



# WOOD ZYMES

## WOOD TRANSFORMING ENZYMES

### **Kick-off meeting of the WoodZymes project, a Research & Innovation Action of the H2020 “Bio-Based Industries” Joint Undertaking coordinated by CIB, CSIC**

The Biological Research Center (CIB) from the Spanish National Research Council (CSIC) will host on June 14<sup>th</sup> (in Madrid, Spain), the kick-off meeting of the WoodZymes European Project on “Extremozymes for wood-based building blocks: from pulp mill to board and insulation products”. This is a H2020 Research & Innovation Action funded with € 3.25 million by the “Bio-Based Industries” Joint Undertaking ([www.bbi-europe.eu](http://www.bbi-europe.eu)) and coordinated by Dr. Susana Camarero from the CIB [Group of Biotechnology for Lignocellulosic Biomass](#).

The project goal is to develop tailor-made enzymes able to work under the extreme operation conditions of pH and temperature required by the wood-processing industries to remove or modify hemicelluloses and recalcitrant lignin protecting cellulose in the plant cell wall. This will enable selective valorisation of currently underutilised biomass fractions to provide high-value bio-equivalents of petroleum-derived chemical building blocks.

Enzyme application will include the recovery of phenolic compounds from enzymatic breakdown of technical lignin, and the extraction of lignin and hemicellulose compounds from enzymatic delignification and bleaching of kraft pulp. Extremophilic enzymes will also be used to valorise these compounds as bio-based precursors for adhesives in the manufacture of medium-density fibreboards, and as components of insulation polyurethane foams, as well as for obtaining renewable sugar-based papermaking additives. As shown in the figure below, WoodZymes illustrates the potential of extremozymes in the global bio-based economy, contributing to the sustainability and competitiveness of cellulose, fibreboard and polyurethane manufacture, and establishing a direct link between pulp and wood industrial sectors.

The feasibility of this ambitious project is based on a strong European consortium from Portugal, France, Finland and Spain, formed by world-leading companies of the sectors of pulp & paper ([The Navigator Company](#) and [Fibre Excellence](#)), fibreboard manufacture ([FINSA France](#)) and insulation materials ([Soprema](#)), a biotech SME commercializing extremophilic enzymes ([MetGen](#)) and several research institutes ([CIB](#), [IRNAS](#) and [IATA](#) from [CSIC](#)) and technology centres ([RAIZ](#), [CTP](#) and [FCBA](#)) of the wood, cellulose, lignin and enzyme sectors.

CTP contribution to the work plan will be led by Dr. Valérie Meyer for the InTechFibres team and will focus on the use of extremophilic enzymes in the production of lignocellulosic fibres, especially in the delignification and bleaching stages of the kraft pulping process. The use of enzymes will be explored to facilitate the lignin extraction during the delignification and bleaching stages and its recovery in the different mill effluents. Besides, hemicelluloses will be also considered in these effluents to be valorised as papermaking additives. The production of lignocellulosic

fibres with these extremophilic enzymes must be comparable to the current kraft pulping process in terms of fibres quality but will be done with a lower environmental impact.

More information: [www.bbi-europe.eu/](http://www.bbi-europe.eu/); [www.woodzymes.eu](http://www.woodzymes.eu) (under construction)

Figure illustrating the WoodZymes concept:

