

*Supplementary material*

High purity hydrogen production from real biomass pyrolysis  
vapors via chemical looping process

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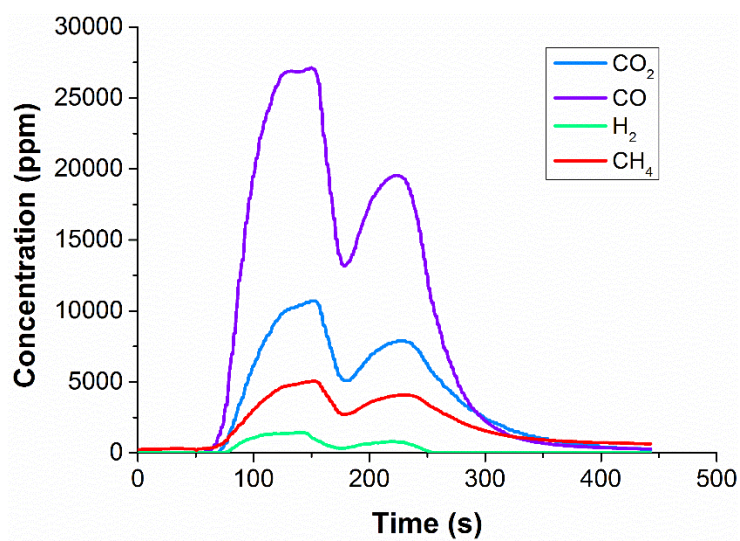
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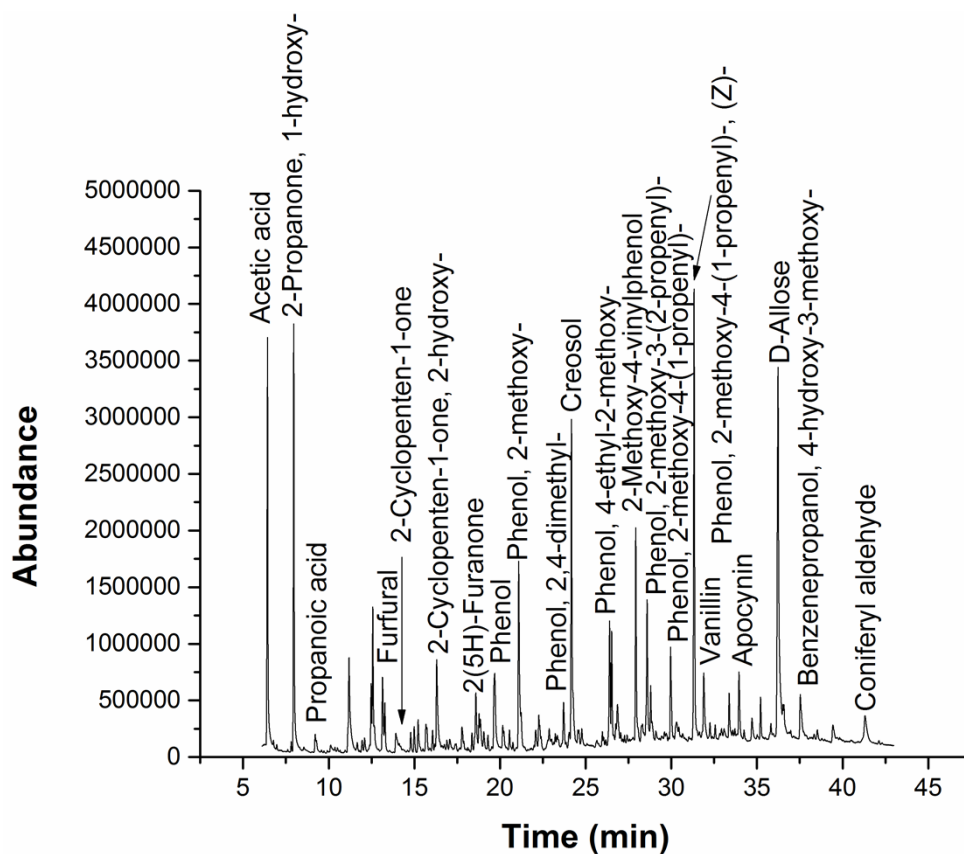
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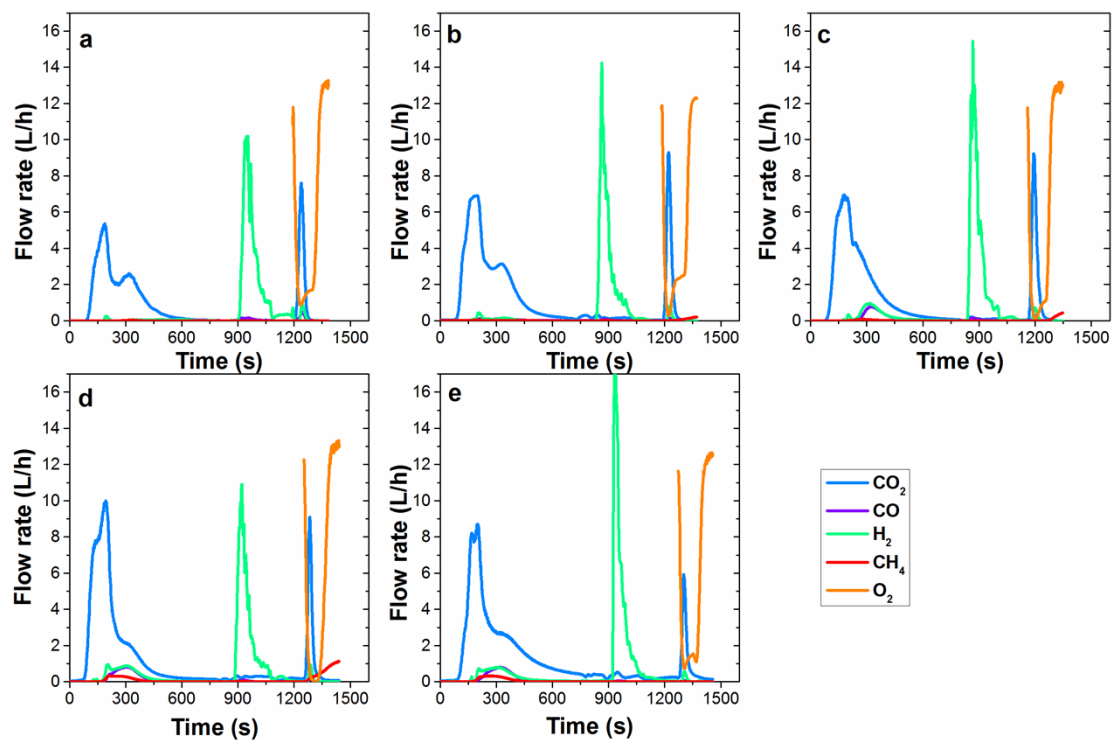


(a)

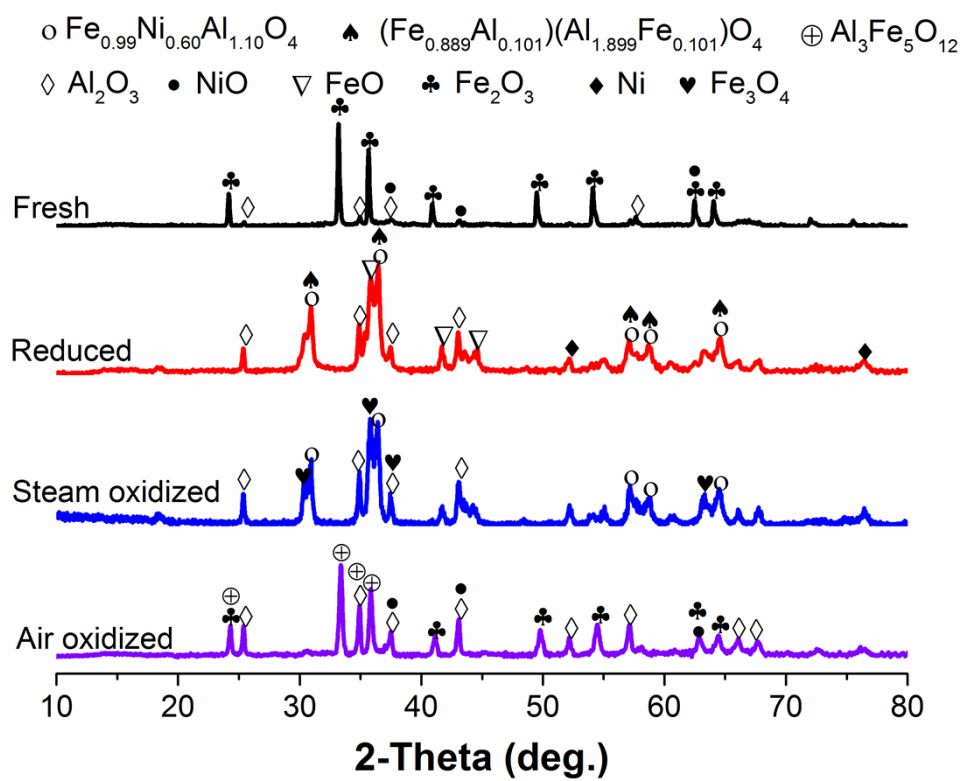


(b)

**Fig. S1** Pyrolysis vapors analysis of sawdust pyrolyzed under 500 °C. (a) permanent gases, (b) condensable chemicals.



**Fig. S2** Effluent gases profile of CLHG process with pyrolysis vapors derived under different pyrolysis temperature. a. 450 °C, b. 500 °C, c. 550 °C, d. 600 °C, e. 650 °C.



**Fig. S3** XRD pattern of OC in different CLHG stage.