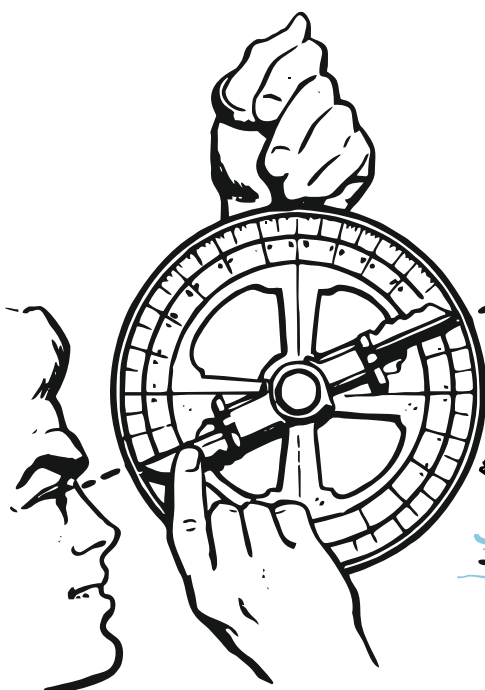




Łukasiewicz
Institute of Heavy
Organic Synthesis
BLACHOWNIA



HORIZON
europe

TOPIC ID:
HORIZON-JU-CBE-2025-RIA-01

Valorisation of untapped forest biomass

Sustainable Lignin-Coated Fertilizers for Forestry and Soil Remediation

Type of project: RIA

Call opening date: 4 April 2025

Call deadline: 17 September 2025

ABOUT US

Since early 2000s Łukasiewicz - ICSO "Blachownia" has been working on various technologies to replace fossil-based chemicals with bio-based or waste-based alternatives. The feedstocks that we are working on include plant oils, wood oil, starch, bio-based alcohols, lignin, cellulose, and organic acids. Our offer can be divided into the following segments: fuels, specialty chemicals, polymers, solvents, cosmetic additives and waxes.

Łukasiewicz – ICSO "Blachownia" offers cooperation in the following areas:

- Development of lignin-based coatings for multi-component fertilizers
- Assessment of Fertilizer Performance
- Process upscaling (from lab to pilot scale)
- Analytical services and online process control
- Life Cycle Assessment (LCA) and Techno-Economic Analysis (TEA)
- Biodegradation tests

OUR IDEA

Lignin-Derived Coatings for Multi-Component Fertilizers

We develop lignin-based encapsulation methods for multi-component fertilizers, combining mineral nutrients (N, P, K) with organic materials. These biodegradable coatings are designed to optimize nutrient release kinetics, reducing nutrient losses and improving soil quality. By enabling slow-release formulations, they minimize environmental impacts and support carbon sequestration by enhancing soil organic matter.


Our work includes biodegradability tests, conducted in compliance with Regulation (EU) 2019/1009, to ensure that the coatings degrade into environmentally benign substances. These tests confirm their sustainability by reducing plastic residues and supporting circular economy principles.

We also evaluate fertilizer performance through controlled pot tests, measuring nutrient efficiency, plant growth, and yield under realistic conditions. By integrating slow-release technologies and biodegradable materials, we aim to promote sustainable agriculture, reduce eutrophication, and enhance soil health for long-term environmental benefits.



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