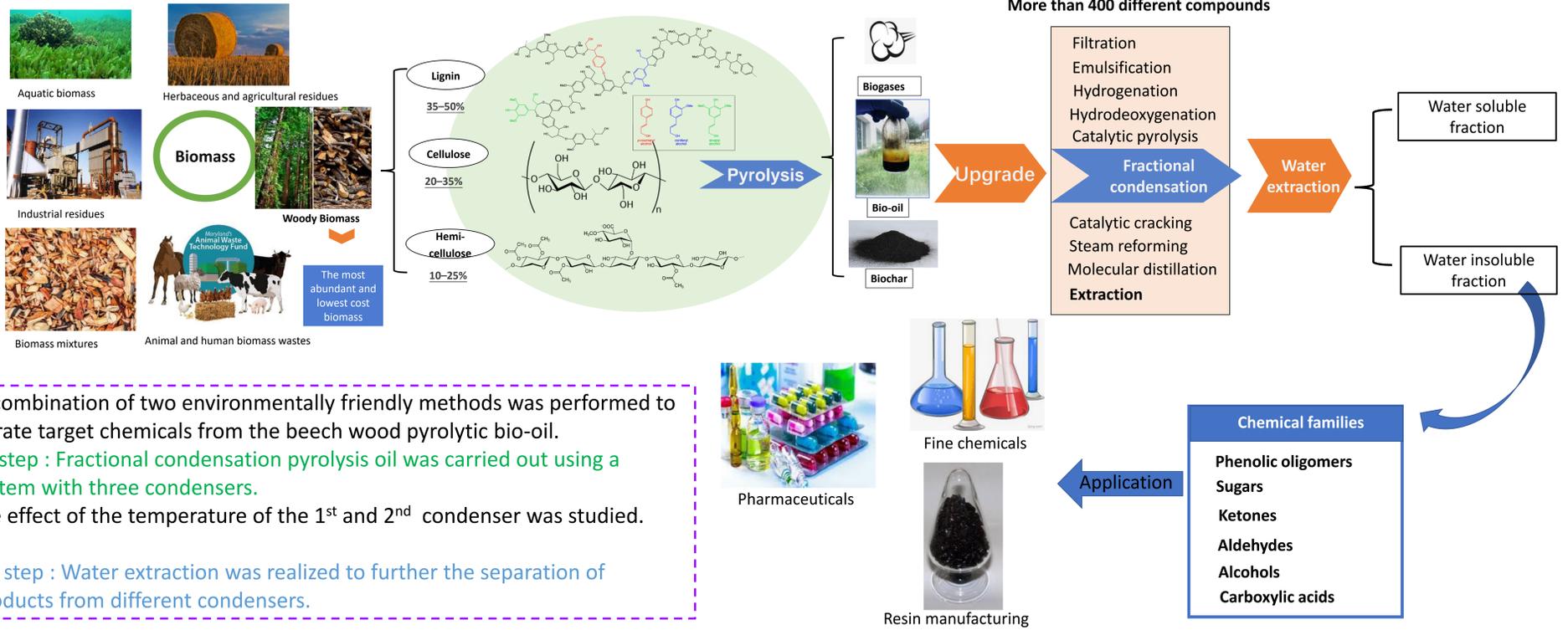


# Chemical Characterization of pyrolysis bio-oil separated by fractional condensation and water extraction

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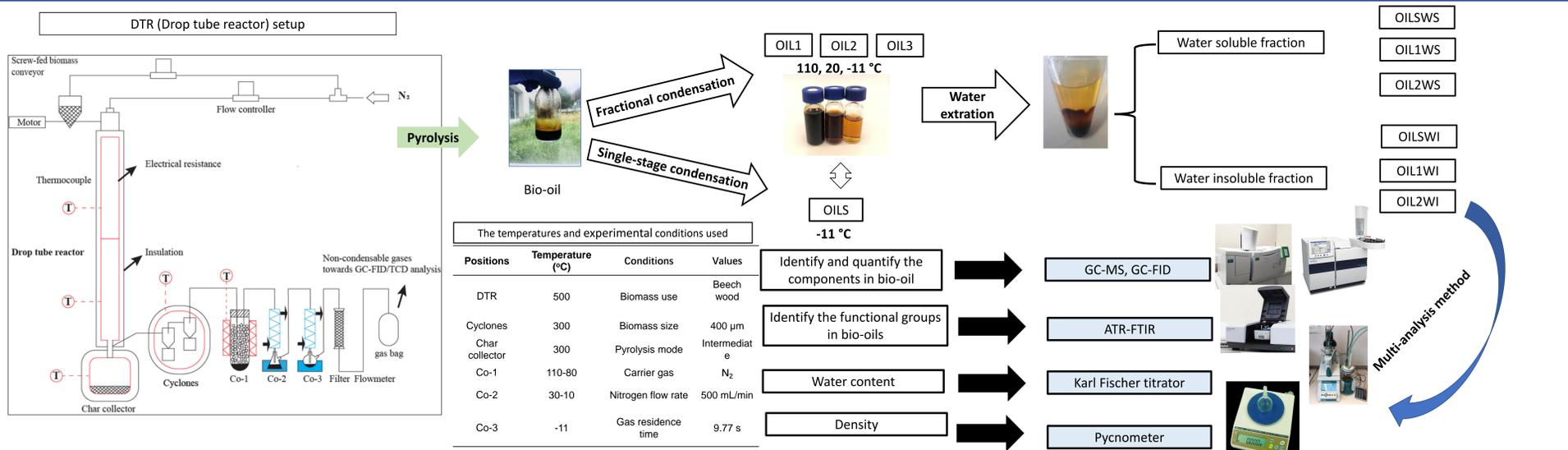
## Introduction and Material



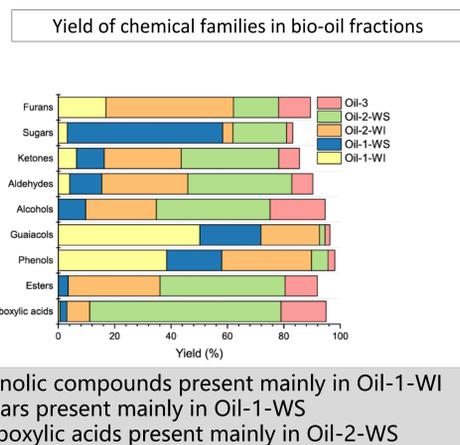
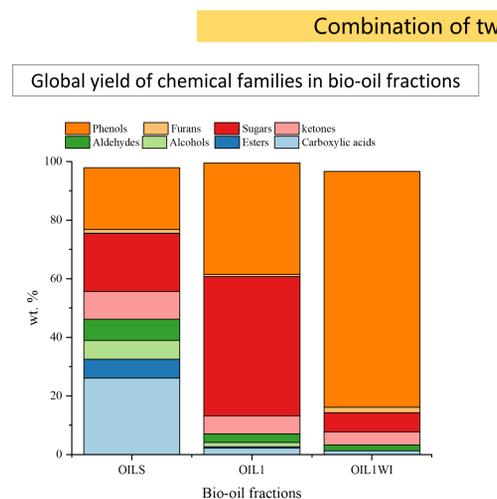
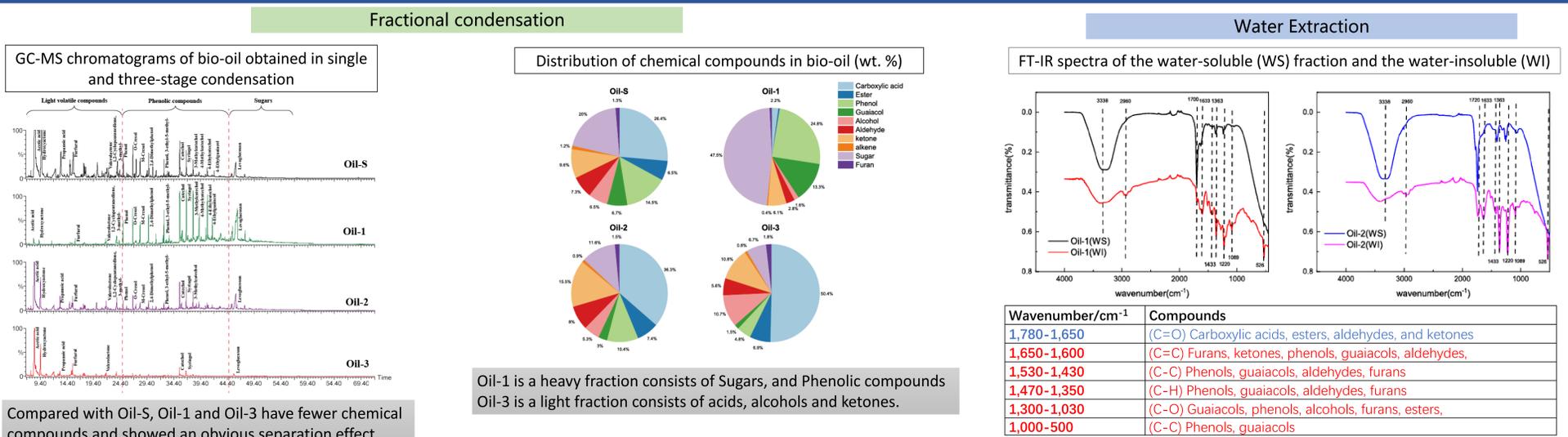
The combination of two environmentally friendly methods was performed to separate target chemicals from the beech wood pyrolytic bio-oil.

- 1<sup>st</sup> step : Fractional condensation pyrolysis oil was carried out using a system with three condensers. The effect of the temperature of the 1<sup>st</sup> and 2<sup>nd</sup> condenser was studied.
- 2<sup>nd</sup> step : Water extraction was realized to further the separation of products from different condensers.

## Experiment and Analysis Method



## Results and Conclusions



Phenolic compounds present mainly in Oil-1-WI  
Sugars present mainly in Oil-1-WS  
Carboxylic acids present mainly in Oil-2-WS

## Conclusions

- Combining fractional condensation and water extraction is an efficient and lowest cost method for the separation of bio-oil.
- Concerning fractional condensation part, phenols and sugars are mainly in the first condenser. An increase in the first condenser temperature promotes the selectivity for sugars and phenols in Oil-1.
- The water extraction is more beneficial for the Oil-1: Sugars can be separated efficiently in the WS fraction and phenols in WI fractions.