

## MWP – Young Researcher Abstract 2023

<b>Project title:</b> Dry papermaking	
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<p><b>Abstract</b> (approx. 200 words):</p> <p>In the paper industry, thermal drying accounts for the largest share of energy consumption in the conventional production of paper from an aqueous suspension. The development of a disruptive process for dry paper production thus holds enormous potential for saving not only the resource water, but above all the drying energy used, which would make it highly sustainable.</p> <p>Water fulfills several functions in paper production. It ensures fiber separation and distribution and thus good formation, fiber swelling and thus flexibility, compaction of the fiber structure by capillary forces during drying, and adhesion between the fibers by forming hydrogen bonds. These tasks must either be replaced technologically or - if water cannot be completely replaced - fulfilled by a necessary minimum of water. Research is being done on dry fiber web forming processes that allow good formation. By applying high pressures and temperatures, the fibers are compressed to create the largest possible molecular contact areas. Particular focus is being placed on investigating the bonding mechanisms that hold the fiber web structure together at its core and what minimal amount of water is required to achieve this to take advantage of the full potential of the paper's mechanical properties.</p>	
<p><b>Key words:</b> Dry papermaking, fiber bonding, water saving, energy saving</p>	