PRESS RELEASE

SPLENDOR unlocks the potential of lignin from black liquor to drive Europe's circular bioeconomy

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A European research and innovation project is developing new ways to transform lignin in black liquor, a by-product of the pulp and paper industry, into high-value bio-aromatics for industrial applications.

Six months after its official start, **SPLENDOR** is now fully underway, bringing together partners from across Europe to explore new pathways for the valorisation of black liquor, a side stream from the pulp and paper industry. At a time when reducing reliance on fossil-based chemicals and improving resource efficiency are key priorities, SPLENDOR aims to transform this underused stream into a valuable and sustainable source of bio-aromatic compounds.

Funded under the **Circular Bio-based Europe Joint Undertaking (CBE JU) and its members**, SPLENDOR aims to develop and demonstrate an innovative approach to converting black liquor into valuable bio-aromatic fractions. This process breaks down lignin into smaller building blocks and separates them into high-value components for industrial applications. In doing so, the project seeks to contribute to more circular, resource-efficient and sustainable industrial value chains in Europe.

Over a period of 36 months, SPLENDOR brings together a multidisciplinary consortium of research organisations, technology developers and industrial partners working across the lignin value chain. The project aims to demonstrate how these bio-aromatic fractions can be further developed for a range of industrial applications, including fine chemicals, waterproof coatings, rubber and tyre plasticisers, and sustainable fuel components.

One of the project's distinguishing features is its ambition to work directly from black liquor, without relying on purified lignin as a starting point. This approach is designed to support a more direct and integrated valorisation pathway. At the core of SPLENDOR is the objective of converting this stream into light and heavy oil fractions containing valuable aromatic compounds, while enabling the recovery and return of inorganic chemicals to the pulp mill.

During this first phase of the project, the consortium has focused on laying the scientific, technical and operational foundations for the work ahead. This includes preparatory work on process optimisation, analytics, modelling and integration methodologies, as well as communication activities supporting the next stages of implementation.

A major step in the project pathway will be the advancement of a 250 L/h prototype, which will be tested under relevant industrial conditions. The planned trajectory includes prototype testing at LignoCity, the open innovation and test site in Sweden, followed by further integration work in an operational pulp mill environment. These activities are intended to help assess continuous operation, feedstock variability and system performance under industrially relevant conditions, while informing future scale-up.

In parallel, laboratory research and advanced modelling will support the optimisation of both depolymerisation and separation steps. The knowledge generated through the project will also contribute to the design of a future 5,000 L/h demonstration plant, representing an important step towards future industrial deployment.

As the project progresses, SPLENDOR will also evaluate the potential of lignin-derived fractions in several end-use applications. By connecting upstream process development with downstream industrial requirements from an early stage, the project aims to demonstrate the relevance and versatility of lignin-based building blocks across a range of sectors.

By combining research, industrial collaboration and pilot-scale ambition, SPLENDOR aims to help unlock new value from industrial side streams and support Europe's transition towards a more sustainable and circular bio-based economy.

As Prof. Jeroen Lauwaert, Project Coordinator of SPLENDOR, explains:
"SPLENDOR is about rethinking how we use one of Europe's largest industrial side streams. Instead of burning black liquor, we show how it can become a local source of valuable bio-aromatics, integrated directly into pulp mills and serving real industrial markets. That shift is essential for a truly circular bioeconomy."

About SPLENDOR
SPLENDOR stands for: Sustainable Production of Lignin-Derived End-Products via Depolymerisation Reactions.

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