



CoMo and NiMo catalysts in the hydrodeoxygenation of guaiacol

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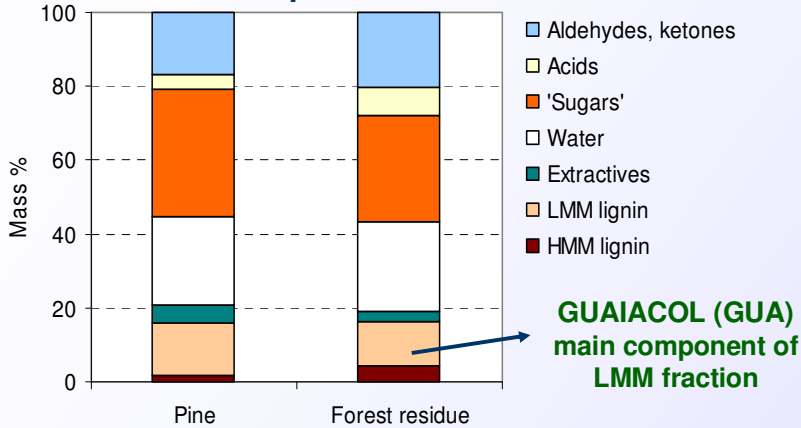
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Background

Bio-oils produced from the pyrolysis of biomass are considered as a source of biocomponents for traffic fuels and chemicals.

Composition of bio-oils



Advantages

- Higher energy density than biomass
- CO₂ neutral
- Negligible generation of SO_x
- Easier to handle and transport

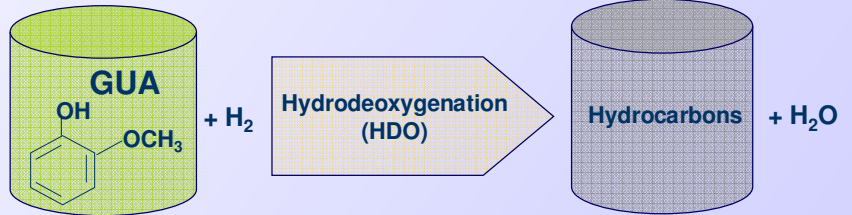
Disadvantages

- The composition depends on the biomass
- Thermally unstable
- High viscosity

The properties can be improved with the removal of oxygenates

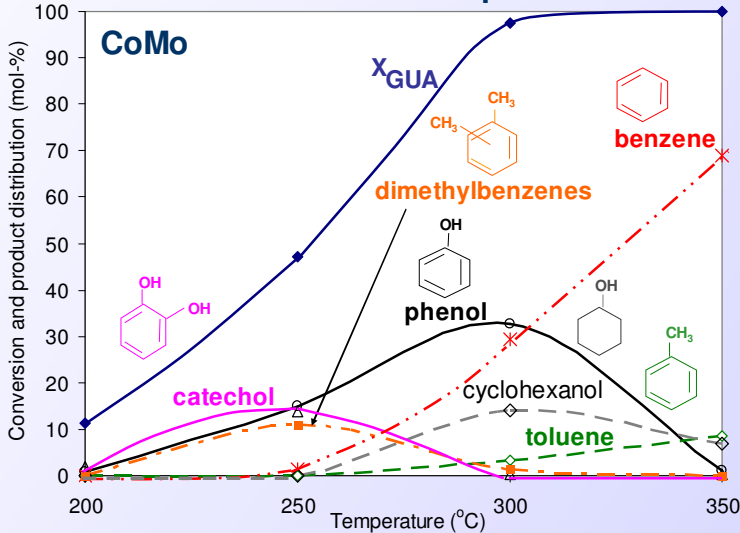
Experimental

- Bio-oil simulated with GUA in n-hexadecane
- Batch reactor
- 8 MPa total pressure
- Al₂O₃-supported CoMo and NiMo catalysts (sulfided form)

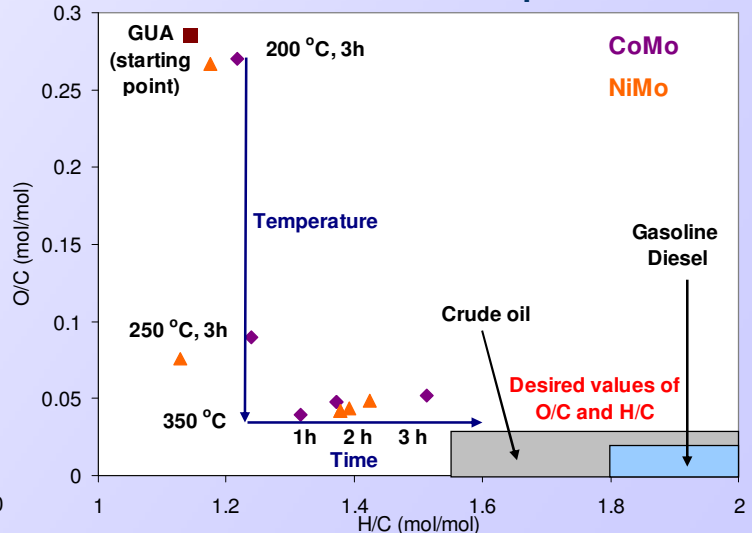


Results

Effect of reaction temperature



O/C and H/C of HDO products



- Sulfur-containing compounds also detected (methylthiol, cyclohexanethiol, methylthiocyclohexane)

Conclusions

- Complete conversion of GUA on both CoMo and NiMo at T higher than 300 °C
- Complex reaction scheme
- Main HDO product: benzene
- The reaction temperature affects mainly the O/C while the reaction time affects the H/C molar ratio

Acknowledgments

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