

## MWP – Young Researcher Abstract 2023

<b>Project title:</b>	
Advancements in three-dimensional (3D) forming of fiber-based materials using a thermoforming process	
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<b>Abstract</b> (approx. 200 words):	
<p>The global movement to reduce plastic usage and promote sustainable alternatives has sparked interest in fiber-based materials. Researchers are investigating these materials as an environmentally impactful solution, aiming to enhance their market potential by incorporating existing technologies and improving manufacturing processes. Thermoforming, a cost-effective and versatile forming process widely used in plastics manufacturing, has received limited attention in the context of fiber-based composites.</p> <p>The primary objective of the research is to evaluate the feasibility of employing thermoforming for three-dimensional (3D) forming of fiber-based materials, with an emphasis on the multilayer and mixed composite structures. Addressing key challenges, the study aims to develop novel approaches for achieving high-quality thermoformed products by optimizing process operation and modifying tooling.</p> <p>Applying thermoforming to fiber-based materials has extensive implications; including the potential to revolutionize the forest-based industry by enabling the development of diverse and eco-friendly product lines. With sustainable alternatives gaining traction, this research could drive significant market demand and encourage a shift away from plastic-based products. Furthermore, the utilization of thermoforming in fiber-based composites can enhance manufacturing efficiency, leading to reduced costs and increased scalability. This advancement will not only benefit the forest-based industry but also positively impact other sectors, such as packaging, construction, and automotive, where fiber-based materials can offer greener alternatives.</p>	
<b>Key words:</b> Fiber-based materials, Thermoforming, 3D forming	