MECH SEMINAR SERIES 2026

Department of Mechanical Engineering

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Thursday, 5 February 2026
Venue : E16 Lecture Theater
Time : 11.00 – 12.00

Title : From building envelope to urban microclimate – multiscale modeling approaches for passive cooling and resilient strategies

Speaker : Professor Emmanuel Bozonnet

Laboratory of Engineering Sciences for the Environment

University of La Rochelle, France

Abstract : Climate change and new environmental challenges are reshaping building and urban design, affecting both new construction and the retrofitting of existing buildings. With most populations residing in cities (87% in New Zealand and 75% in Europe), overheating risks are intensified by climate change and urban heat islands. This presentation introduces advanced multi-scale modelling approaches spanning building envelopes to urban microclimates, addressing complex optimisation challenges in real design contexts. Particular emphasis is placed on passive cooling, thermal comfort, and resilience under extreme events, which increasingly challenge conventional design strategies.

Brief Bio: Professor Emmanuel Bozonnet is a Full Professor at the University of La Rochelle (France), specialising in urban microclimates and building energy performance. Since 2006, he has led research on urban heat islands and currently serves as Director of the joint CNRS–Tipee laboratory RU-PEE'lab, focused on building energy efficiency and digital built environments. He is an active contributor to international research initiatives (including IEA Annexes 80 and 97), has supervised numerous early-career researchers, authored over 120 peer-reviewed publications, and led extensive academic–industry collaborations.