Electronic Supplementary Material (ESI) for RSC Advances.
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EFFECTS OF ORGANOSOLV FRACTIONATION TIME ON THERMAL AND CHEMICAL PROPERTIES OF LIGNINS

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Supplementary material

Table 1. The Pearson correlation matrix (correlation coefficient and correlation significance levels *p* value) between and within chemical and thermal properties of lignin fractionated at different time periods.

	Ash	Cellulose	Hemi-cellulose	AIL	ASL	Lignin	Carboxylic acid	Condensed OH	*p* Hydroxy-phenyl	Guaiacyl OH	Syringyl OH	Total phenolic OH	Aliphatic OH	C	H	M_n	M_w	PDI	T_g	Yield at 900 °C	Lignin decomposition temperature
Ash		0.40	0.39	-0.20	0.36	-0.16	0.28	0.06	-0.14	-0.35	-0.47	-0.41	0.39	-0.13	-0.05	-0.14	0.42	0.45	-0.10	-0.11	-0.29
		0.32	0.34	0.64	0.38	0.70	0.50	0.89	0.75	0.40	0.24	0.32	0.34	0.76	0.90	0.74	0.30	0.27	0.82	0.80	0.49
Cellulose			0.91	-0.81	0.94	-0.72	0.51	-0.60	-0.72	-0.51	-0.75	-0.77	0.74	-0.88	0.60	0.26	0.57	0.01	-0.63	-0.64	-0.79
			0.00	**0.01**	**0.00**	**0.04**	0.20	0.11	**0.04**	0.20	**0.03**	**0.03**	**0.03**	**0.00**	0.12	0.54	0.14	0.97	0.10	0.09	**0.02**
Hemicellulose				-0.94	0.91	-0.87	0.21	-0.65	-0.91	-0.65	-0.93	-0.94	0.92	-0.86	0.79	0.46	0.76	-0.14	-0.83	-0.86	-0.79
				0.00	**0.00**	**0.01**	0.62	0.08	**0.00**	0.08	**0.00**	**0.00**	**0.00**	**0.01**	**0.02**	0.25	0.03	0.75	**0.01**	**0.01**	**0.02**
AIL					-0.80	0.98	-0.02	0.77	0.93	0.69	0.92	0.96	-0.93	0.92	-0.87	-0.62	-0.83	0.28	0.84	0.93	0.77
					0.02	**<.0001**	0.97	**0.02**	**0.00**	0.06	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.10**	**0.01**	0.50	**0.01**	**0.00**	**0.02**
ASL						-0.66	0.47	-0.45	-0.76	-0.50	-0.80	-0.78	0.72	-0.80	0.58	0.11	0.50	0.14	-0.63	-0.65	-0.79
						0.07	0.24	0.26	**0.03**	0.20	**0.02**	**0.02**	**0.04**	**0.02**	0.13	0.79	0.21	0.74	0.10	0.08	**0.02**
Lignin							0.11	0.84	0.88	0.69	0.87	0.93	-0.90	0.88	-0.87	-0.73	-0.88	0.37	0.82	0.91	0.71
							0.80	**0.01**	**0.00**	0.06	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.00**	0.37	**0.01**	**0.00**	0.05
Carboxylic acid OH								0.10	0.15	-0.23	-0.01	-0.01	-0.10	-0.22	-0.28	-0.32	-0.09	0.31	0.26	0.24	-0.02
								0.81	0.72	0.59	0.97	0.99	0.82	0.59	0.50	0.43	0.83	0.46	0.54	0.57	0.96
Condensed OH									0.66	0.45	0.50	0.63	-0.60	0.71	-0.69	-0.71	-0.72	0.36	0.61	0.65	0.62
									0.07	0.27	0.20	0.09	0.12	0.05	0.06	0.05	**0.04**	0.38	0.11	0.08	0.10
p Hydroxyphenyl OH										0.49	0.88	0.90	-0.93	0.79	-0.94	-0.56	-0.68	0.31	0.97	0.97	0.78
										0.22	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	0.15	0.06	0.46	**<.0001**	**<.0001**	**0.02**
Guaiacyl OH											0.72	0.77	-0.63	0.55	-0.43	-0.61	-0.86	0.29	0.40	0.57	0.17

	0.04	**0.03**	0.10	0.16	0.29	0.11	**0.01**	0.48	0.32	0.14	0.68
		0.98	-0.96	0.79	-0.77	-0.46	-0.81	0.12	0.81	0.89	0.71
Syringyl OH		**<.0001**	**0.00**	**0.02**	**0.03**	0.25	**0.01**	0.77	**0.01**	**0.00**	0.05
			-0.97	0.84	-0.81	-0.58	-0.88	0.21	0.82	0.91	0.71
Total phenolic OH			**<.0001**	**0.01**	**0.01**	0.13	**0.00**	0.61	**0.01**	**0.00**	0.05
				-0.82	0.89	0.60	0.80	-0.30	-0.91	-0.95	-0.72
Aliphatic OH				**0.01**	**0.00**	0.12	**0.02**	0.47	**0.00**	**0.00**	0.04
					-0.79	-0.50	-0.63	0.26	0.72	0.80	0.77
C%					0.02	0.21	0.09	0.54	**0.04**	**0.02**	0.03
						0.72	0.63	-0.57	-0.97	-0.97	-0.65
H%						**0.04**	0.09	0.14	**<.0001**	**<.0001**	0.08
							0.73	-0.85	-0.63	-0.69	-0.12
M_n							**0.04**	**0.01**	0.09	0.06	0.78
								-0.29	-0.62	-0.74	-0.47
M_w								0.49	0.10	**0.04**	0.24
									0.47	0.46	-0.21
PDI									0.24	0.25	0.61
										0.96	0.67
T_g										**0.00**	0.07
											0.67
Yield at 900 °C											0.07
Lignin decomposition temperature											