



Heat and Mass Transfer and Energy Efficiency in Building

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

The concept of green building has become a dominant trend and the public is becoming aware of the potential environmental benefits of this alternative to conventional construction. A new emerging field focused on the study of bio-based buildings is becoming the subject of several studies in order to understand and characterize their hygrothermal behavior and to reducing energy consumption and CO₂ footprint while keeping acceptable hygrothermal comfort to occupants.

However, investigating the relative humidity variations and neglecting it may lead, in some circumstances, to underestimate the risk of condensation and mold growth cold indoor surfaces and thus leads to the deterioration of the material and alteration of the thermal resistance of the envelope.

This current Special Issue aims to collect the last findings in specific laboratory or in situ experimental studies or modeling data at different scales and building topics based on hygrothermal behavior effects for better understand the complex physics of coupled heat, air and mass transfers.

Dr. Mourad Rahim
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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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