



## **Innovative Sustainable Architectural Design, Building Technologies and Structural Retrofitting**

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Deadline for manuscript  
submissions:

**closed (20 December 2023)**

### **Message from the Guest Editors**

Dear Colleagues,

The current sustainability awareness at global level responds to the high environmental impact by human activities; buildings are responsible for an important part of those human activities. The sustainable impact share by construction activities is close to half of the environmental impact by human activities in some indicators when including the embodied part during the whole life cycle of a building. In order to move towards more sustainable buildings, it is crucial to improve all their life phases, from their design to their end of life, while moving towards a circular economy model in which discarded building elements are reintroduced to the production of new construction components. Therefore, the construction process, the usage phase, as well as the renovation, refurbishment, and retrofitting of buildings need to be optimized. In this sense, structural optimization, from its mechanical to its fire behavior, is essential. Furthermore, new construction technologies such as 3D printing need to be introduced. The highest levels of energy...

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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.

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