

## A biorefinery approach to the separation and application of the products of lignocellulose pyrolysis

Project contract No. 1.1.1.2/16/I/001

Project number: 1.1.1.2/VIAA/3/19/388

Operational Programme “Growth and Employment”

Activity 1.1.1.2 “Post-doctoral Research Aid”

### Project progress over-view from January 1 2023 to March 31 2023

Implementation of WP3 “Analysis of the pyrolysis product fractions and purification of specific chemicals” continues, and WP4 “Development of a universal scheme for the sequential separation of valuable products from pyrolysis condensates according to biorefinery principles” has been started.

During the 11<sup>th</sup> quarter, different commercially available ion exchange resins have been compared for the separation of phenols from pyrolysis condensates by solid phase extraction. The resins varied by their matrix structure, porosity, functionality, and counter ions. Ultra-high performance liquid chromatography showed that strongly basic anion exchange resins in OH<sup>-</sup> form could selectively adsorb phenols, but not furans and sugar derivatives. The phenol extract obtained with a mixture of methanol, water and acetic acid contained mainly vanillic acid, syringic acid, vanillin, syringaldehyde and acetosyringone. Since the project is approaching its final phase, work has been started on summarising the results into a technological instruction for consecutive separation of phenols, levoglucosan and a mixture of hydrolysable anhydrosugars.

Partners at the Kaunas University of Technology were visited during mobility. A presentation about the project results and more generally about the research directions at LSIWC was given to the staff of KTU to promote future cooperations.

**Leading partner** – Latvian State Institute of Wood Chemistry

**Cooperation partner** – Kaunas University of Technology, the Department of Food Science and Technology

**Project duration:** 36 months.

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