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**MATERIAL & HVAC
EQUIPMENT TECHNOLOGIES**

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AMERICAN UNIVERSITY OF BEIRUT



MOISTURE, MATERIALS, AND HVAC SYSTEMS SOME INSIGHT INTO HYGROTHERMAL INTERACTIONS AT DIFFERENT SCALES

by

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| Bio

Monika Woloszyn is a full professor at the Université Savoie Mont Blanc in France, and head of the Solar Academy Graduate School. Over the past 25 years at the Universities of Lyon and Savoie, Monika has covered various topics in Building Physics and Building Energy Performance. Her research focuses mainly on coupled heat and mass transfer in building envelopes, covering different scales from material behavior to whole building performance. Her research work in modeling with experimental validation has enabled Monika to gain a better understanding of building envelopes. The applications of this research span from innovative modern double-skin ventilated facades to very traditional wooden-frame, bio-based, or earth-based walls. Monika has published over 100 scientific papers. She is involved in Building Physics and International Building Performance Association communities. She is IBPSA Fellow and serves as Editor in Building and Environment Journal.

| Abstract

Moisture in construction elements has a recognized effect on building performance, as it impacts not only moisture-related damage but also thermal energy performance (thermal conductivity). Several construction materials are strongly hygroscopic, and old construction materials, such as earth and timber, are among them. It is also important to maintain indoor relative humidity at correct levels, to ensure hygrothermal comfort and indoor air quality (IAQ). For example, humidity-controlled ventilation systems are widely used in several European countries. With the tightening of energy performance directives all over the world, and the necessity of low carbon shift, there is a growing interest for detailed studies of moisture-related phenomena at different scales in the field of building performance. What is relevant at the material/wall scale? What is relevant for the interaction with the HVAC system and comfort? The talk will discuss related issues, show some examples, and try to address some questions.



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