energies

Supplementary Materials: Conversion of waste corn straw to value-added fuel via hydrothermal carbonization after acid washing

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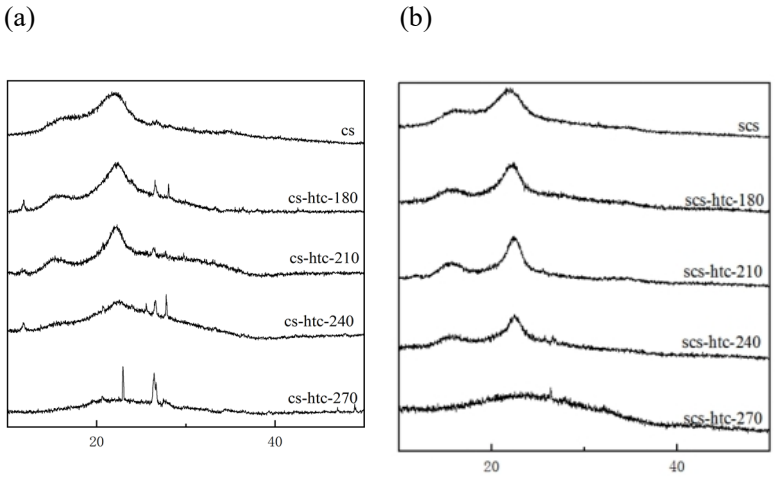

Figure S1. XRD analysis of CS, SCS and their hydrochar, (a) CS and (b) SCS.

Table S1. Fuel properties of hydrochars

Sample	Proximate analysis/wt.%			HHV	Yield	Energy densification	Energetic Recovery effificiency (%)	Elemental analysis/wt.%			
	VM	FC[a]	Ash	(MJ/kg)	%			C	H	O[b]	N
CS	67.6±0.1	17.8±0.29	14.6±0.05	16.3±0.06	100	-	-	41.9±0.2	5.8±0.1	35.4±0.3	1.7±0.3
CS-HTC-180	68.6±0.2	16.2±0.42	15.2±0.21	17.3±0.12	75.4±0.2	1.06	77.3	44.3±0.6	5.4±0.1	32.6±0.4	1.7±0.1
CS-HTC-210	61.8±0.5	19.8±0.3	18.4±0.23	18.6±0.25	67.9±0.4	1.14	77.1	47.9±0.4	5.2±0.3	25.7±0.5	2.1±0.5
CS-HTC-240	52.6±0.3	28.3±0.54	19.1±0.23	24.2±0.85	42.6±1.1	1.48	63.1	54.3±0.3	4.7±0.1	18.9±0.8	2.3±0.1
CS-HTC-270	37.5±0.3	40.94±0.22	21.5±0.22	25.9±0.85	38.5±1.3	1.58	60.8	58±0.5	4.2±0.4	15.6±0.4	2.3±0.2
SCS	72.5±0.5	20.8±0.12	6.7±0.5	18.5±0.61	92.4±0.7	-	-	47±0.4	6.8±0.2	37.9±0.1	0.96±0.1
SCS-HTC-180	73.3±0.3	18.6±0.4	8.08±0.02	19.1±0.04	72.3	1.22	88.2	52.6±0.3	6.3±0.4	31.4±0.6	1.1±0.1
SCS-HTC -210	71.8±0.6	18.64±0.11	9.6±0.11	21.2±0.04	64.2	1.36	87.3	55.3±0.2	5.9±0.3	27.6±0.1	1.2±0.2
SCS-HTC -240	53.1±0.6	37.15±0.23	9.8±0.6	26.9±0.41	46.7	1.65	77.1	63.4±0.7	5.1±0.2	19.9±0.1	1.3±0.1
SCS-HTC -270	40.7±0.3	49.07±0.04	10.3±0.14	27.7±0.35	41.7	1.69	70.7	67±0.4	5±0.2	15.8±0.2	1.5±0.1

[a] By difference: Fixed carbon%= 100% - volatile matter% -ash% [b] By difference: O% = 100% - C% -H% -N% -ash