MWP – Young Researcher Abstract 2024

Project title:

Wood and Adhesive Interactions for Durable Bond Lines in EWPs

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Abstract (approx. 200 words)**:**

The increased utilization of engineered wood products (EWPs) in building sector contributes largely to carbon storage and sustainable building practices. The structural integrity and durability of bond lines in wood components are important for modern mass construction. The susceptibility of wood polymers to environmental factors like moisture and UV light compromise joint performance, leading to premature failures and reduced longevity. Moreover, adhesive application on wood surfaces and bond line properties are influenced by a number of factors. A certain penetration of the adhesive inside the wood cells helps the formation of stable bonds, while this is regulated by the local moisture of wood cells and the rheological characteristics of the adhesive. In my doctoral study, I aim to understand the interactions between wood and adhesive by determining the role of adhesive line formation and penetration into the wood cells in its short- and long-term performance. This study expects to develop knowledge in efficient and durable bonding in wood products for better prediction of joint behavior under various conditions.

Key words:

EWPs, moisture dynamics, adhesive penetration, microscopy