Special Issue

Smart Materials and Shape Memory Alloys for Sustainable and Resilient Building and Engineering Structures: Innovations and Applications

Message from the Guest Editors

Smart materials and shape memory alloys (SMAs) are enabling a new class of sustainable and resilient building and engineering structures that can adapt, self-recover, and reduce lifecycle impacts. This Special Issue will gather advances that translate material-level functionalities, shaping memory effect, superelasticity, damping, thermally activated actuation, and other emerging technologies for adaptive or kinetic facades into design-ready solutions for buildings and infrastructure. We welcome contributions on SMA/Fe-SMA reinforcement for self-prestressing and crack control, seismic self-centering and energy dissipation devices, emerging technologies for adaptive or kinetic façades and deployable systems, multi-scale and digital-twin modelling, durability and corrosion behavior, long-term monitoring and control, and the life-cycle assessment and circularity of smart structural systems. Experimental studies, numerical/analytical developments, and full-scale demonstrations that quantify performance, robustness, and sustainability benefits are particularly encouraged. You may choose our Joint Special Issue in *Sustainability*.

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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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