Special Issue

Multi-Hazard Resilience for Sustainable Building Structure

Message from the Guest Editor

Buildings and infrastructure increasingly face cascading hazards—earthquakes, extreme weather, and disruptions like power outages and communication failures. Resilience now means not only preventing collapse, but also maintaining functionality, enabling rapid damage understanding, and supporting low-carbon recovery. This Special Issue on “Multi-Hazard Resilience for Sustainable Building Structures” seeks advances that integrate mechanics, sensing, and decision support for the built environment.

We welcome research across the lifecycle of resilient structures, including multi-hazard performance-based design; adaptive damping and isolation systems; health monitoring and self-powered sensing; rapid damage estimation under uncertainty; data fusion from remote sensing, UAVs, IoT, and mobility data; and digital twin platforms integrating simulations with streaming data. Studies may cover buildings, lifelines, or critical facilities, employing numerical, experimental, or field-based approaches. By integrating engineering innovation with analytics, this Special Issue aims to advance solutions that enhance safety and recovery, and reduce environmental impact under evolving hazards.

Guest Editor

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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.

Editor-in-Chief

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