

COMPUTATIONAL MICROMECHANICS OF WOOD, ENGINEERED WOOD PRODUCTS AND CELLULOSE-BASED MATERIALS

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ABSTRACT

This minisymposium will provide a forum to present and debate recent applications of computational micromechanics to wood and cellulose-based composites. It aims at bringing together researchers from various disciplines, such as wood and paper science, engineering, physics, and chemistry, working on the mechanical characterization and simulation of these composite materials. The symposium is intended to give an overview of our current understanding of wood and paper micromechanics from the molecular to the macroscopic scale and of the manifold approaches to link observations at different length scales. Contributions on combined computational and experimental approaches, reflecting the need for comprehensive microstructural information in microscale/multiscale modelling, are also welcome.

Topics of interest include (but are not limited to)

- multiscale and multiphysics modelling of wood and cellulose-based materials;
- molecular dynamics simulations;
- structure-function relationships;
- wood fibres and fibre networks;
- fracture, damage and large deformations;
- transport phenomena involving vapour, fluids and solids;
- interactions between microscaled components;
- influence of moisture, temperature, and time on the mechanical performance;
- micromechanical aspects of wood modification and innovative cellulose fibre-based composites.