Special Issue

Transformable and Modular Building Systems: Mechanics, Design, and Applications Innovations

Message from the Guest Editors

Transformable and modular building systems have emerged as innovative solutions to address evolving architectural, engineering, and environmental challenges. These adaptable structures leverage advancements in mechanics, materials science, and design to meet the demands of rapidly changing urban environments, extreme conditions, and sustainability goals. Their modularity and transformative capabilities offer versatility, efficiency, and resilience, paving the way for novel architectural and engineering applications. This Special Issue welcomes original research articles and reviews that explore the cutting-edge development of transformable and modular building systems. Key research areas include: Mechanics and material innovations in transformable building systems Design principles and applications of modular construction systems Inflatable structures and their engineering potential Deployable shelter structures for emergency or temporary use Adaptive façade systems for climate-responsive design Structural analysis and optimization of transformable and modular buildings Digital and computational approaches to transformable and modular building design

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About the Journal

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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