

MECHANICS OF WOOD AND BIOCOMPOSITES IN ENGINEERING

TRACK NUMBER (2200 OTHER: COMPUTATIONAL WOOD MECHANICS)

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ABSTRACT

This session focuses on the use of computational techniques to better understand the mechanical behavior of wood and bio-based structural materials. The underlying mechanics of such materials is characterized by a rather complex nonlinear behavior that involves anisotropy, viscoelasticity, elasto-plasticity, damage, etc., which can get even more complex under environmental influences such as due to moisture and temperature variations [1]. Mainly simplified material models are used/replaced for simulations to describe the behavior of these materials. However, the models need to sufficiently cover the relevant phenomena for efficient simulation/optimization to support design decisions [2]. Therefore, this session aims to discuss recent advances in computational mechanics of wood and biocomposites and their engineering applications, focusing on modeling methodologies. Topics of interest for this session are:

- Time-dependent static, quasi-static and dynamic analysis
- Stochastic modelling and optimization
- Development of new material models
- Model order reduction and computational efficiency
- Damage and failure
- Validation and verification of the numerical problems

REFERENCES

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