Supporting Information

Characterization of the synthesized products

1-Chlorobutane (AR, 9.3g, 0.1mol) and N-methylimidazole (AR, 8.2g, 0.1mol) were mixed into round-bottom flask at 80℃ for 24 h. The precipitate was washed with ethyl acetate and dried under reduced pressure at 70℃. Light yellow liquid was formed and the yield is 91.32%.

1-Bromobutane (AR, 13.7g, 0.1mol) and N-methylimidazole (AR, 8.2g, 0.1mol) were mixed into round-bottom flask at 80℃ for 24 h. The precipitate was washed with ethyl acetate and dried under reduced pressure at 70℃. Light yellow liquid is formed and the yield is 90.06%.

3-Chloro-1-propanol (AR, 9.45g, 0.1mol) and N-methylimidazole (AR, 8.2g, 0.1mol) were mixed into three-necked bottle with N_2 at 80℃ for 24h. The precipitate was washed with ethyl acetate and dried under reduced pressure at 70℃. Light yellow liquid is formed and the yield is 72.13%.

3-Chloro-1-propanol (AR, 9.5g, 0.1mol) and N, N-dimethyl ethanolamine (AR, 8.9g, 0.1mol) were mixed into three-necked bottle with N_2 at 80℃ for 24h. The precipitate was washed with ethyl acetate and dried under reduced pressure at 70℃. White solid is formed and the yield is 76.27%.

Table S1 The chemical shifts of ^{1}H NMR spectra for ionic liquids

Ionic liquids[a]	^{1}H NMR spectra (δ, $\times 10^{-6}$)[b]								
	2-H	3-H	4-H	5-H	6-H	7-H	8-H	9-H	10-H
[bmim][Cl]	10.31(s, 1H)	_	7.50(d, *J=2.0 Hz*, 1H)	7.60(d, *J=2.0 Hz*, 1H)	4.11(s, 3H)	4.34(t, *J=7.2 Hz*, 2H)	1.89(m, 2H)	1.3(q, *J=7.6 Hz*, 2H)	0.95(t, *J=7.2 Hz*, 3H)
[bmim][Br]	9.87(s, 1H)	_	7.40(d, *J=2.0 Hz*, 1H)	7.52(d, *J=2.0 Hz*, 1H)	3.91(s, 3H)	4.14(t, *J=7.2 Hz*, 2H)	1.68(m, 2H)	1.15(q, *J=7.6 Hz*, 2H)	0.73(t, *J=7.2 Hz*, 3H)
[OH-pmim][Cl]	9.41(s, 1H)	_	7.87(s, 1H)	7.78(s, 1H)	5.04(s, 1H)	4.27(t, *J=7.0 Hz*, 2H)	3.54(m, 2H)	1.94(p, *J=6.5 Hz*, 2H)	_
Choline-like IL	5.61(s, 1H)	4.97(s,1H)	3.80(s, 2H)	3.47(m, 6H)	3.09(s, 6H)	4.31(t, *J=7.4 Hz*, 2H)	1.83 (t *J* = *11.7Hz*, 2H)	_	_

[a] IL1 and IL2 were dissolved in $CDCl_3$ .IL3 and IL4 were dissolved in DMSO. The results were recorded on Varian-INOVA 400 NMR spectrometry.

[b] ^{1}H NMR chemical shifts were recorded at 400MHz and reported downfield from trimethylsilane (TMS). Multiplicities are abbreviated as s=singlet, d=doublet, q=quartet, t=triplet and m=multiplet.

Electronic Supplementary Material (ESI) for Analytical Methods