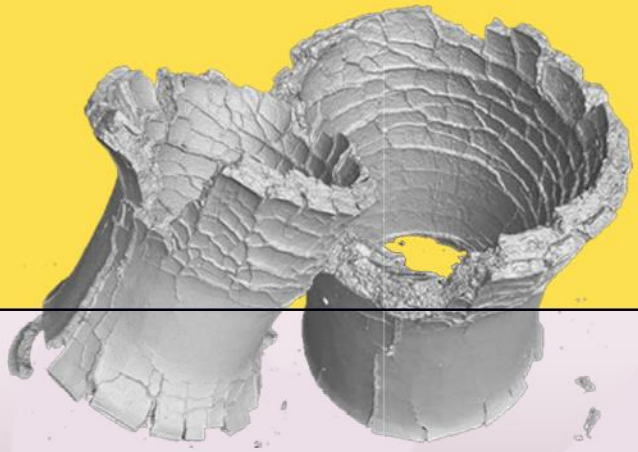
Microstructure Related Durability of Cementitious Composites



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Preface

The 4th International RILEM conference on Microstructure Related Durability of Cementitious Composites (Microdurability) is held from April to May 2021. Due to Covid-19 the Microdurability conference has been postponed twice, from May 2020 to October 2020, and from October 2020 to April 2021, respectively. Since the ongoing Covid-19 situation continuously prevented us from meeting in person, we have changed the Microdurability conference to 9 webinar series spreading over 5 weeks.

The cement hydration and microstructure development of cementitious materials determine the mechanical properties, durability, and service life of concrete structures. These topics are so important that they are receiving increasing attention. Since the first international conference on Microstructure related durability of cementitious composites was organized in Nanjing in 2008. Up until now, four Microdurability conferences have been successfully held in turn, either in China or in the Netherlands. The Microdurability conferences provide a platform for the researchers to exchange their knowledge and research results.

For the 4th Microdurability conference we have received more than 160 abstracts, and 125 papers have been accepted and published in the proceedings. In total 135 presentations were scheduled to take place during the webinar series. Three special sessions i.e., alkali-activated materials, alkali silica reaction and carbonation were organized. The special session of alkali-activated materials was jointly organized with the midterm workshop of the European ITN-DuRSAAM project. From the presentations and discussions we have learned that the worldwide mission on lowering the global CO2 emission has generated opportunities for researchers to look for new or alternative binders to partially, or fully replace Portland cement in concrete. New binders may alter the hydration mechanism and microstructural development, affecting durability and service life of concrete structures. Smart materials and new technologies (e.g., 3D printing and machine learning) are used more and more in construction. All these open new possibilities to researchers.

The microdurability conferences have received great support from many aspects. We would like to thank our scientific committee for reviewing the papers, chairing sessions, leading discussions and selecting the Best Students Presentations. The valuable efforts of the committee members have ensured scientific quality of the conference. We very much appreciate the keynote speakers for delivering excellent lectures with great scientific value, and for joining the panel discussion to share their views on microstructure, durability of construction materials and trends in future research. Thanks to the supporting staff for their enormous and high-quality support throughout the whole webinar period. We would like to thank authors and presenters for their contribution and knowledge exchange. Finally, RILEM, fib, ACI and Jiangsu Sobute New Materials Company are thanked for their sponsorship.

Hope to see you all in the 5th Microdurability conference in 2024, Nanjing China.

Chairman of conference organization committee

Dr. Guang Ye

Prof. Changwen Miao

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Xing Chen, University of Jinan, China
Yamei Zhang, Southeast University, China
Zhengwu Jiang , Tongji University, China

Keynote speakers

Prof. dr. Ippei Maruyama, Nagoya University, Japan

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Dr. Jorge Sanchez Dolado, Materials physics centre, CSIC, Spain

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Prof. dr. Doug Hooton, University of Toronto, Canada

Understanding the differences between chemical and physical degradation mechanisms that can occur in similar exposures

Prof. dr. Liu Jiaping, Southeast University, China

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Prof. dr. Susan Bernal Lopez, Leeds University, UK

The Materials Science Underpinning the Long-Term Performance of Alkali-Activated Concretes

Prof. dr. Yan Peiyu, Tsinghua University, China

The hydration characteristics of slag in cement-slag complex binder and the microstructural variation of hardened paste under the condition of leaching by soft water

Dr. Ruben Snellings, VITO, Belgium

Reactivity controls on the microstructure development of low clinker blended cements

Prof. dr. Barbara Lothenbach, Senior Researcher, Empa, Switzerland

Effect of chloride and alkalis on the durability of cementitious materials

Prof. dr. Gaurav N. Sant, SAMUELI School of Engineering, UCLA, United States

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