

A portrait of Professor Jan Carmeliet, a middle-aged man with grey hair, wearing a maroon V-neck sweater over a striped collared shirt. He is standing in front of a large window with a grid pattern, looking directly at the camera with a neutral expression. The background is slightly blurred, showing the window and some architectural elements.

Professor Jan Carmeliet

«To address climate change, we must find new solutions, and make society aware of the need to tackle the problem at its roots.»

Chair of Building Physics

We study the urban climate from material to city scale including its impact on urban comfort, health and building energy. Using observations and models, we try to understand the physical processes driving local heat islands during heat waves and develop measures such as evaporative cooling to mitigate heat waves. Our education activities include courses at Bachelor and Master level covering building materials, building physics (heat, acoustics, moisture, comfort, energy), moisture transport in porous materials, and urban physics.

Focus

- Urban microclimate, climate change and heat wave mitigation
- Fluids and porous materials
- Buildings and urban energy

Tools and methods

- Multiscale modelling of urban climate
- Molecular dynamics, lattice Boltzmann, discrete elements, pore network and continuum modelling of heat and moisture transport in porous materials
- Developing urban mitigation measures

Further details online:
www.carmeliet.ethz.ch

