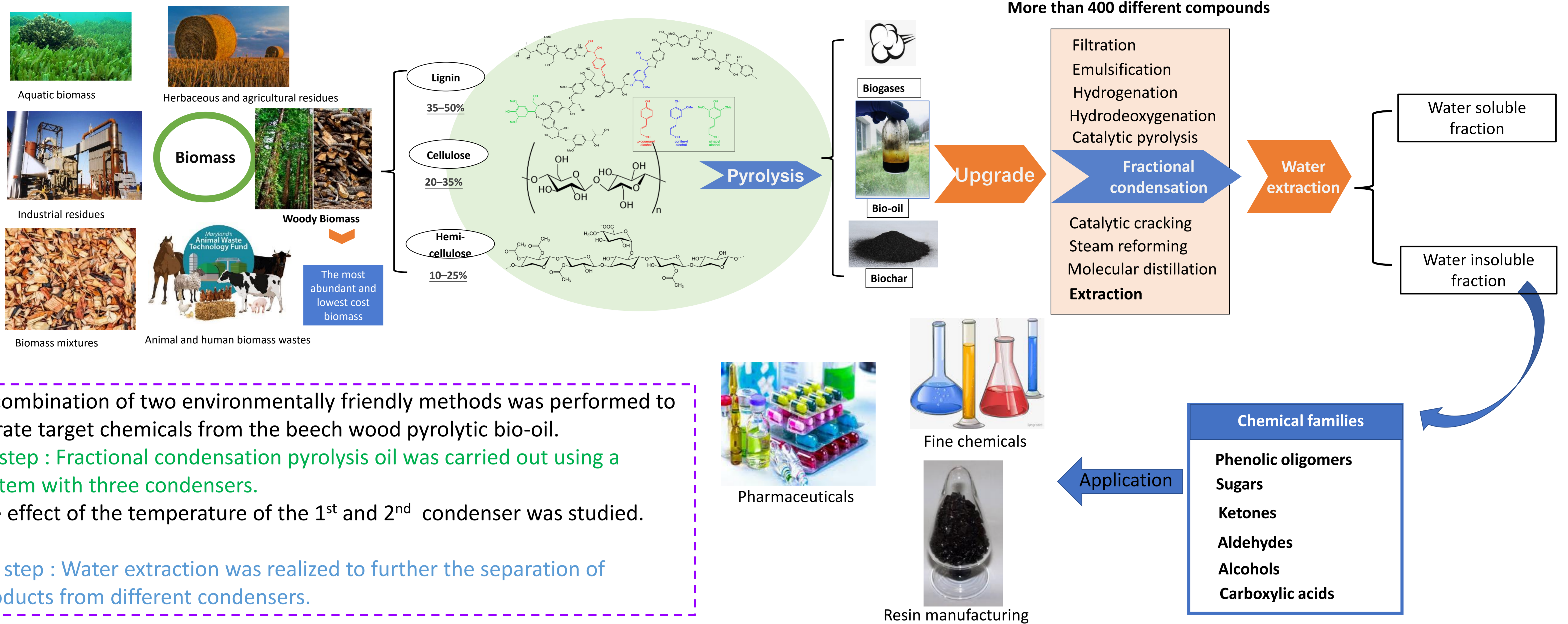


Chemical Characterization of pyrolysis bio-oil separated by fractional condensation and water extraction

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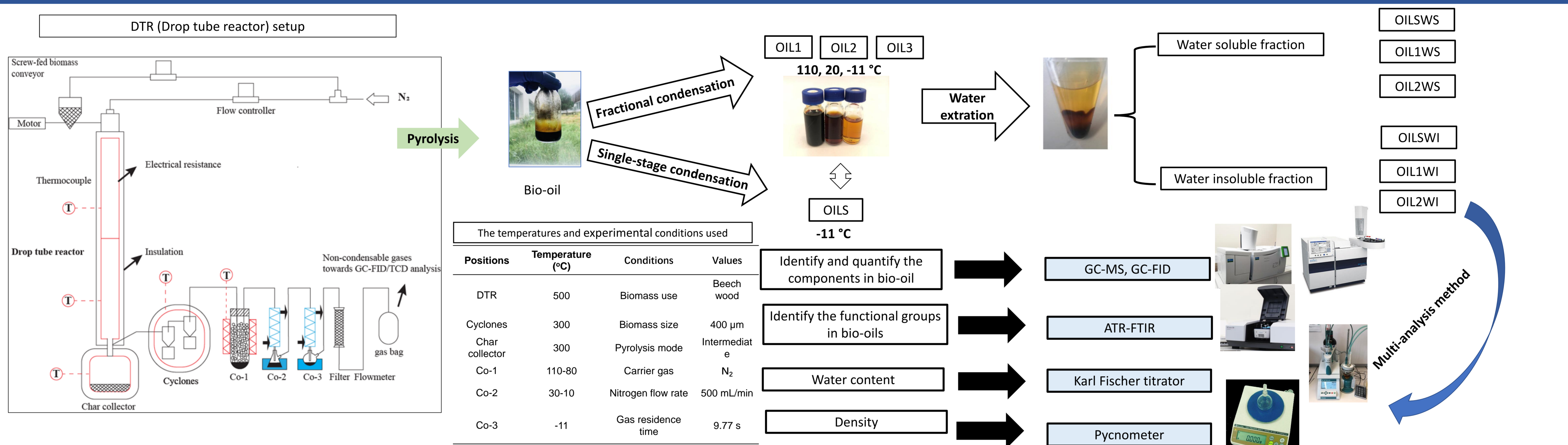
Introduction and Material



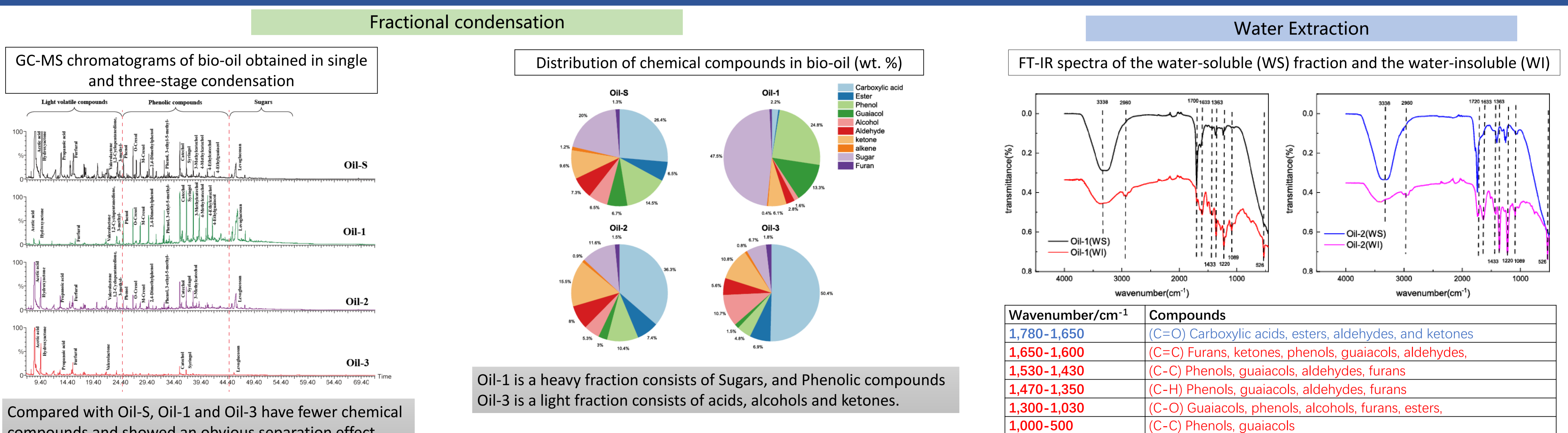
The combination of two environmentally friendly methods was performed to separate target chemicals from the beech wood pyrolytic bio-oil.

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

Experiment and Analysis Method

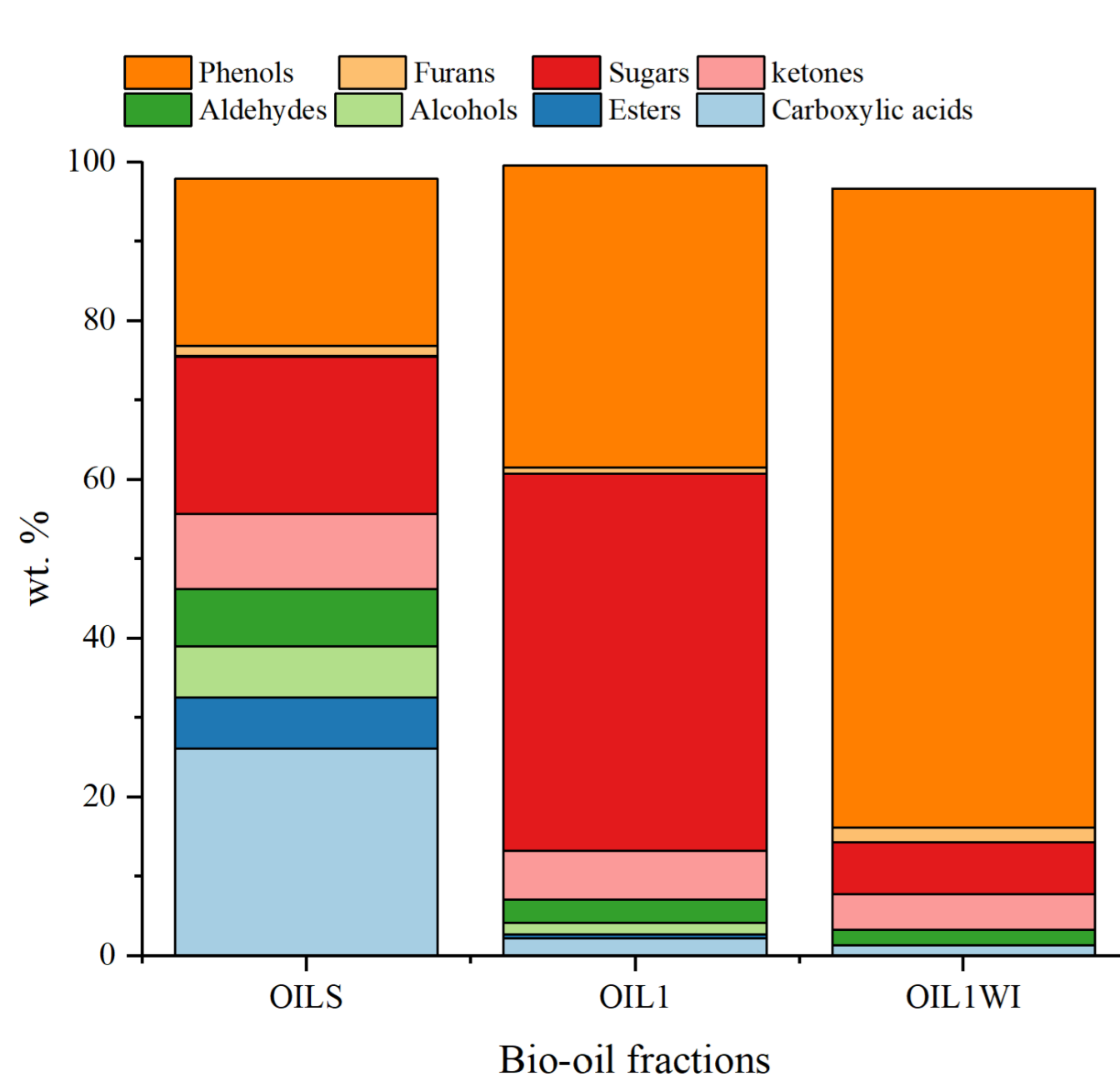


Results and Conclusions

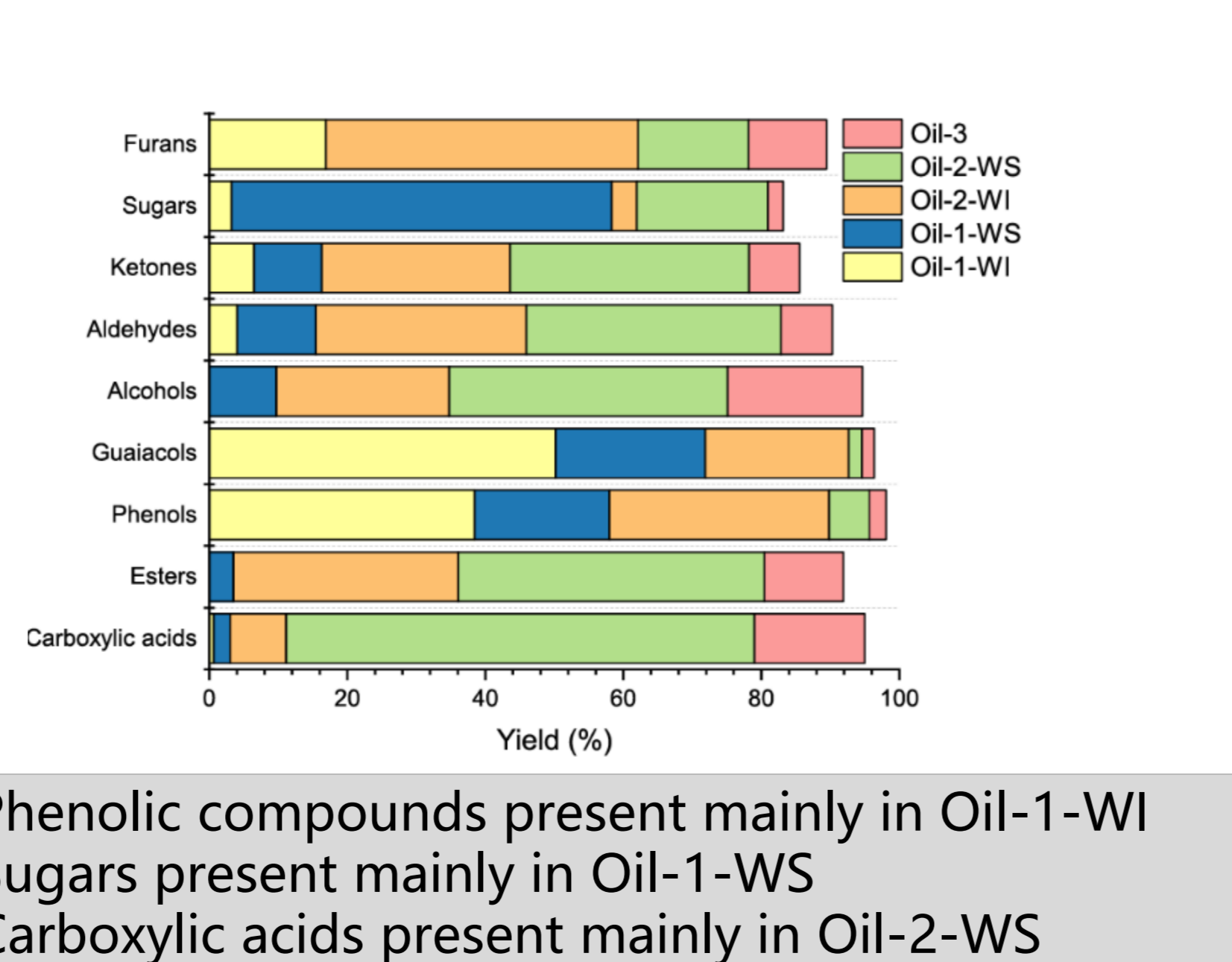


Combination of two methods

Global yield of chemical families in bio-oil fractions



Yield of chemical families in bio-oil fractions



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.