# CHEMIS-TREE ENGINEERED SANDWICH COMPOSITES

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Pulp foams are a potential alternative to porous polymers; however, their poor mechanical properties limit their application to packaging materials. We utilised the sandwich composite approach to produce panels (370 mm x 300 mm x 20 mm) comprising of pulp fibre foams and kraft liner papers to improve the mechanical properties of pulp fibre foams. Two types of sandwich structures are produced to improve the mechanical properties of pulp fibre foams: foam core sandwich panels and stiffened sandwich composites. The resulting sandwich structures materials have apparent densities ranging from 80 kg/m$^3$ to 161 kg/m$^3$. The mechanical properties are assessed in compression, three-point bending and double lap shear loading conditions. We show that pulp fibre foam sandwich structures possess significantly higher compression and flexural moduli and strengths when compared to pure pulp fibre foams. Stiffening the pulp fibre foam core further by incorporation of kraft liner paper stiffeners results in even higher mechanical, including lap shear, properties.

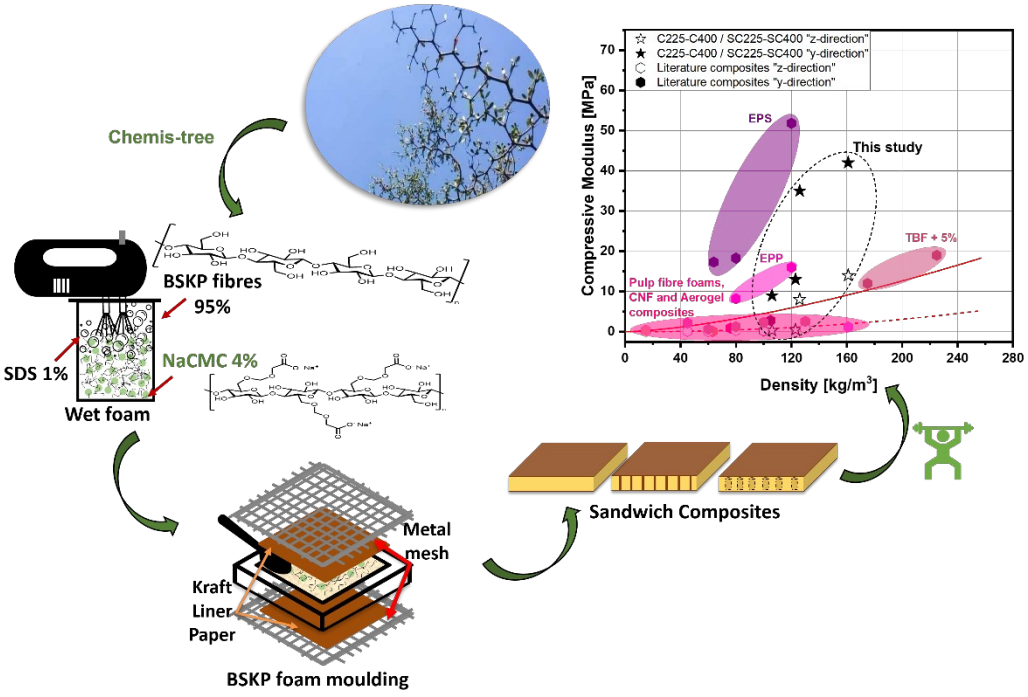


Figure 1. Graphical abstract of the Sandwich Composites.