MWP – Young Researcher Abstract 2024

Project title: Optimizing Recovered Wood from Building Demolitions through Circular Economy Principles	
Author: Nametso Linda Moumakwa, Mark Hughes	
Affiliation: Aalto University	**E-mail:** Nametso.moumakwa@aalto.fi

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

Given increasing concerns about the environment and a growing demand for sustainable building methods, this study investigates the feasibility of converting wood from demolished Finnish building into high performance building materials. We seek to assess and improve the performance of demolished wood by utilizing the circular economy's concepts, thus demonstrating it as a viable alternative to fresh wood in the building and forestry industry. Due to the ageing of the surfaces of demolition wood and heterogenous mixes of materials, plasma surface treatment will be explored as a way of enhancing the adhesion. These techniques are expected to improve the recovered wood's adhesive performance, bringing it up to par with fresh wood. We will use contact angle goniometry to obtain data on the wood surfaces' adhesive capability and wettability. Scanning electron microscope will be used to identify and investigate demolition induced micro-structural modifications. The goal of this research is to provide a viable and sustainable alternative for the forestry and construction sectors by improving the performance of salvaged wood while maintaining its intrinsic value. We may transition to a circular economy—one that reuses materials rather than discards them—by reevaluating the lifecycle of wood products.

Key words: Circular economy, Demolished Wood, Surface Modification, Sustainable building