

FIGURES

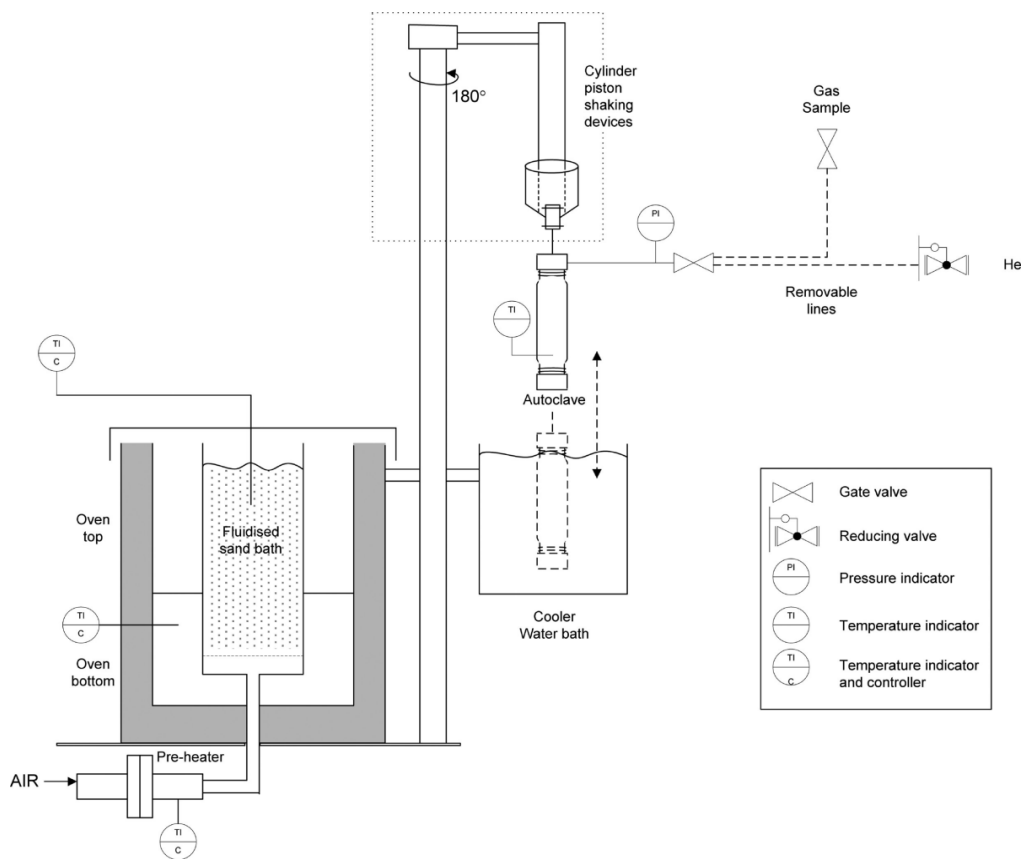


Figure S1. Schematic diagram of the HTL set-up.

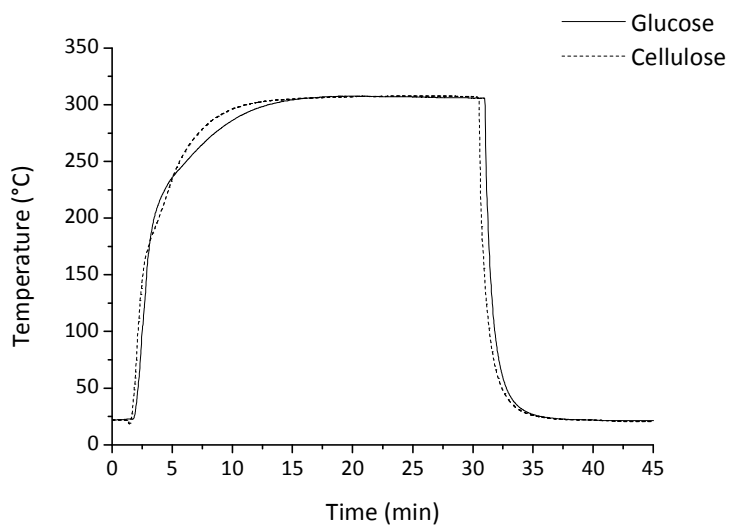
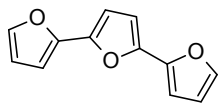
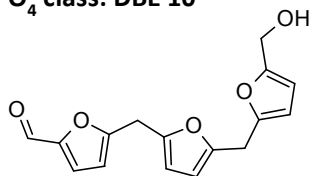


Figure S2. Heating curves obtained during HTL treatment of glucose and cellulose (20 reaction minutes).

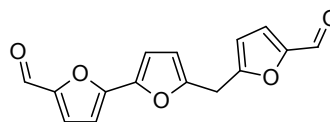
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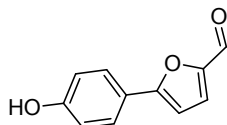
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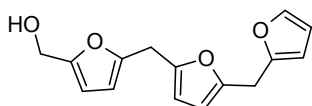
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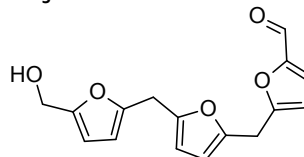
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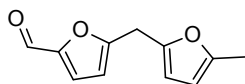
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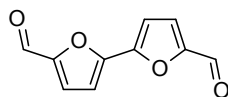
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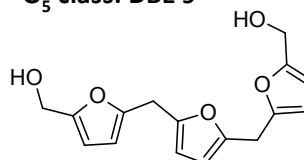
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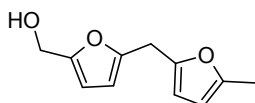
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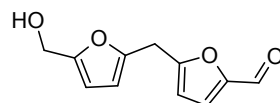
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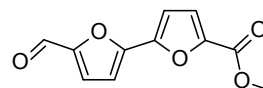
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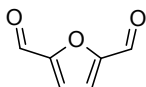
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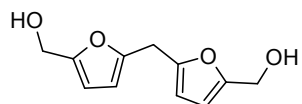
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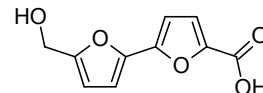
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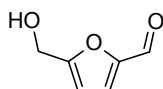
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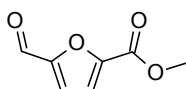
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O₃ class: DBE 4



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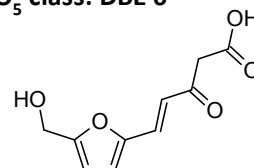


Figure S3. Some hypothesized structures for the main higher molecular weight compounds identified through APPI FTICR-MS analysis of bio-oils obtained after HTL treatment of glucose and cellulose at 300°C and 2 reaction minutes.

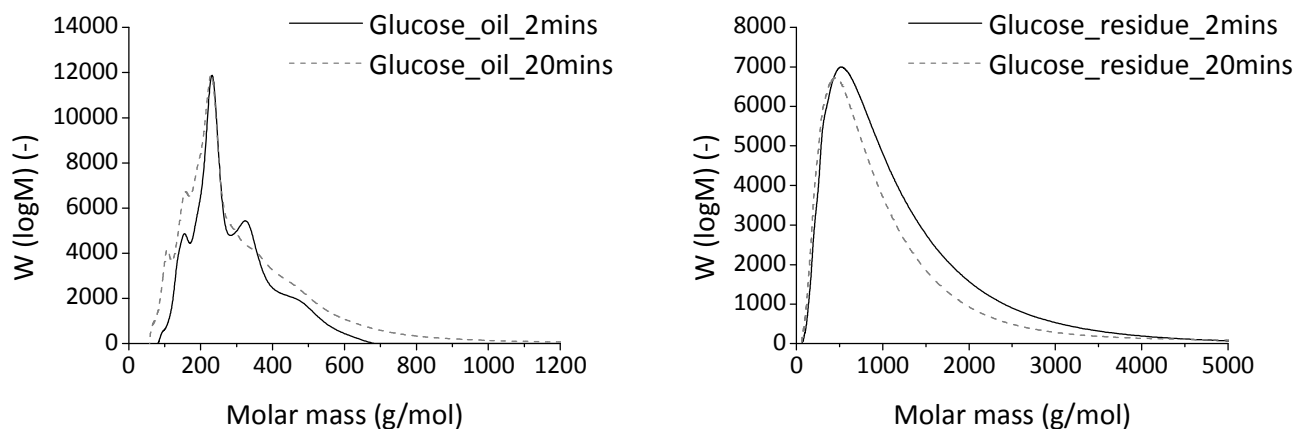


Figure S4. Molecular weight distributions through GPC-RID analysis of bio-oils and solid residues obtained after HTL treatment of glucose at 300°C (2 and 20 reaction minutes).

TABLES

Table S1. Composition of the gas phases obtained after HTL treatment of glucose and cellulose at 300°C and different reaction times.

Data are expressed as a percentage of the total gas volume.

		Glucose gas phase			Cellulose gas phase		
Identified gases		CO	CO ₂	H ₂	CO	CO ₂	H ₂
Reaction Time (min)	2	8.4%	90.9%	0.6%	8.8%	87.6%	3.5%
	5	8.8%	90.3%	0.7%	8.4%	88.3%	3.0%
	10	9.9%	89.2%	0.6%	8.4%	88.9%	2.5%
	20	9.2%	89.7%	0.6%	9.3%	88.1%	2.1%

Table S2. Elemental composition and properties of bio-oils obtained after HTL treatment of glucose at 300°C and different reaction times.

Reaction Time (min)	C (wt%)	H (wt%)	O (wt%)	HHV (MJ/kg)	Molar O/C	Molar H/C	Energy Recovery
Glucose	39.9	6.9	53.2	16.20	1.00	2.09	-
2	53.9	6.0	40.1	21.47	0.56	1.33	18.79
5	57.8	6.1	36.1	23.44	0.47	1.27	18.57
10	54.1	6.6	39.3	22.38	0.54	1.47	16.75
20	54.2	6.7	39.1	22.52	0.54	1.48	15.89

Table S3. Elemental composition and properties of solid residues obtained after HTL treatment of glucose at 300°C and different reaction times.

Reaction Time (min)	C (wt%)	H (wt%)	O (wt%)	HHV (MJ/kg)	Molar O/C	Molar H/C	Energy Recovery
Glucose	39.9	6.9	53.2	16.20	1.00	2.09	-
2	66.8	4.8	28.4	25.93	0.32	0.86	50.74
5	67.9	4.8	27.3	26.43	0.30	0.85	51.20
10	69.1	4.8	26.1	26.96	0.28	0.83	52.29
20	70.4	5.0	24.6	27.83	0.26	0.86	53.23

Table S4. Elemental composition and properties of bio-oils obtained after HTL treatment of cellulose at 300°C and different reaction times.

Reaction Time (min)	C (wt%)	H (wt%)	O (wt%)	HHV (MJ/kg)	Molar O/C	Molar H/C	Energy Recovery
Cellulose	42.3	6.0	51.7	16.16	0.92	1.71	-
2	63.5	6.0	30.5	25.86	0.36	1.12	19.16
5	62.9	6.2	30.9	25.83	0.37	1.17	18.91
10	63.9	6.2	29.9	26.40	0.35	1.17	17.01
20	64.8	6.5	28.7	27.20	0.33	1.21	14.91

Table S5. Elemental composition and properties of solid residues obtained after HTL treatment of cellulose at 300°C and different reaction times.

Reaction Time (min)	C (wt%)	H (wt%)	O (wt%)	HHV (MJ/kg)	Molar O/C	Molar H/C	Energy Recovery
Cellulose	42.3	6.0	51.7	16.16	0.92	1.71	-
2	68.7	4.0	27.3	25.76	0.30	0.70	51.29
5	70.6	4.3	25.1	27.03	0.27	0.73	52.89
10	71.3	4.4	24.3	27.44	0.26	0.73	53.12
20	71.6	4.3	28.1	27.47	0.25	0.72	54.03

Table S6. Quantitative data for the compounds identified through GC-FID analysis of bio-oils obtained after HTL treatment of glucose and cellulose at 300°C and different reaction times. Data are expressed as a percentage of the total amount of bio-oil.

	Reaction Time (min)	Glucose Oil (wt%)				Cellulose Oil (wt%)			
		2	5	10	20	2	5	10	20
Compound Name	2-Furaldehyde (Furfural)	1.97	2.40	1.65	1.02	3.34	3.64	2.40	0.16
	Pyruvaldehyde	1.00	0.89	0.60	0.54	0.63	0.76	0.67	0.15
	5-Methyl-2(3H)-furanone	0.21	0.17	0.21	0.20	0.06	0.00	0.00	0.00
	2,5-Hexanedione	0.20	0.28	0.27	0.34	0.17	0.25	0.33	0.23
	5-Methyl-2-furaldehyde	0.50	0.71	0.78	0.59	0.63	0.93	0.68	0.10
	Phenol	0.09	0.07	0.15	0.14	0.07	0.10	0.14	0.11
	2,5-Heptanedione	0.17	0.14	0.13	0.13	0.09	0.10	0.12	0.10
	3-Methyl-1,2-cyclopentenolone	0.30	0.37	0.95	0.86	0.41	0.58	0.71	0.70
	4-Oxopentanoic Acid (Levulinic Acid)	3.80	4.35	3.59	3.02	3.38	5.21	6.56	8.15
	2,5-Furandicarboxaldehyde	0.18	0.00	0.00	0.00	0.14	0.00	0.00	0.00
	2-Acetyl-5-methylfuran	0.27	0.45	0.60	0.37	0.21	0.15	0.09	0.07
	1,2-Dihydroxybenzene (Pyrocatechol)	0.10	0.23	0.44	0.32	0.07	0.12	0.17	0.25
	5-Hydroxymethylfurfural	28.49	14.70	9.08	1.09	15.14	3.82	0.20	0.06
	1,4- Dihydroxybenzene (Hydroquinone)	0.22	0.42	0.59	0.94	0.30	0.56	0.81	1.26
1,2,4-Benzenetriol (Hydrohydroxyquinone)	0.00	1.92	1.65	1.48	1.84	3.56	3.94	3.33	