

Supporting Information

Choline Hydroxide Based Deep Eutectic Solvent for Dissolving Cellulose†




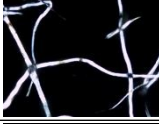




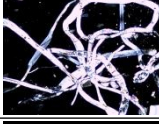

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Table S1. POM images obtained by polarizing microscope.

HBA	HBD	Ratio	Temp	Dissolution time	Photo	Solubility
ChCl	Urea	1:2	100°C	24h		non
	Thiourea	1:2	100°C	24h		non
	Resorcinol	1:1	100°C	24h		non
	Imidazole	3:7	100°C	24h		non
	Acetic acid	1:1	60°C	24h		non
	KOH ^a	1:4	100°C	-	-	-
	<i>l</i> -Histidine ^b	1:1	100-140°C	-	-	-
ChOH	Thiourea	1:2	70°C	2h		non
	Resorcinol	1:1	100°C	2h		non
	Imidazole	3:7	100°C	2h		non
	<i>l</i> -Histidine	1:1	100°C	2h		non
	Serine	1:1	100°C	2h		non

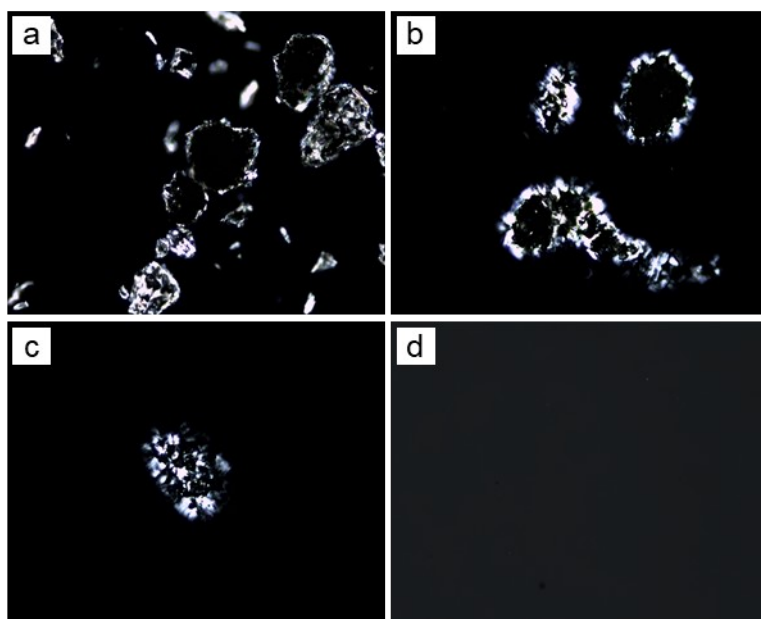


Figure S1. POM images of MCC (2 wt.)/ChOH/Ur mixture sandwiched between two glass slides for (a) 0 min, (b) 15min, (c) 20min, and (d) 30min at 45°C.

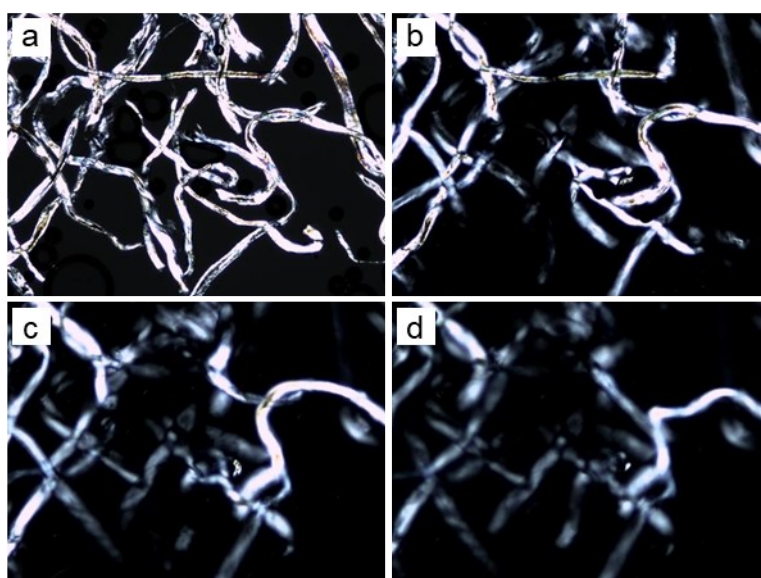


Figure S2. POM images of cellulose (DP = 926, 1 wt.)/ChOH/Urea mixture sandwiched between two glass slides for (a) 0 min, (b) 1 min, (c) 10 min, and (d) 20 min at 70°C.



Figure S3. POM images of cellulose (DP = 926, 1 wt.)/ChOH/Urea mixture stirring at 70°C for (a) 0 min, (b) 5 min and (c) 10 min.

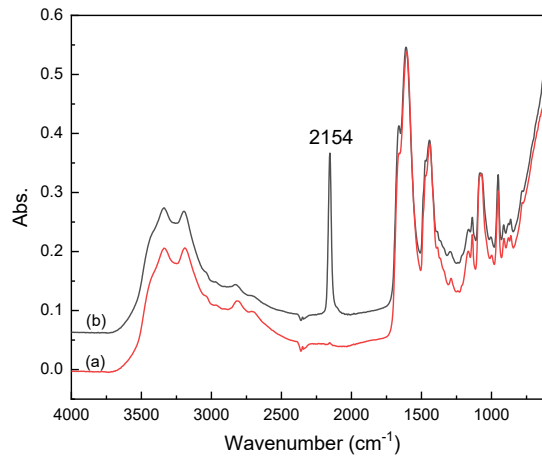


Figure S4. ATR-FTIR spectra of cellulose/ChOH/Ur mixture (a) before and (b) after kept at 100 °C for 15 hrs.

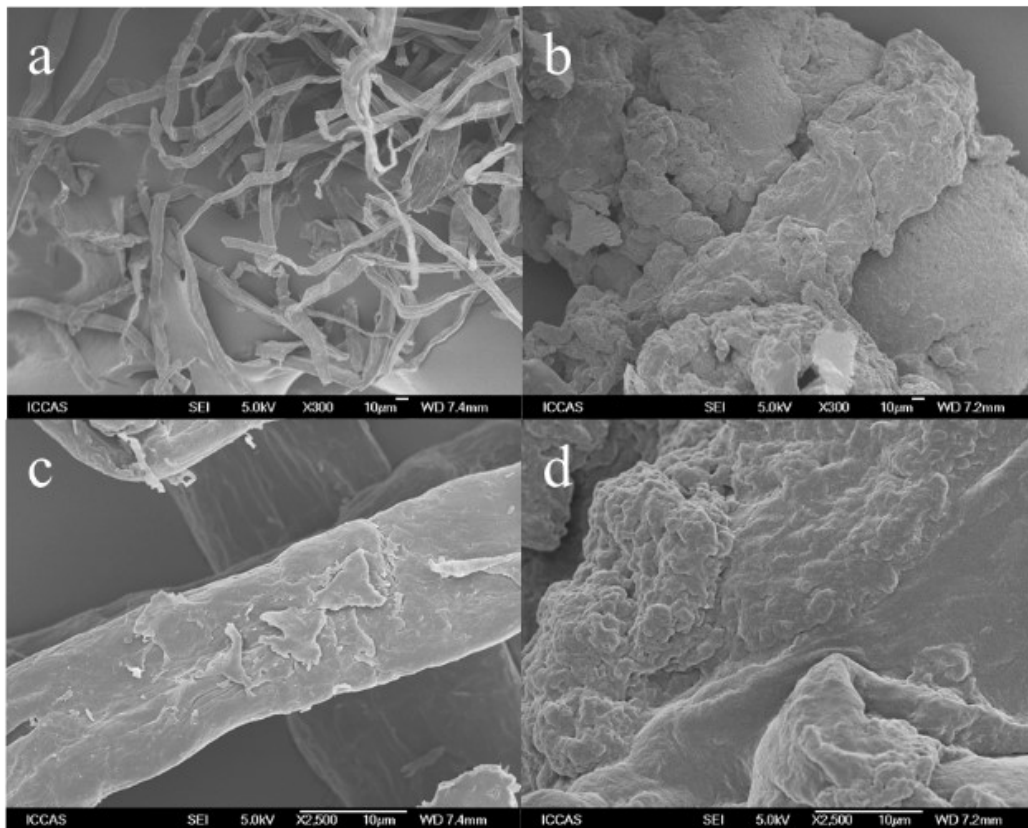


Figure S5. Scanning electron microscope (SEM) photos of Pulp and RePulp, a) pulp with 300x; b) regenerated pulp with 300x; c) pulp with 2500x; d) regenerated pulp with 2500x.

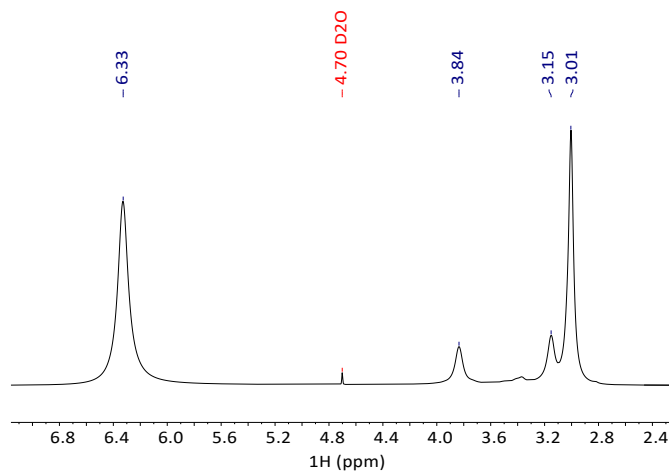


Figure S6. ¹H NMR spectra of ChOH/urea DES, deuterium oxide as external reference.

Table S2. The data obtained from Ubbelohde viscosity experiment

Time (day)	0	1	3	5	7
[η] ^a (ml·g ⁻¹)	458.3	388.2	375.0	371.7	377.0
DP	926	770	741	734	745
Extend of degradation (%)	-	16.8	19.9	20.7	19.5

^a [η] was the average of [η 1] and [η 2] acquired from the intercepts in figure S4.

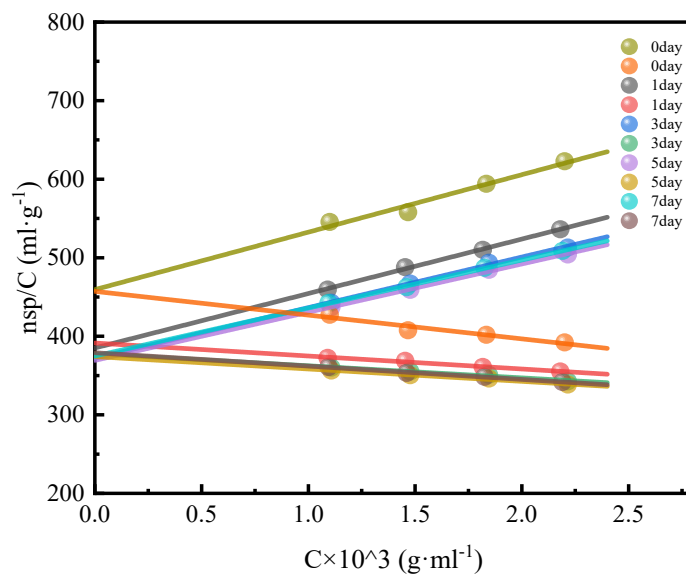


Figure S7. Relationship between [η] and concentration of cotton linter pulp in CED (0.5M; 25°C).

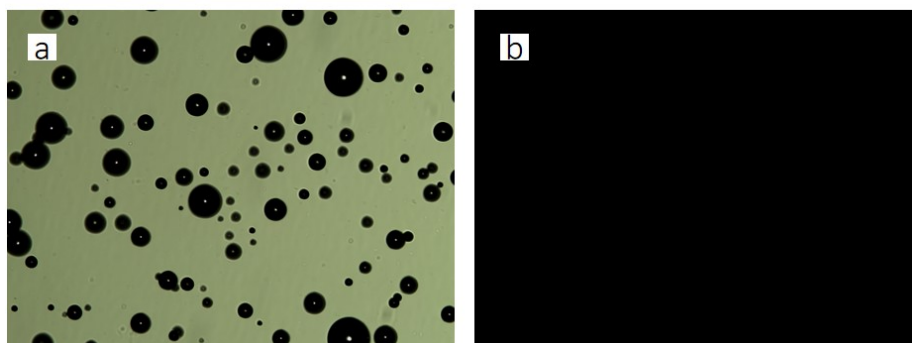


Figure S8. Images of MCC (8 wt.%) dissolved in recycled-3 ChOH/Urea mixture under (a) normal light, (b) orthogonal polarized light.