



H el ene CURMI

Post-doc (2019-2021)
LGP2 (C. Chirat; D. Lachenal)

Study of the degradation of the black liquor components during its hydrothermal treatment

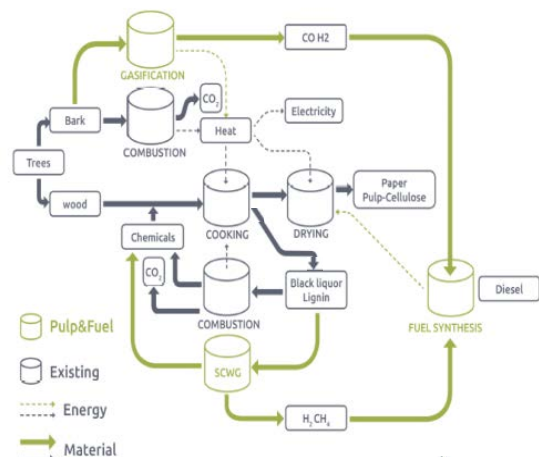
Etude de la d egradation des composants de la liqueur noire lors du traitement hydrothermal

Context

Transport sector

- 25% of EU greenhouse gas emissions
- 95% of fossil fuel
- EU objective : 10% alternative fuels in 2020
- Limitations in biomass availability
- Avoid indirect land use change effects
- Need for **advanced** and **sustainable biofuels**

Valorize pulp and paper mill residues into biofuels thanks to gasification



- 10 Partners from 4 countries
- Oct 2018 – Sept 2022
- Budget 4.9 M 

PULP & FUEL
pulp and paper industry waste to fuel



This project have received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 818011.

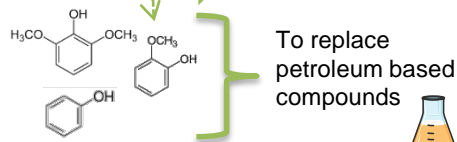
Objective

Post-doc objective:

Study of the degradation of the black liquor components during its hydrothermal treatment

- Understand and identify lignin depolymerization steps
- Looking for interesting phenolic compounds

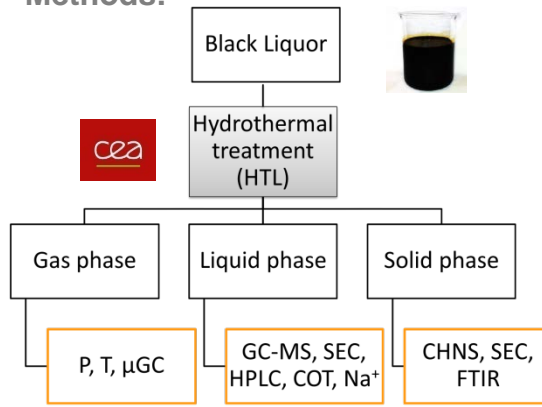
Lignin $\xrightarrow{\text{SCWG}^*}$ H₂, CO₂, CH₄



* **Supercritical Water Gasification**

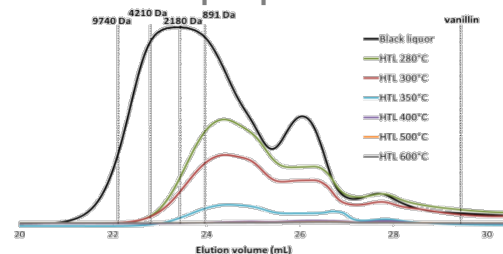
Critical point : 374 C ; 22.1 MPa

Methods:



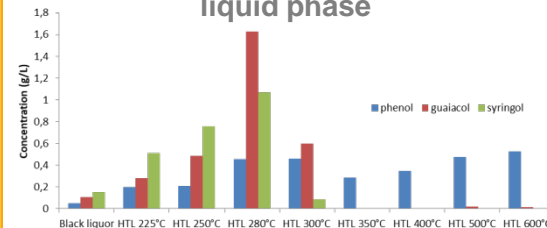
Results

Size Exclusion Chromatography of liquid phase

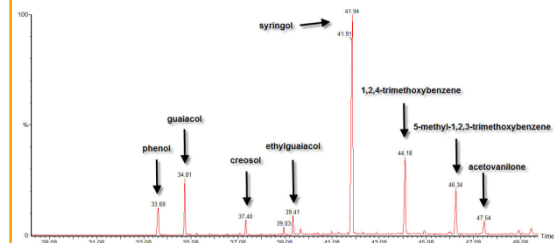


- Lignin depolymerization already occurs at low temperature

Search for molecules of interest in liquid phase



- 280 C is the optimal temperature
- A yield of **55g per kg** of lignin in black liquor has been achieved



- Other compounds have also been extracted