Electronic Supplementary Information (ESI)

Conversion of lignin pyrolysis oil to cyclohexyl methyl ethers for use as biomass-derived solvents

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Table S1. Methylation of model compounds[a]

Entry	Compound[b]	DMC (ml)	DBU (g)	Time (h)	% yield of pure product[c]
1	Phenol	2.5	0.5	24	-
2	Phenol	5	1.25	24	53
3	Guaiacol	5	1.25	24	85
4	4-methyl cate-chol	2.5	1.25	17	96
5	Eugenol	5	1.25	17	95

[a]Temperature = 120 ºC

[b]1 g of a model compound was used for each reaction

[c]Methylation was completed for all entries except entry 1

Composition of LOME

Table S2. The approximate percent composition of LOME[a]

Compound	% of peak area
4-methylveratrole	38
Veratrole	20
4-ethyl veratrole	11
3-methyl veratrole	5
2,3-dimethylanisole	4
4-allylveratrole	2
Unidentified	20

[a]The mixture composition is approximated by the peak areas on the total ion count chromato-gram.

NMR spectra

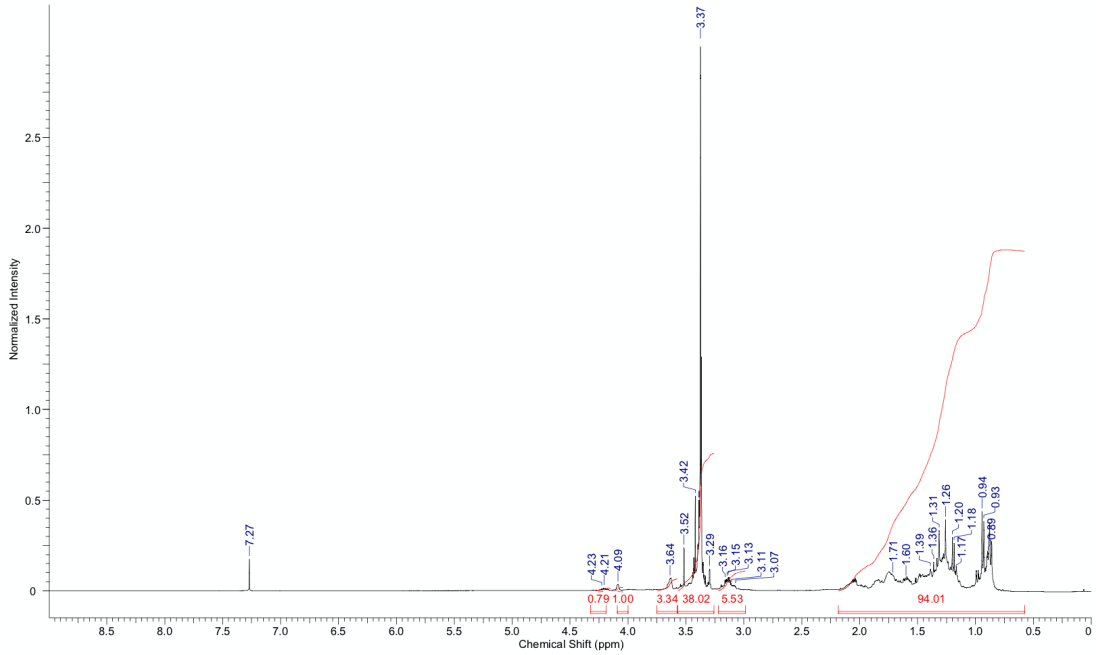

Figure S1. The ^{1}H NMR spectrum of methylated, rectified and hydrogenated LPO mixture (HLOME) in $CDCl_3$. The peak at 7.27 ppm corresponds to residual $CHCl_3$ in the $CDCl_3$ solvent.

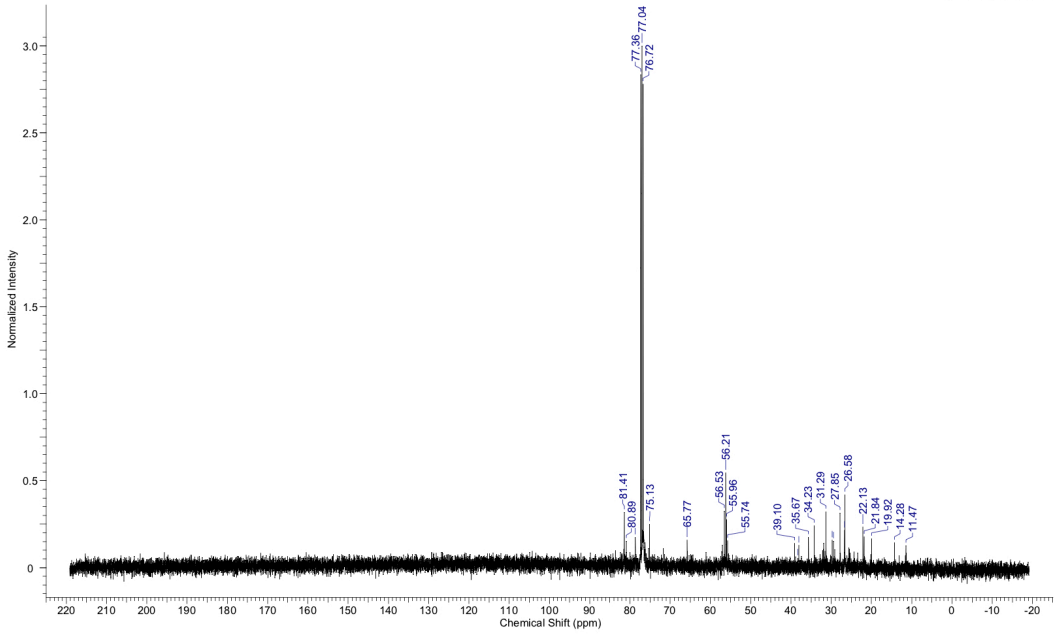

Figure S2. The ^{13}C NMR spectrum of methylated, rectified and hydrogenated LPO mixture (HLOME) in $CDCl_3$. The peaks at 76.72, 77.04, and 77.36 ppm correspond to the $CDCl_3$ solvent.

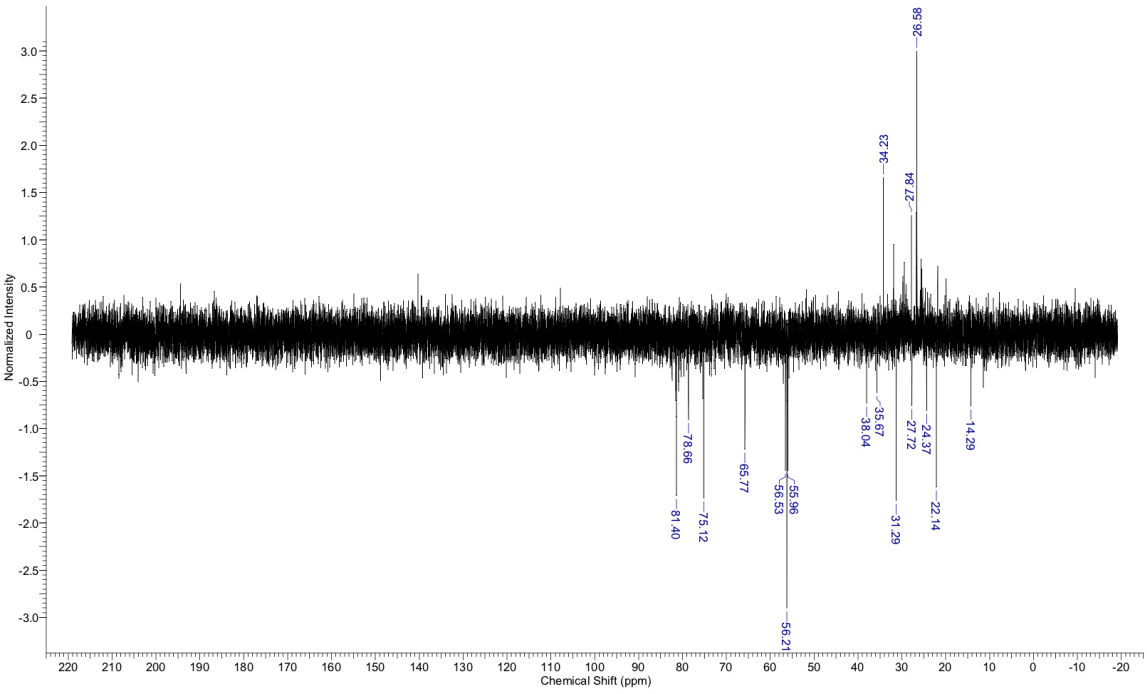

Figure S3. The DEPT 135 spectrum of methylated, rectified and hydrogenated LPO mixture (HLOME) in $CDCl_3$.

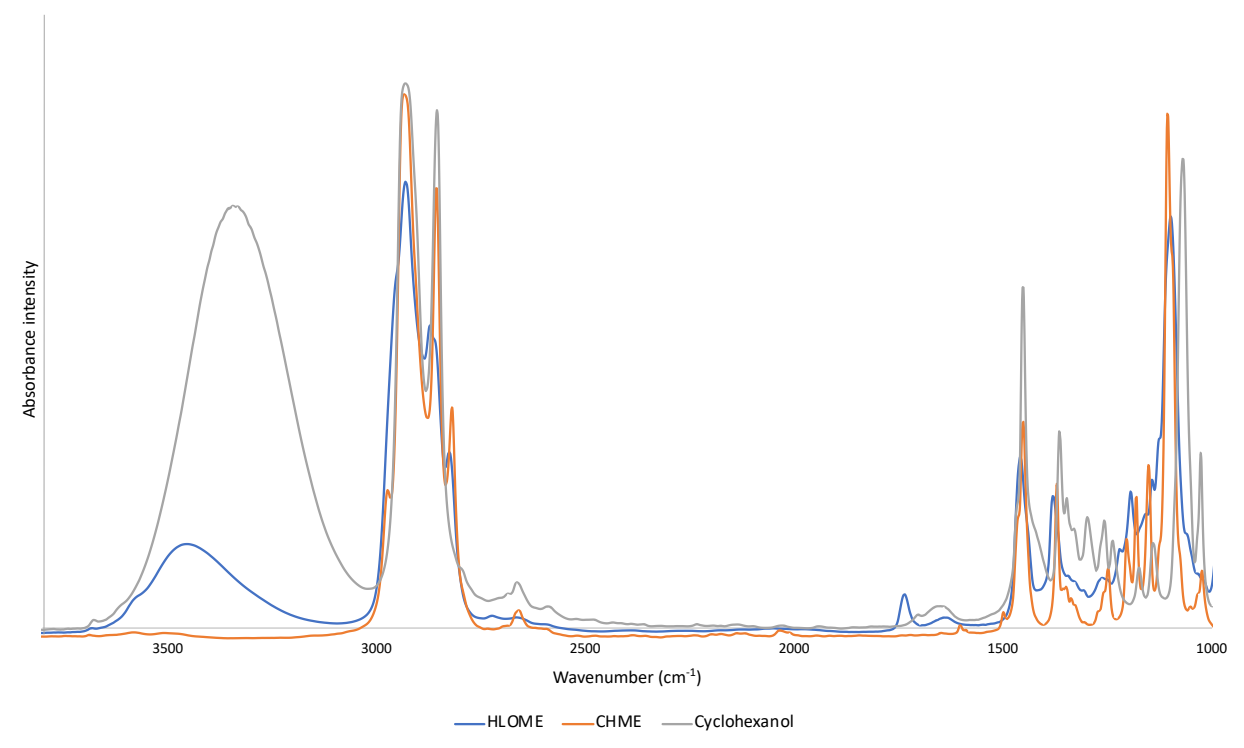

Figure S4. Overlaid FTIR spectra of HLOME, CHME, and cyclohexanol.