Supplementary Material (ESI) for Green Chemistry

Electronic Supplemental Information (ESI) for

Production of Jet and Diesel Fuel Range Alkanes from Waste Hemicellulose-derived Aqueous Solutions

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Table S1 Physical properties of chemicals used in this study.

Physical Properties	THF	Furfural	Acetone	F-Ac	F-Ac-F	Alcohol H-dimer	Ketone H-dimer	Tridecane
Molecular formula	C_4H_8O	$C_5H_4O_2$	C_3H_6O	$C_8H_8O_2$	$C_{13}H_{10}O_3$	$C_{13}H_{24}O_3$	$C_{13}H_{22}O_3$	$C_{13}H_{28}$
Molecular mass (g/mol)	72.1	96.1	58.0	136.2	214.2	228.3	226.3	184
Density (g/cm^3)	0.8892	1.16	0.79	1.07	1.2	1.05	1.05	0.756
Melting point (°C)	-108.4	-36.5	-94.9	34-41	57-60	-	-	-5
Boiling point (°C)	66	161.7	56.53	227.2±15.0	347.9±37.0	189	345.7±7	234
Flash point (°C)	-14	62	-17	104	163.2±19.2	351.6±7.0	154.1±4.6	102
Solubility in water at 25 °C (g/l)	300	0.8	miscible	2.3	0.021	1	3.4	insoluble

Table S2 Representative mass flow rates for production of jet fuel range alkanes from hemicellulose-derived aqueous solution.

Stream #	Xylose	H_2O	NaCl	HCl (37 wt%)	THF	Fur	Ace	NaOH	F-Ac-F	H_2	H-FAF	Alkane	Sum
1	1	3											3333
2			633										633
3				33									33
4					3950								3950
5		3269	633	33	3950	64							7949
6		3269	633	33									3935
7					3950	64							4014
8					3792								3792
9					158	64							222
10							19.3						19.3
11		28.1						9.9					38
12		40			158			9.9	71.4				279.3
13		40						9.9					49.9
14					1				71.4				229.4
15										9.3			9.3
16					158						76.1		234.1
17										1			14
18										10			10
19										6.7			6.7
20										16			16
21										16			16
22										8			8
2		18			158							61.3	237.3
24		18											18
25												61.3	61.3
26					158								158