leading European universities of science and technology committed to excellence in research and jointly developing solutions to the grand challenges of society. The alliance combines the complementary strengths of its partner universities to jointly achieve multi-scale initiatives of high impact to society and to industry. It engages with all societal actors to raise awareness on the opportunities offered by science and technology.

RILEM

The course is scientifically sponsored by RILEM (www.rilem.net) and the newly established RILEM Technical Committee TC-CEC dealing with controlled expansion of concrete, which is the international union of laboratories and experts in construction materials, systems, and structures. The mission of the association is to advance scientific knowledge related to construction materials, systems and structures and to encourage transfer and application of this knowledge world-wide. The three main goals of RILEM are: (a) to promote sustainable and safe construction, and improved performance and cost benefit for society, (b) to stimulate new directions of research and its applications, promoting excellence in construction, c) to favor and promote cooperation at international scale by general access to advanced knowledge. All doctoral students registered in the course are offered a 3-year free RILEM membership.

Scope

The course will address sustainability, testing, design and construction of concrete structures exposed to different loading and environmental (including extreme) conditions. The course contents will span extreme exposure environments, such as the highly concentrated magnesium, sulfate and chloride brines of the hot weather Dead Sea and the chloride salt exposure of infrastructure (e.g. pavements and bridges) in cold climates. Although reinforced concrete structures can be designed and built to be durable in harsh conditions, there are numerous occasions where this potential is not materialized. The economic implications of the damage when such deterioration occurs are quite extensive. The annual cost of repairs of concrete and reinforced concrete structures that deteriorate due to chloride corrosion only in the Middle East, Japan, North Europe and North America, is estimated to be hundreds of billions of dollars. Therefore, the problem of durable concrete materials and life-cycle evaluation of concrete structures for use under severe conditions in different climates, hot and cold, is critically important. The research cooperation in studying the processes of concrete deterioration in different environments, and the development of advanced high-performance materials, with a focus on utilization of industrial by-products, such as coal fly ash and granulated slag, is expected to bring scientific and practical benefits for the society.

RILEM Workshop

The course precedes & interacts with the 3rd International RILEM Workshop on Concrete Durability & Service Life Planning ("ConcreteLife'20"), Haifa, 14-16 January, 2020.

This combined event is intended to bring together young professionals and international experts dealing with the variety of topics related to sustainability, durability and service life planning of concrete structures. The meeting of the RILEM Technical Committee TC-CEC will be held in conjunction with the RILEM Workshop and will be open for the course participants.

Course Program

The course will cover important topics related to service life of cement-based materials and structures with a focus on advanced experimental and analytical methods. The workload includes 28 hours of preparatory work at home (paper reading and preparation of the presentations before the course) and 28 hours of on-site activities during the course itself. These activities include frontal lectures, lab session, attending a professional tour at a construction site, preparation of a final presentation, plenum presentations and participation in the discussions. Notes will be provided before the course. Guest professors from DTU and TU/e (Prof. O.M. Jensen and Prof. H.J.H. Brouwers) are internationally recognized authorities in the field of sustainable construction materials. The three host teachers are actively involved in teaching and research in this field, representing the staff of The National Building Research Institute – Faculty of Civil and Environmental Engineering, Technion.

Evaluation and Certificates

Two ECTS credits and participation certificates will be issued based on active participation in the entire course and the final evaluation.

Registration & Accommodation

Participants are expected to have a basic knowledge of concrete technology. 2/3 of the participant seats are reserved for PhD-students from the EuroTech universities, however, the course is also open to participants from other universities or practice.

Participants

Participation fee is €100 for PhD-students. Each EuroTech participating university covers accommodation and travel expenses of its participants. The host university (Technion) covers the local costs (facilities, materials, lunch, coffee breaks, professional tour, reception and Gala dinner). The number of the participants and accommodation at the Technion campus is limited, so participants will be approved on a first come, first served basis. The deadline for registration in the PhD School is Monday, 4th November 2019, through the website: rilem2020.net.technion.ac.il/eurotech-phd-winter-school/, where further information on available grants and contacts can be found. The registration fee includes entrance to the lectures and associated laboratory activities, a technical tour, handouts, coffee breaks, lunches, welcome reception and gala dinner.

Organizers and Sponsors

EuroTech Engineer Network
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National Building Research Institute

TECHNION
Israel Institute of Technology
Civil and Environmental Engineering

TU/e
Technische Universiteit Eindhoven University of Technology

DTU
Danmarks Tekniske Universitet

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