

N°358 / OC

TOPIC(s) : Biomass conversion / Alternative technologies

## Bio4Products: Creating sustainable resources for processing industry

### AUTHORS

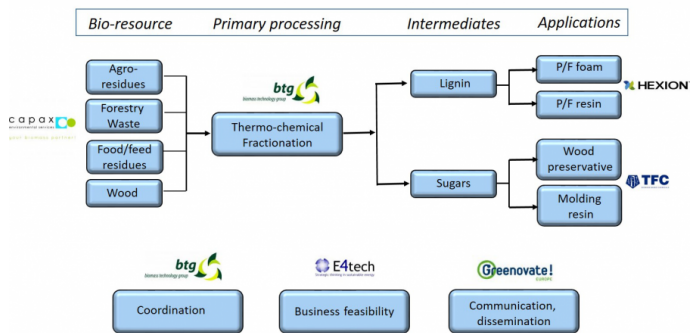
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### PURPOSE OF THE ABSTRACT

Biomass is a sustainable feedstock for the production of high added value chemicals and materials, and will play an important role in the transition of the European Process Industry to a Sustainable Process Industry. However, for the optimal utilization of these bio-resources the fractionation of the biomass on basis of functionalities is required. The innovative approach of Bio4Products is to apply fast pyrolysis to enable the fractionation of the bio-resource, but keeping the key chemical functionalities in separate, depolymerized fractions. In an earlier project, a bench-scale fractionation unit was constructed to process 12 kg/h of pyrolysis oils and produce raw-materials for further upstream processing. Within this project this continuous bench scale fractionation facility will be scaled up from a TRL 5 to TRL 6-7. Subsequently, Bio4Products will demonstrate the use of the resulting intermediate processing streams for the production of wood preservation products, moulding resins and phenolic resins (see Figure) as cost-effective renewable alternatives for fossil resources in the conventional products (30-100% substitution). Like for the fractionation, each of the steps in the whole chain have at least been proven on bench-scale (TRL 5) and should reach TRL 6-7 by execution of this project. The feedstock flexibility will be shown by demonstrating the complete chain for 4 different biomass resources (residual) representative for the majority of biomass resources available in Europe.

Both the sugar and lignin stream can be produced in non-concentrated form, or can optionally be further treated in subsequent processing. For the wood modification, a dilute sugar stream is used, while for the moulding resin a more concentrated sugar stream is desired. The untreated lignin and the concentrated lignin can be readily used in various phenolic resins. Only for the optional (wood) resin extraction from the pyrolysis oil an additional solvent is applied, which will be recycled. Bio4Products will see a unique blend of organizations and expertise working together, led by BTG Biomass Technology Group from the Netherlands. Industrial partners from Belgium and Germany will demonstrate the viability of the new value chains, with support from expert partners in the United Kingdom and Belgium. The project, which started in September 2016 will run for four years, and is funded by the Sustainable Process Industry through Resource and Energy Efficiency (SPIRE) programme, under the EU framework programme Horizon 2020. In this contribution an update will be given on the progress of the project and the applications of the various fractions. [www.bio4products.eu](http://www.bio4products.eu)

# FIGURES



**FIGURE 1**

Figure 1

Schematic representation of the Bio4Products concept

**FIGURE 2**

## KEYWORDS

Bio-resources | Thermo-chemical fractionation | Key functionalities | Demonstration

## BIBLIOGRAPHY