

# IALCCE 2020

## The Seventh International Symposium on Life-Cycle Civil Engineering

27-30 October 2020, Shanghai, China



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Life-Cycle Civil Engineering*

Nowadays, people have realized the importance of creating a sustainable society to avoid or alleviate problems like climate change, environmental pollution or economic crisis. Therefore, the life-cycle thinking of civil engineering is discussed more and more frequently.

Civil engineering is mainly focused on design and construction during the past days, but contemporary society needs civil engineering to pay attention to more aspects, such as inspection, monitoring, repair, maintenance and optimal management of structures and infrastructures, in order to effectively manage the function of these structures throughout their lifetime. Considering these needs, the objective of the International Association for Life-Cycle Civil Engineering (IALCCE) is to promote international cooperation in this field of expertise to enhance the welfare of society. Its mission is to become the premier international organization for the advancement of the life-cycle civil engineering.

Previous editions of the bi-annual IALCCE symposium took place in Varenna, Lake Como (2008), Taipei (2010), Vienna (2012), Tokyo (2014), Delft (2016) and Ghent (2018). The Seventh International Symposium on Life Cycle Civil Engineering (IALCCE 2020) will be organized on behalf of IALCCE under the auspices of Tongji University in Shanghai (China) on October 27-30, 2020.

All major aspects of life-cycle engineering are addressed, with special focus on structural damage processes, life-cycle design, inspection, monitoring, assessment, maintenance and rehabilitation, life-cycle cost of structures and infrastructures, life-cycle performance of special structures, and life-cycle oriented computational tools.

We are looking forward to welcome all of you in Shanghai in 2020!

### Special Session SS-3:

### Distributed Fiber Optic Sensing for Geoengineering Monitoring

### Objective of the Special Session SS-3



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With the rapid development in the construction of geoengineering related infrastructures, the construction quality of these structures and their safety operation become a major concern. To ensure this and prevent various potential disasters, the improvement of the level of engineering monitoring technology is a necessity. Recently, a series of distributed fiber optic sensing (DFOS) technologies, such as Optical Time Domain Reflectometer (OTDR), Brillouin Optical Time Domain Reflectometer (BOTDR), Brillouin Optical Time Domain Analysis (BOTDA), Raman Optical Time Domain Reflectometer (ROTDR), and Fiber Bragg Grating (FBG), have been developed. As these distributed technologies feature of sensing integrating with transmitting, with the characteristics of distributed measuring, long distance, insensitivity to corrosion, immunity to electromagnetic interference, etc., it has a bright and wide application prospect in the field of geoengineering monitoring. It is, therefore, of increasing interests to seek rational solutions for technical and practical problems related to distribute fiber optic sensing network in geo-engineering field. We invite the researchers in this field to participate in this special session and give presentations on up-to-date research findings, hotspots and difficult subjects related to DFOS-based geoengineering monitoring. Potential topics include, but are not limited to:

- Recent development of full and quasi distributed fiber optic monitoring technologies
- Demodulation technologies for distributed fiber optic sensing network
- Data acquisition and wireless transmission technologies for distributed fiber optic sensing network
- Temperature compensation and abnormality recognition for distributed fiber optic sensing network
- Distributed fiber optic monitoring technologies of geo-materials with large deformation
- Development of special distributed fiber optic sensing fibers and cables
- Designing, installation and protection of distributed fiber optic sensing network in geo-engineering
- Safety monitoring and diagnosis system based on distributed fiber optic monitoring technologies
- Integration of distributed fiber optic sensing network in geo-engineering monitoring field
- Case study of applications of distributed fiber optic monitoring technologies in geo-engineering