

Electronic supplementary information

Response surface optimization of ionic liquid pretreatments for maximizing cellulose nanofibril production

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Table S1 Experimental levels of the factor variables used in the pretreatment process

Coded	Variable	Levels		
		-1	0	1
A	pretreatment time(h)	2	3	4
B	pretreatment temperature(°C)	100	110	120
C	liquid-solid ratio (g/g)	60	80	100
D	PIL content(%)	20	30	40

Table S2 Analysis of variance of regression equation

Source	Sum of squares	Degree of freedom	Mean square	F-value	P-value	Significance
Model	3158.63	14	225.62	35.51	<0.0001	Saliience
A	154.80	1	154.80	24.37	0.0003	**
B	810.16	1	810.16	127.52	<0.0001	*
C	58.96	1	58.96	9.28	0.0102	*
D	54.19	1	54.19	8.53	0.0128	*
AB	2.89	1	2.89	0.45	0.5128	
AC	31.92	1	31.92	5.02	0.0447	*
AD	141.61	1	141.61	22.29	0.0005	**
BC	0.72	1	0.72	0.11	0.7418	
BD	35.40	1	35.40	5.57	0.0360	*
CD	72.25	1	72.25	11.37	0.0055	**
A ²	194.68	1	194.68	30.64	0.0001	**
B ²	1772.28	1	1772.28	278.96	<0.0001	**
C ²	132.22	1	132.22	20.81	0.0007	**
D ²	291.40	1	291.40	45.87	<0.0001	**
Residual	76.24	12	6.35			
Lack of fit	74.31	10	7.43	7.71	0.1201	Insignificance
Pure error	1.93	2	0.96			
Total	3234.87	26				

(Note: ** indicate highly significant difference $p < 0.01$, * indicate significant difference $p < 0.05$)