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PhD candidate in Engineering and Information Technology

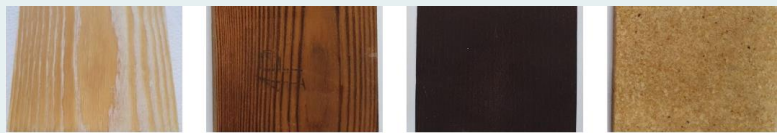
Supervisors: Dr. Emiliano Borri
Prof. Dr. Luisa F. Cabeza
Research group: GREIA (UDL)

Research topic and interests

- My research focuses on thermal energy storage (TES) for buildings through the integration of biobased bio-based phase change material (PCM) into sustainable construction materials.
- It includes thermal characterisation of controlled and impregnated with PCM composites for passive thermal energy storage in buildings, with particular emphasis on wood-based wallboards and flooring.



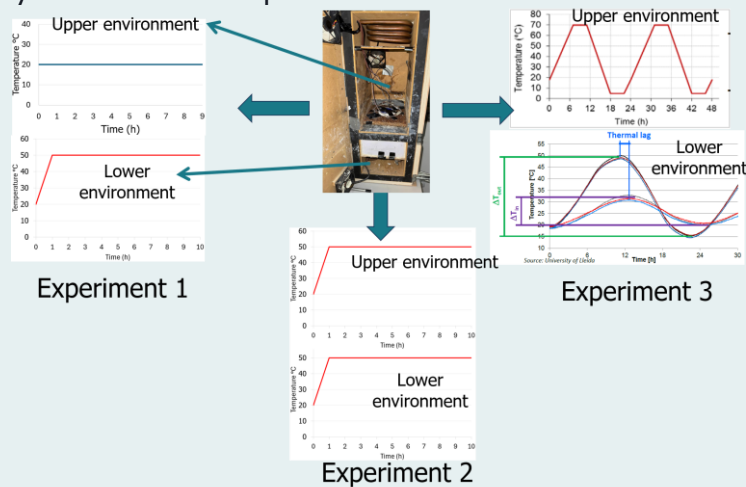
Wood non-impregnated as reference composites



Wood composites impregnated with biobased PCM

Key areas of expertise

Experimentally investigating the thermal behaviour of fully biobased PCM-wood composites, including thermal conductivity, heat capacity, thermal transmittance, and dynamic thermal response.



Current work

- Research work focuses on the structural and thermal characterisation of bio-based PCM-wood composites, including materials developed with different wood species, PCM uptakes and bio-based binders.
- By investigating the influence of:
 - PCM uptake in different woods
 - Wood species and additives
 - Different bio-based binders
 - Material density and compression
 - Composite manufacturing and treatment processes
- Building-scale performance
 - Evaluating the practical contribution of these composites through experimental tests in real buildings

Testing in real buildings



- These composites are installed in walls and flooring of the buildings and undergoing testing.
- These innovative PCM-wood composites with TES functions are expected to reduce energy consumption by 20%.

ACKNOWLEDGEMENTS

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