Supporting information

Lutidinium-Based Ionic Liquids for Efficient Dissolution of Cellulose

Rakesh Samikannu[a,*], Shashi Kant Shukla[a], Ajaikumar Samikannu[a], Jyri-Pekka Mikkola[a,b,]

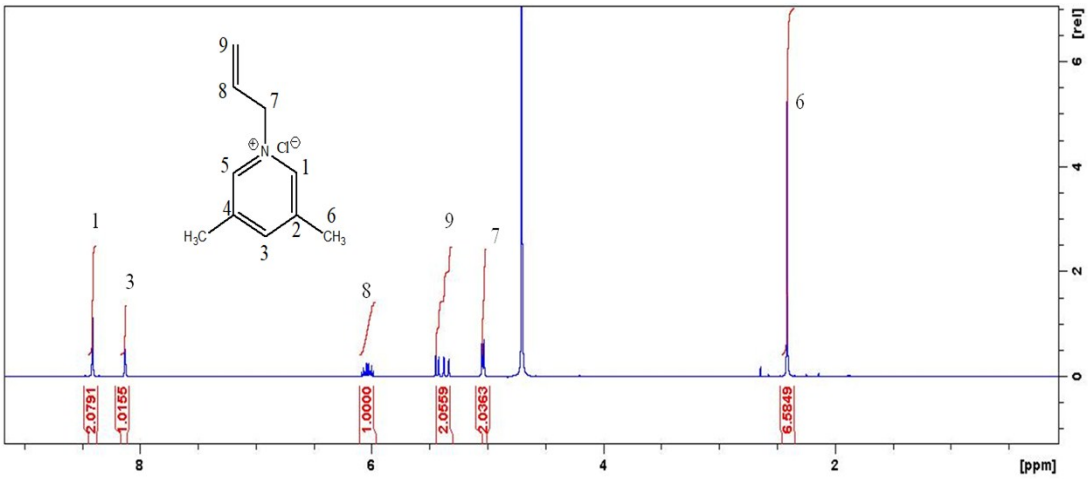


Figure S1. ^{1}H-NMR spectrum of [3,5-ADMPy]Cl.

1-allyl-3,5-dimethylpyridinium chloride[3,5-ADMPy]Cl,

Yield 94.27% , M.P. 88.9 ^{o}C. ^{1}H-NMR (400 MHz, D_2O, ppm); δ-8.40 (s, 1H, H_a), 8.12 (s, 1H, H_b), 2.40 (s, 6H, H_c), 5.03 (d, 2H, H_d), 6.02 (m, 1H, H_e), 5.44 and 5.37 (dd, 2H, H_f),. ^{13}C-NMR (400 MHz, D_2O, ppm); δ-C^1-146.8, C^2-139.0, C^3-140.9, C^4-17.3, C^5-62.9, C^6-130.2, C^7-122.3.

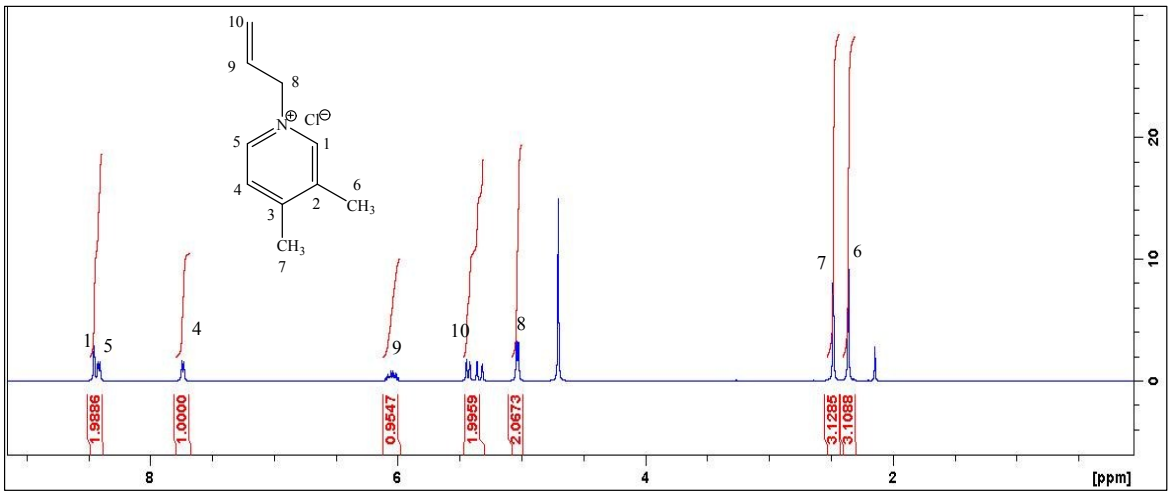


Figure S2. ^{1}HNMR spectrum of [3,4-ADMPy]Cl

1-allyl-3,4-dimethyl pyridinium chloride[3,4-ADMPy]Cl,

Yield 89.51% , M.P. 66.1°C. ^{1}H-NMR (400 MHz, D_2O, ppm); δ-8.45 (s, 1H, H_a), 7.73 (d, 1H, H_b), 8.41 (d, 1H, H_c), 2.47(s, 3H, H_d), 2.35 (s, 3H, H_e), 5.03 (d, 2H, H_f) 6.04(m, 1H, H_e), 5.43 and 5.33 (dd, 2H, H_f),. ^{13}C-NMR (400 MHz, D_2O, ppm); δ-C^1-142.3, C^2-138.6, C^3-159.0, C^4-128.1, C^5-140.7, C^6-19.5, C^7-16.0, C^8-62.3, C^9-130.3. C^{10}-122.1.

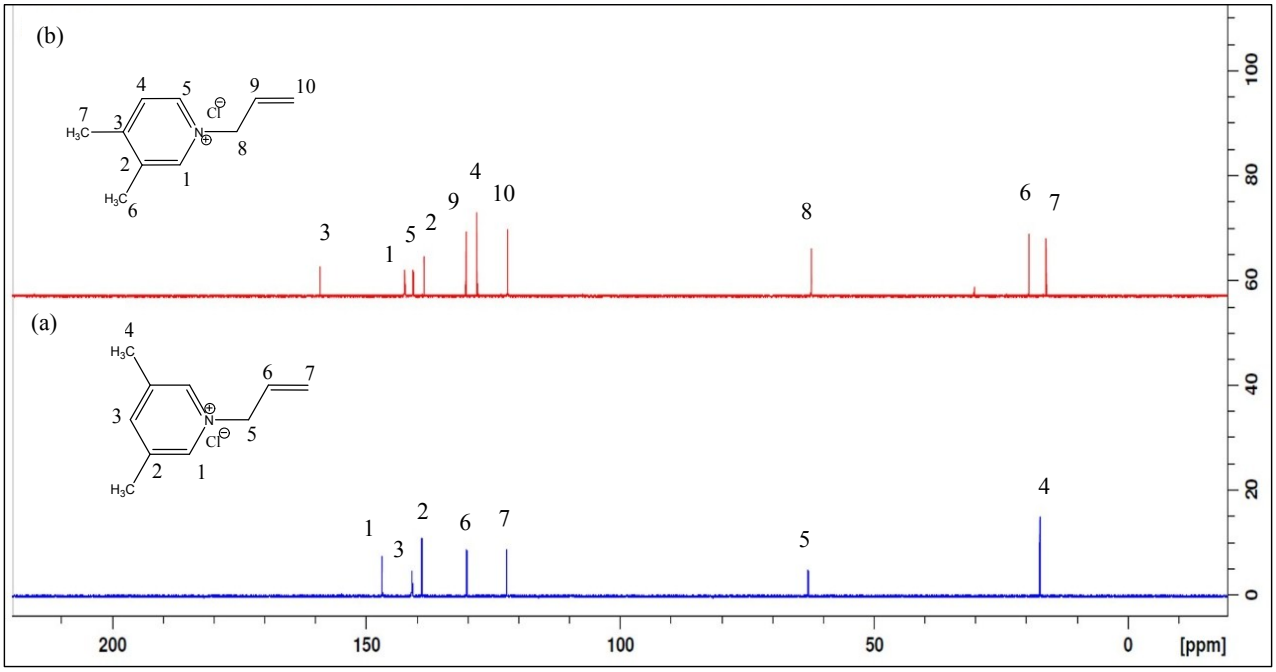
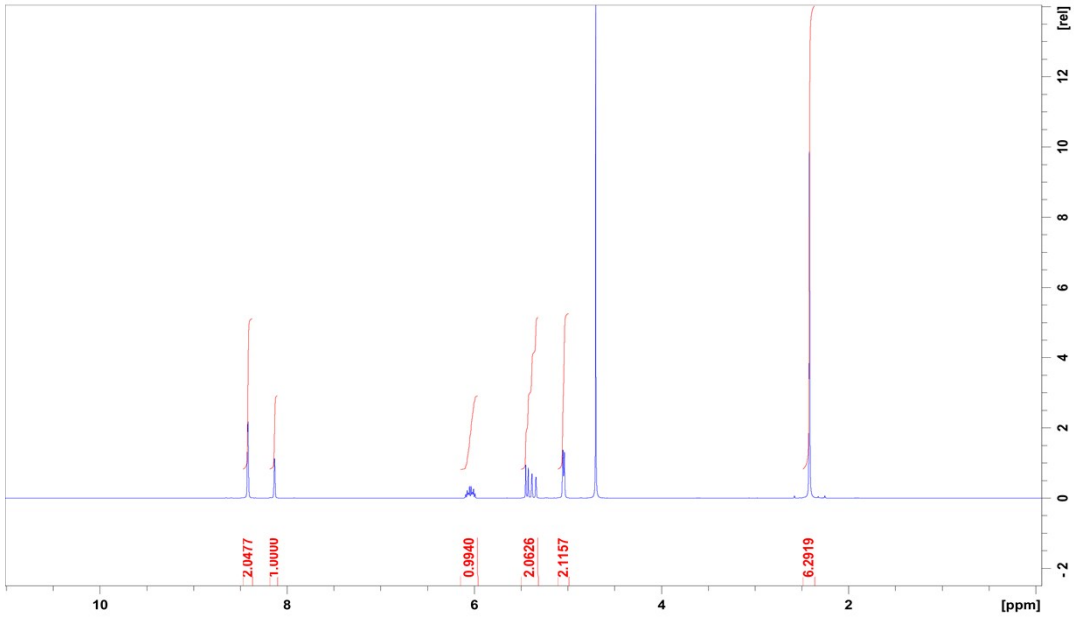
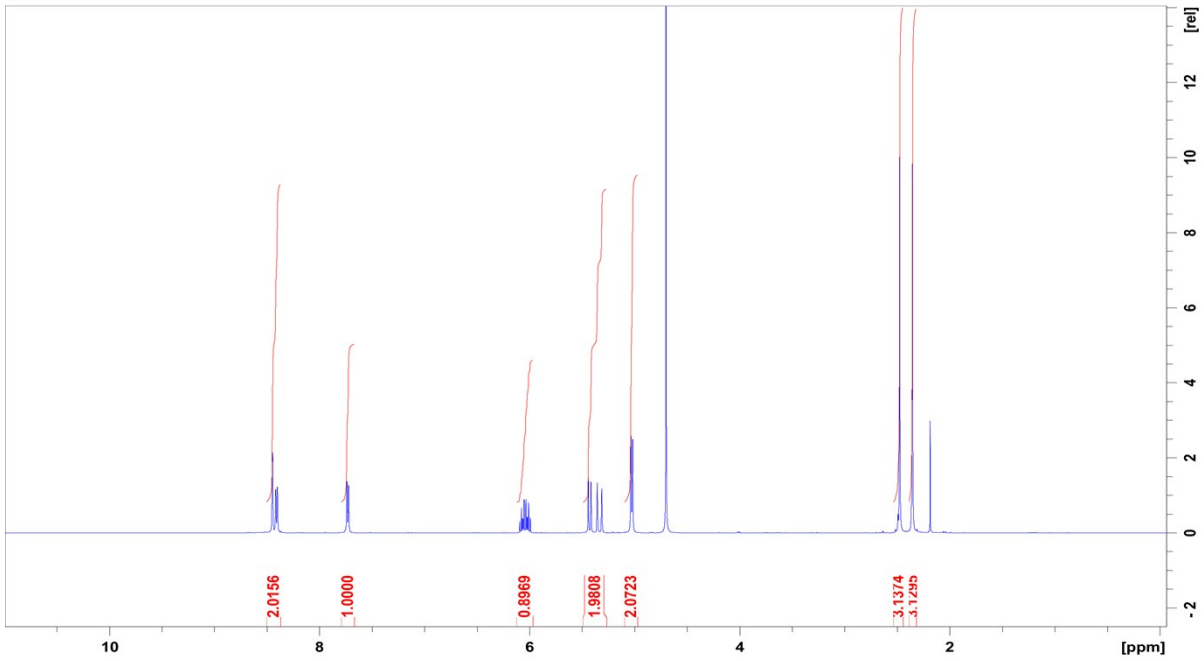


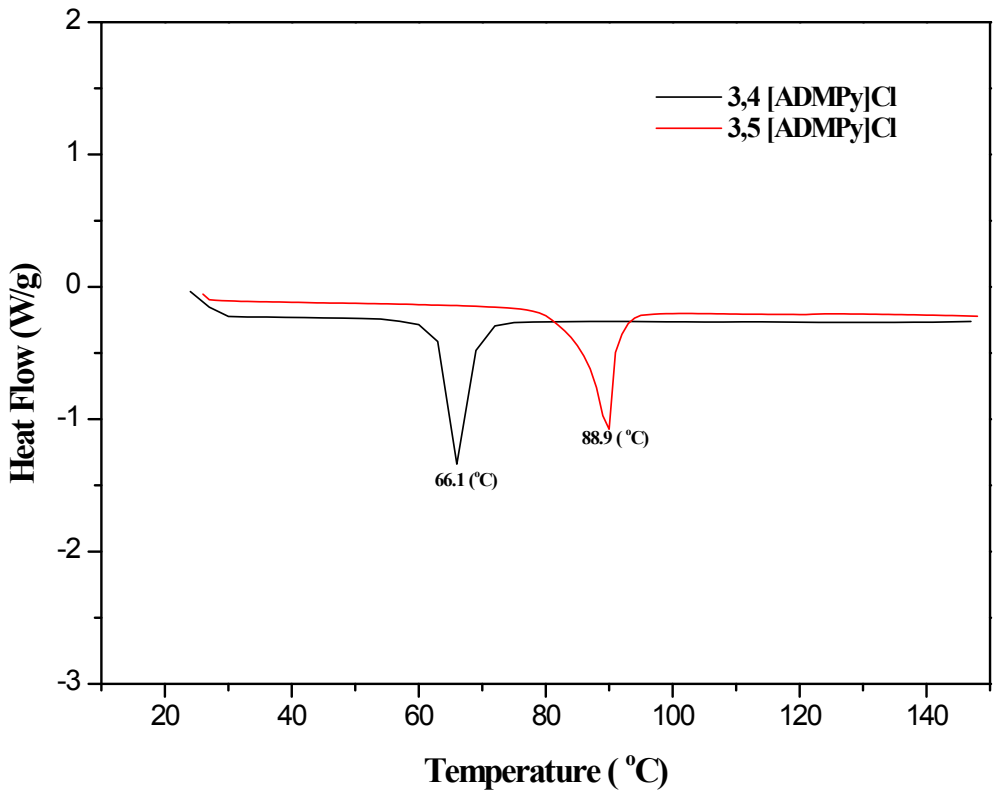
Figure S3. ^{13}C-NMR spectra of [3,5-ADMPy] Cl (a) and [3,4-ADMPy] Cl (b)



S4. ^{1}H-NMR spectram of regenerated [3,5-ADMPy]Cl



S5. ^{1}H-NMR spectram of regenerated [3,4-ADMPy]Cl



S6. DSC curve of [3,5-ADMPy] Cl and [3,4-ADMPy] Cl

Table S1. Dissolution of different wt% of cellulose in lutidinium-based ILs at various temperatures with time. Sulfite cellulose (cell), cellulose (MCC).

Ionic liquids	Cellulose	Temperature (°C)	% Weight dissolved	Time (min)
[3,5-ADMPy]Cl	Cell	118	10	8
	(DP=1644)	118	20	12
		118	26	34
	MCC (DP = 789)	118	5	10
		118	10	18
		118	15	27
		118	19	50
[3,4-ADMPy]Cl	Cell	110	5	10
		110	10	22
		118	5	8
		118	10	15
		118	15	35
		118	18	55
	MCC (DP = 789)	118	5	12
		118	10	21
		118	15	32