

Supplementary Material (SM)**Synergetic Effects of Feedstock Mixture and Torrefaction on Some Briquette Characteristics of Cornhusk and Sawdust Wastes****Mufutau Adekojo Waheed¹, Opeyemi Ayodeji Akogun^{2,*}**¹ Department of Mechanical Engineering, Federal University of Agriculture, P.M.B. 2240, Abeokuta, Nigeria² Centre of Excellence in Agricultural Development and Sustainable Environment, Federal University of Agriculture, P.M.B. 2240, Abeokuta, Nigeria

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SM 1 Proximate analyses, calorific value, O/C and H/C ratio of CH and SD briquettes [6]

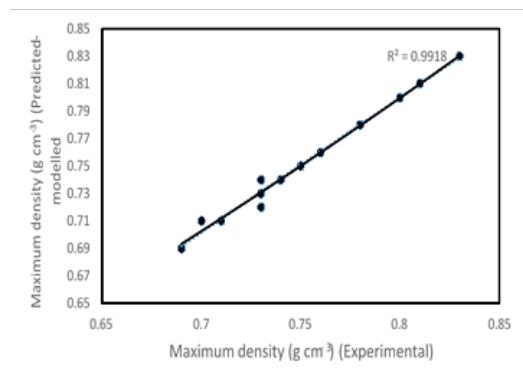
Run	A:CH (g)	B:SD (g)	D:TEMP (°C)	MC (%)	FC (%)	AC (%)	VM (%)	CV (MJ/kg)	O/C	H/C
1	30	70	300	7.8	33.4	2.3	56.5	22.12	0.889	0.172
2	30	70	Raw	4.9	19.3	2.1	73.7	13.04	1.041	0.177
3	90	10	300	6.8	40.4	5.1	47.7	19.90	0.714	0.143
4	90	10	Raw	10	20.3	3.6	66.1	12.43	1.313	0.247
5	10	90	250	7.2	23.8	1.9	67.1	17.09	1.061	0.193
6	90	10	250	10.3	28.6	3.3	57.8	16.02	1.114	0.219
7	90	10	Raw	10	20.3	3.6	66.1	12.43	1.313	0.247
8	90	10	200	10.4	24.1	2.9	62.6	14.37	1.232	0.237
9	10	90	200	5.9	21.4	1.5	71.2	15.53	1.047	0.184
10	30	70	250	9.2	24.4	2.1	64.3	14.93	1.155	0.218
11	90	10	300	6.8	40.4	5.1	47.7	19.9	0.714	0.143
12	50	50	200	8.1	22.1	3.1	66.7	16.43	1.150	0.211
13	50	50	Raw	6.3	20.1	2.8	70.8	13.47	1.098	0.193
14	50	50	300	7.9	34.1	3.1	54.9	21.54	0.878	0.171
15	50	50	250	10.9	23.8	2.4	62.9	17.48	1.270	0.245
16	90	10	250	10.3	28.6	3.3	57.8	16.02	1.114	0.219
17	10	90	Raw	5.1	18.9	1.9	74.1	13.12	1.062	0.181
18	10	90	300	6.3	33.1	2.2	58.4	22.78	0.827	0.155
19	30	70	200	5.7	21.9	1.7	70.7	15.79	1.025	0.179
20	90	10	200	10.4	24.1	2.9	62.6	14.37	1.232	0.237

SM 2 ANOVA output for the characteristics of CH/SD briquette

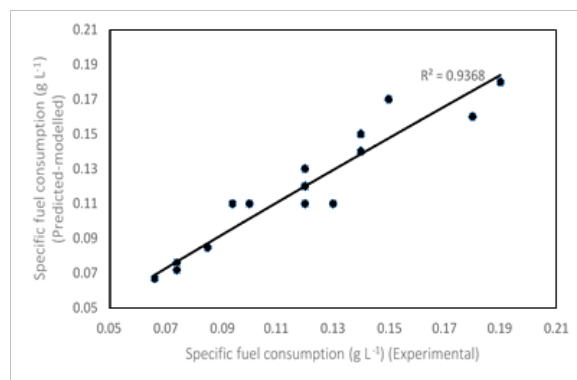
Source/ model	SS	df	MS	F value	Prob>F	Remark
MD (Quadratic x main effect)	0.034	11	0.0031	202.79	< 0.0001	Significant
WRI (Quadratic x main effect)	16765.02	11	1524.09	296.25	< 0.0001	Significant
WBT (Linear x main effect)	53.61	7	7.66	12.1	0.0001	Significant
SFC (Linear x main effect)	0.023	7	0.0033	25.92	0.0001	Significant
BR (Linear x main effect)	0.000027	7	3.9E-06	9.4	0.0005	Significant
TE (Linear x main effect)	64.68	7	9.24	12.1	0.0001	Significant
H/C (Quadratic x main effect)	0.022	11	0.00199	54.67	< 0.0001	Significant
O/C (Quadratic x main effect)	0.61	11	0.055	81.22	< 0.0001	Significant

SM 3 Cross methods model output for the characteristics of the briquettes

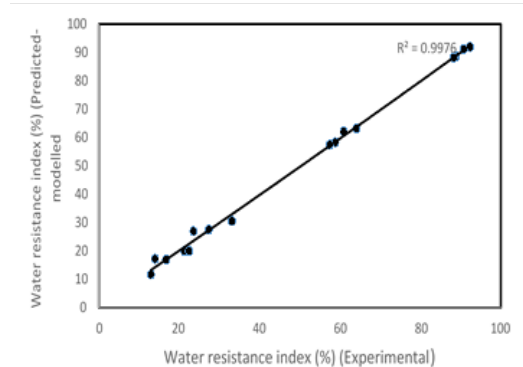
Characteristics	Mean	SD	R ²	Adj. R ²	CoV	AP	PRESS
MD	0.77	0.0039	0.9918	0.9915	0.51	46.153	0.0021
WRI	48.11	2.27	0.9976	0.9942	4.71	45.719	697.10
WBT	16.2	0.8	0.8759	0.8035	4.91	10.062	27.28
SFC	0.12	0.011	0.938	0.9018	9.33	16.503	0.00308
BR	0.006287	0.000644	0.8458	0.7559	10.25	9.835	1.2E-05
TE	25.85	0.87	0.8759	0.8036	3.38	11.279	21.39
H/C	0.20	0.006027	0.9869	0.9688	3.04	22.340	0.004923
O/C	1.06	0.026	0.9911	0.9789	2.46	29.692	0.092



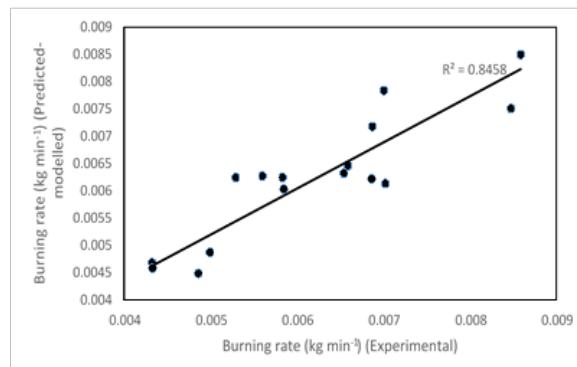
(a)



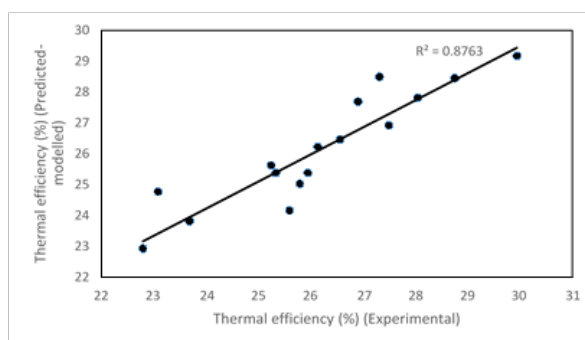
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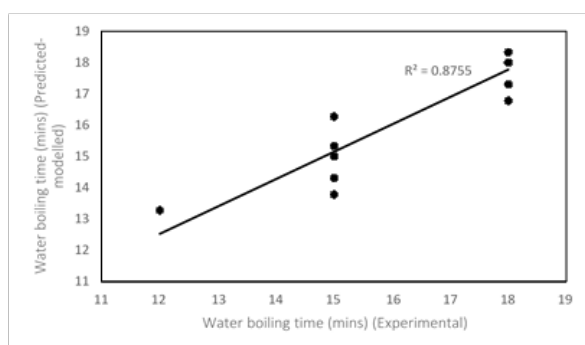
(b)



(d)

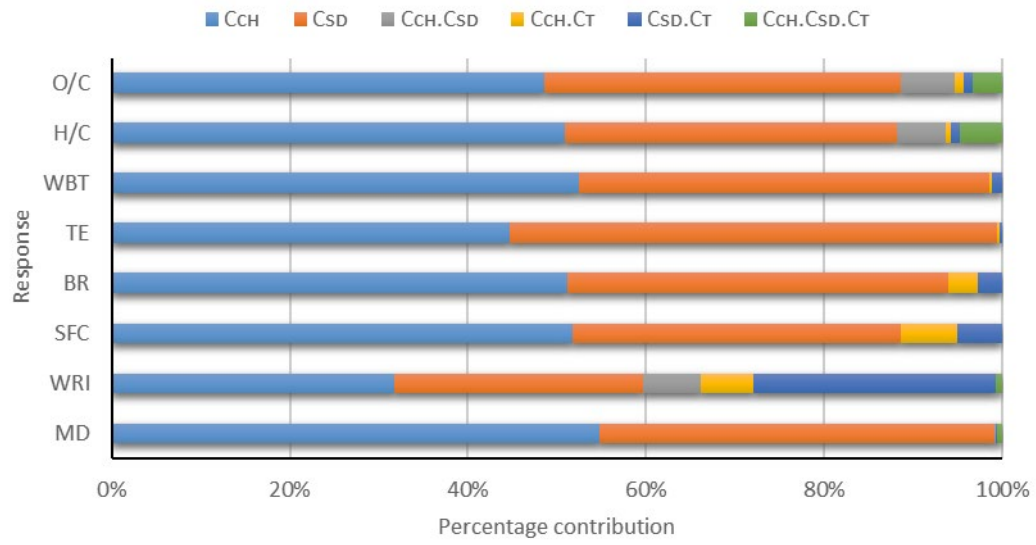


(e)



(f)

SM 4 Experimental and predicted values of the CH/SD briquette characteristics.



SM 5 Pareto graph of CH/SD briquette characteristics.