Electronic Supplementary Material (ESI) for Green Chemistry.

Supplementary information

Quantitative ^{13}C NMR spectra of pyrolytic lignin, LMW fraction, HMW fraction, and hydrogenated pyrolytic lignin after three steps of hydrogenation.

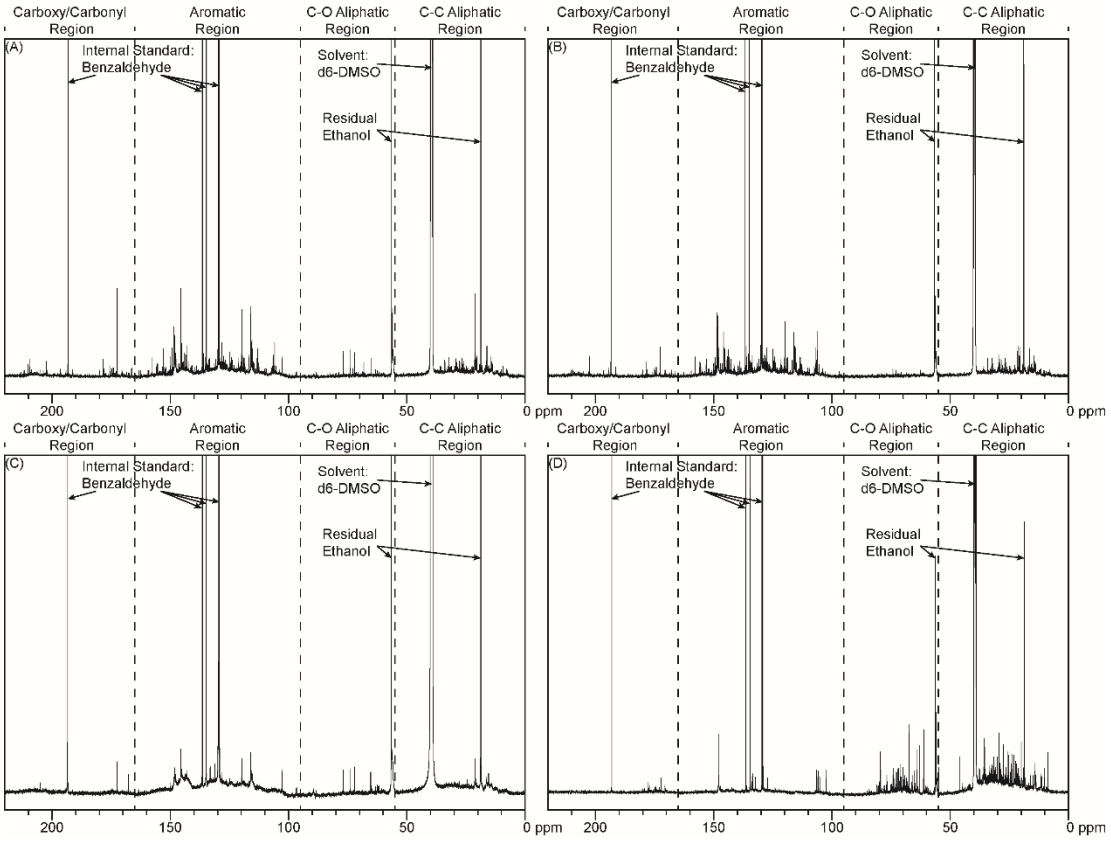

Figure S1. Quantitative ^{13}C NMR of pyrolytic lignin (A), LMW fraction (B), HMW fraction (C), and hydrogenated pyrolytic lignin (D) three step hydrogenated pyrolytic lignin. Highlights the carboxyl/carbonyl, aromatic, C-O aliphatic, and C-C aliphatic regions as well as the internal standard (benzaldehyde), residual ethanol, and the solvent (d6-DMSO).

Rotary evaporation results of pyrolytic lignin, LMW fraction, and HMW fraction in ethanol (10 wt.%)

Table S1. Rotary evaporation results of pyrolytic lignin, the LMW fraction, and the HMW fraction in ethanol (10 wt.%) (Rotary evaporation conditions: 170 mbar of pressure, 55 °C, 5 g of substrates, 1 h).

Fraction	Mass yield (wt. %)		Carbon yield (Carbon %)	
	Volatile liquids[a]	Non-volatile liquids[b]	Volatile liquids[a]	Non-volatile liquids[b]
Pyrolytic lignin	24.2	75.9	27.3	72.8
LMW	N/A	107.8	3.1	96.9
HMW	29.9	70.1	26.3	73.7

[a] Volatile liquids: distillates after rotor evaporation of liquid product at 55 °C and 170 mbar for 1h.

[b] Non-volatile liquids: distillate residue after rotor evaporation of liquid product at 55 °C and 170 mbar for 1 h.

Temperature and reaction pressure as a function of reaction time

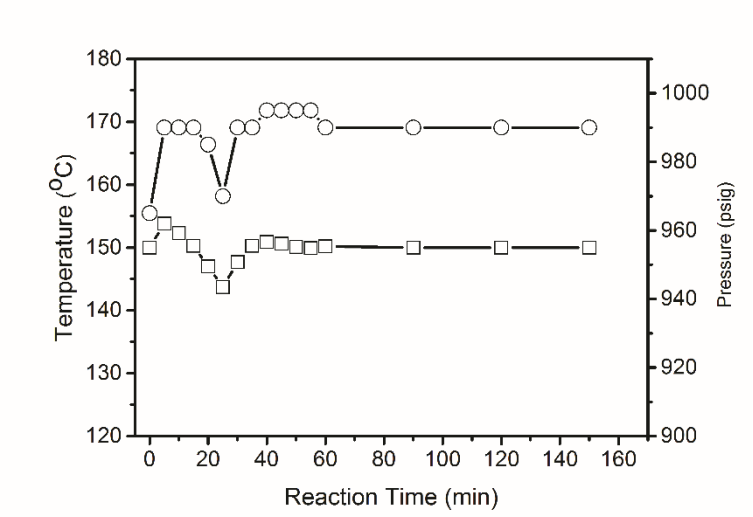

Figure S2. Temperature (□) and pressure (o) as a function of reaction time during the hydrogenation of pyrolytic lignin. Reaction condition: reaction temperature: 150 °C, heating rate: 10 °C/min, 2.5 h, initial hydrogen pressure: 725 psig, 10 g pyrolytic lignin in ethanol (10 wt.%), 1.5 g Ru/TiO_2.