

## MWP – Young Researcher Abstract 2023

<b>Project title:</b> Bio-waxes used as a barrier formulation material in coating fibre-based substrates	
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<b>Abstract</b> (approx. 200 words):  In recent years, bio-based and renewable material alternatives to replace fossil-based plastic packaging solutions have been gaining popularity in the food packaging field. The functions of food packaging materials include containing the food product, and protecting it throughout the supply chain. Polyolefins are well-established food packaging materials due to their lightness, transparency, low price and barrier performance. Resistance to water, water vapour and grease enables to preserve food products from the surroundings. However, drivers such as legislative acts and increased environmental awareness among consumers have forced the materials development towards more sustainable and recyclable solutions.  To increase the shares of bio-material content and improve barrier performance of existing dispersion barrier coatings, bio-waxes were introduced to the coating formulations. In addition, the tested bio-waxes were also characterised using wide-angle x-ray scattering (WAXS) method allowing to understand the crystallinity and crystal structure in the nanoscale. It was concluded that there was a connection between the improved barrier performance and structurally stable bio-waxes. Bio-waxes are renewable, bio-based and readily available materials that can contribute to the sustainable packaging materials development while improving the desired barrier performance.	
<b>Key words:</b> Bio-based waxes, barrier properties, food packaging materials, x-ray scattering, crystallinity	