Electronic Supplementary Information

Evaluation on the recovery of lignin from basic [Ch][Lys] systems using low-cost alcohols as anti-solvent under acid-free condition

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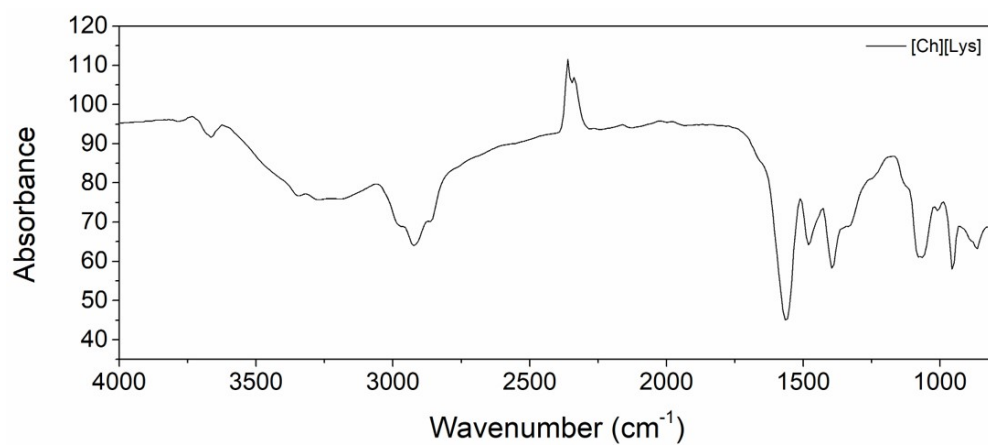
Catalogue:

Fig. S1 FT-IR spectra of [Ch][Lys].

Fig. S2 HSQC NMR spectra of (a-b) pure [Ch][Lys] and (c-d) *i*-PrOH-recovered-AL.
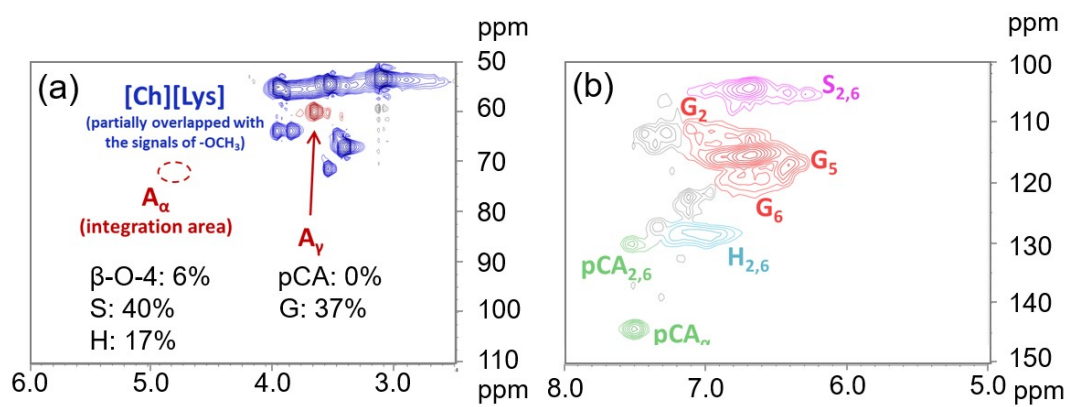
Fig. S3 Photos of AL precipitation in *t*-BuOH for the systems with [Ch][Lys] : water ratios (w/w) of 7:3 (a), 5:5 (b), 3:7 (c), and 1:9 (d), respectively.

Table S1 Elemental analysis of samples of AL and recovered AL.

Table S2 Integration of H NMR spectra of the flesh and i-PrOH-recovered [Ch][Lys].

Fig. S1 FT-IR spectra of [Ch][Lys].

Fig. S2 HSQC NMR spectra of *i*-PrOH-recovered-AL.

[Ch][Lys]:water (w/w)

7:3	5:5	3:7	1:9

Fig. S3 Photos of AL precipitation in *t*-BuOH for the systems with [Ch][Lys] : water ratios (w/w) of 7:3 (a), 5:5 (b), 3:7 (c), and 1:9 (d), respectively.

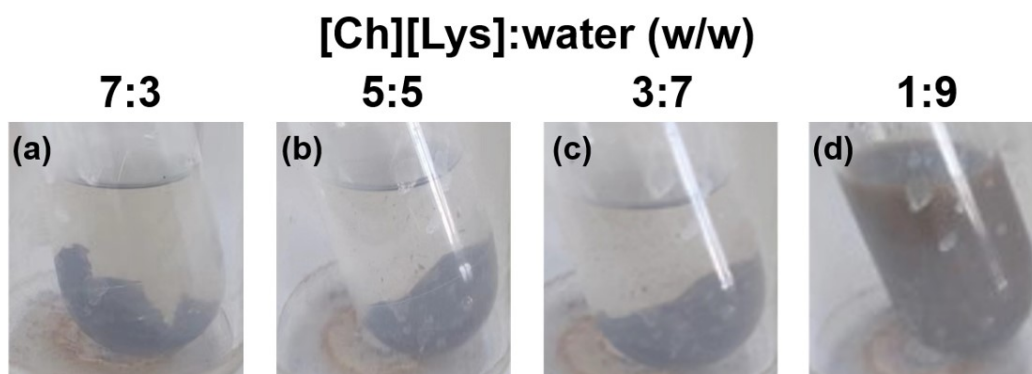**Table S1** Elemental analysis of samples of AL and recovered AL.

Samples	[Ch][Lys] concentration (wt%)	N(%)	C(%)	H(%)	O(%)
AL	/	1.0	62.5	5.4	31.1
EtOH-recovered AL	100	4.9	58.1	6.7	30.3
i-PrOH-recovered-AL	100	8.9	53.4	7.6	30.1
t-BuOH-recovered-AL	100	9.5	52.4	7.6	30.5
t-BuOH-recovered-AL	70	8.6	51.0	9.2	31.2
t-BuOH-recovered-AL	50	8.1	48.0	8.2	35.7
t-BuOH-recovered-AL	30	6.2	54.4	8.4	31.0
t-BuOH-recovered-AL	10	3.3	56.1	8.5	32.1

Table S2 Integration of H NMR spectra of the flesh and *t*-BuOH-recovered [Ch][Lys]. [a]

δH	Assignment [b]	Flesh [Ch][Lys] [c]	*t*-BuOH-recovered [Ch][Lys] [c]
1.2-1.3	CH_2	2.1	2.1
1.3-1.4	CH_2	2.0	2.0
1.4-1.6	CH_2	2.2	2.1
2.5	CH_2	2.0	2.0
3.1	CH_3, CH_3, CH_3, CH-N	9.4	9.5
3.4-3.7	CH_2	2.5	2.4
3.8-4.0	CH_2	1.7	1.8

a. The deuterated reagent was DMSO-d6, which was also used for abscissa calibration.
b. According to the reference.[1]
c. Values were the peak relative intensities of the corresponding signal (the intensity of signal CH_2 at δH = 1.3-1.4 was set as 2.0).

References:
1. Q.-P. Liu, X.-D. Hou, N. Li and M.-H. Zong, *Green Chem.*, 2012, **14**, 304-307.