Liberate

The potential of the lignin feedstock

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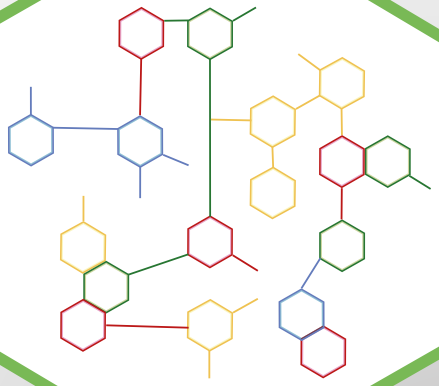
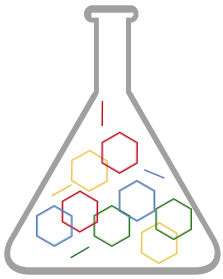
Pilot scale electrochemical plant to demonstrate the commercial opportunities of converting low cost lignin feedstock in high value biosustainable chemicals such as vanillin, antioxidants or polyamide.

LIGNIN

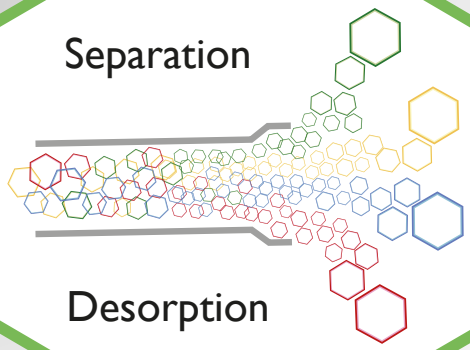


CHEMICALS



Decomposition of raw material

Separation



Desorption

FLOW ELECTROCHEMICAL REACTOR

FLOW SEPARATION

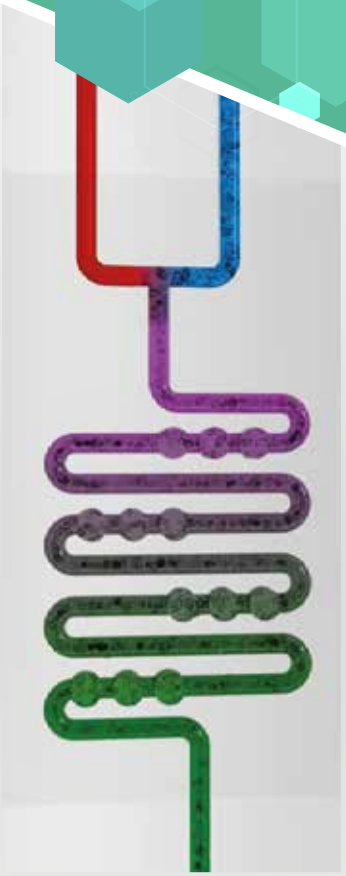
VALUE CHAIN

Starting material

Kraft Lignin
Organosolv Lignin
Cyclohexanol

Electrochemical process

Reaction
Electrodes
Reactors
RES fluctuation



Flow system

Electrochemical
Downstream

System demonstrator

Design
Construction

Validation

Energetic
Business
LCA

Market

Antioxidant
Phenolformaldehyde
Caprolactones
Aromatric aldehydes
Polyamide
Polyester

OBJECTIVES

01

Electrochemical depolymerisation
of kraft lignin to synthesise vanillin with a 7% yield.

02

Electrochemical depolymerisation of organosolv lignin to synthesise mixed phenolic derivate oligomers with a yield of > 35%

03

Electrochemical oxidation of biosustainable cyclohexanol to synthesise propyladipic acid with a yield of up to 80%

04

A biorefinery process:

- Capable of accommodating renewable energy fluctuations without loss in efficiency
- Exhibits a 95% improvement in the energy efficiency of the process and 350% improvement in resource efficiency
- Produce 29 times less CO_2 than the conventional petrochemical alternatives

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GATE 2 GROWTH

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