



Dealing with Extreme Heat: Intelligent Approaches for Improved Building Performance and Occupant Thermal Comfort

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Deadline for manuscript
submissions:

closed (10 May 2024)

Message from the Guest Editors

Dear Colleagues,

Extreme heat, particularly in urban areas, is a serious issue with dire effects on buildings, building systems, and building occupants. We know, for instance, that extreme heat increases energy use for space cooling, reduces the efficacy of HVAC systems, and decreases the thermal satisfaction of building occupants. This Special Issue “Dealing with Extreme Heat: Intelligent Approaches for Improved Building Performance and Occupant Thermal Comfort”, aims to explore recent approaches in heat management for sustainable buildings and occupant comfort.

We welcome papers on the following disciplines and related topics, including, but not limited to, the following:

- smart building materials
- cool roofs, green roofs, and walls
- intelligent controls for solar insolation and ventilation
- climate-responsive dynamic facades and their control
- intelligent controls of HVAC systems
- digital twins for indoor thermal environment management
- simulation and modeling of extreme heat in buildings
- smart energy management systems in buildings
- heat governance and policy frameworks



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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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