Special Issue

Design and Preparation of High-Performance Building Life-Prolonging Materials

Message from the Guest Editors

Under the dual-carbon background, the consolidation of existing damaged concrete structures with high-performance building life-prolonging materials is cost-effective and environment-friendly rather than destroying reconstruction. Building life-prolonging materials can be generally divided into inorganic, organic, and hybrid cementitious systems. Inorganic building life-prolonging materials can provide sufficient durability with concrete substrate, such as Portland cement, sulphoaluminate cement, magnesium phosphate cement, alkali-activated geopolymers, etc., whereas the organic building life-prolonging materials can bring forth adequate interface bonding, such as acrylate polymers, polyvinyl alcohol, styrene butadiene rubber polymers, ethylene vinyl acetate polymers, or latex, etc. Actually, building life-prolonging materials with hybrid cementitious systems can combine the two advantages above, but should be mix-proportion designed and carefully prepared to finally achieve the compromised and expected properties, which is worth extensive study and systematic exploration.

Guest Editors

Prof. Dr. Jianlin Luo

Department of Civil Engineering, Qingdao University of Technology, Qingdao 266520, China

Dr. Bo Pang

Department of Civil Engineering, Qingdao University of Technology, Qingdao 266520, China

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

Editor-in-Chief

Prof. Dr. David Arditi
Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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