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Supplementary Material

Solubility of carbon dioxide in some imidazolium and pyridinium-based ionic liquids and correlation with NRTL model

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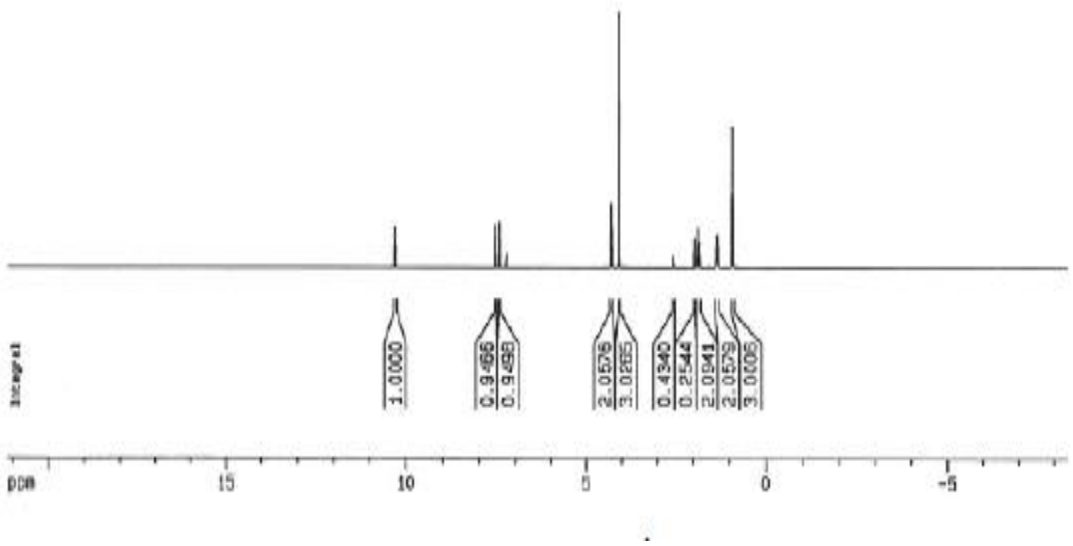

Figure S1. ^{1}HNMR data of 1-butyl-3-methyl imidazolium bromide: ^{1}HNMR (400 MHz: $CDCl_3$; δ/ppm relative to TMS): 0.91 (3H, but-CH_3), 1.34 (2H, CH_2), 1.86 (2H, CH_2), 4.08 (3H, NCH_3), 4.29 (2H, NCH_2), 7.46(1H, NCH), 7.58 (1H, NCH), 10.30 (1H, NCHN).

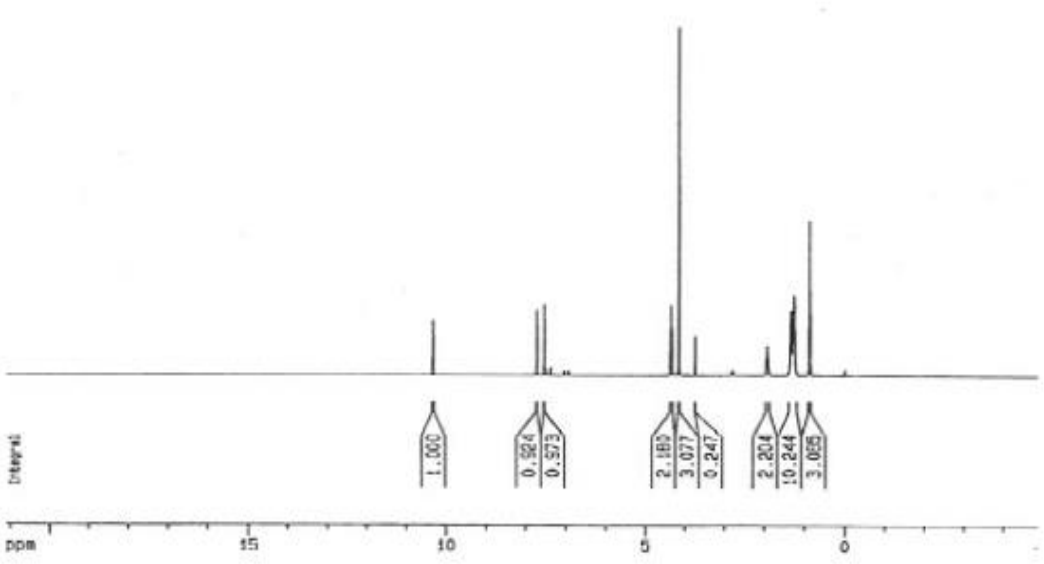

Fig. S2. ^{1}HNMR data of 1-octyl-3-methylimidazolium bromide: ^{1}HNMR (400 MHz: $CDCl_3$; δ/ppm relative to TMS): 0.87 (3H, oct-CH_3), 1.30 (10H, CH_2), 1.92 (2H, CH_2), 4.14 (3H, NCH_3), 4.34 (2H, NCH_2), 7.55(1H, NCH), 7.73 (1H, NCH), 10.32 (1H, NCHN).

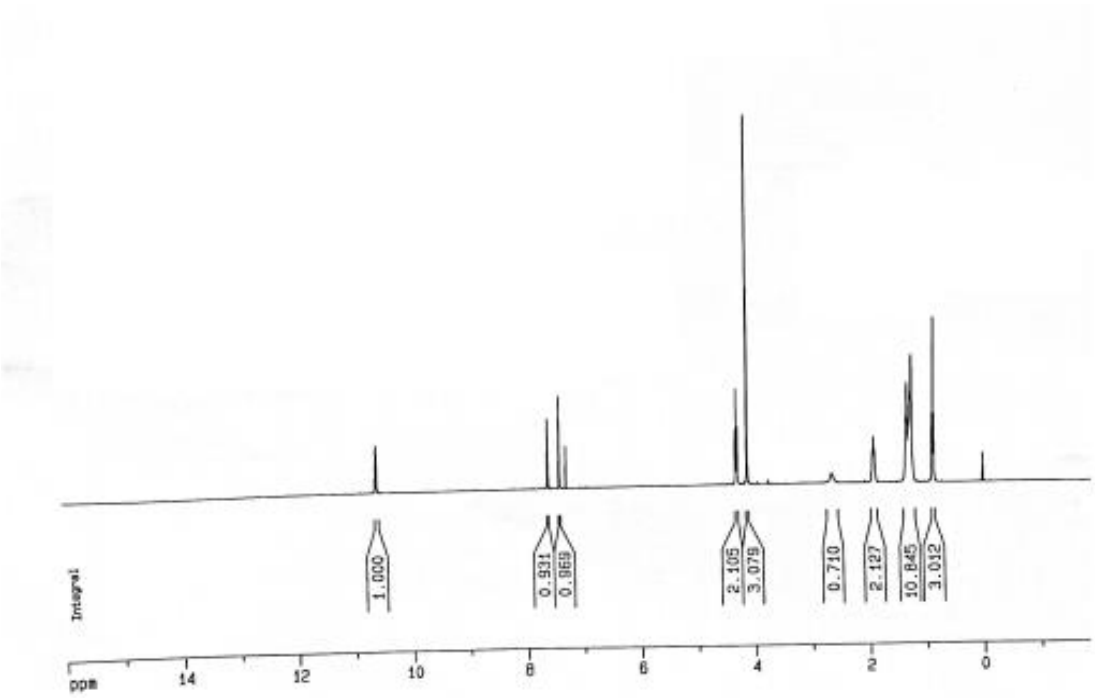

Figure S3. ^{1}HNMR data of 1-octyl-3-methyl imidazolium chloride: ^{1}HNMR (400 MHz: $CDCl_3$; δ/ppm relative to TMS): 0.856 (3H, oct-CH_3), 1.28 (10H, CH_2), 1.92 (2H, CH_2), 4.32 (3H, NCH_3), 7.43 (1H, NCH), 7.64 (1H, NCH), 10.63 (1H, NCHN).

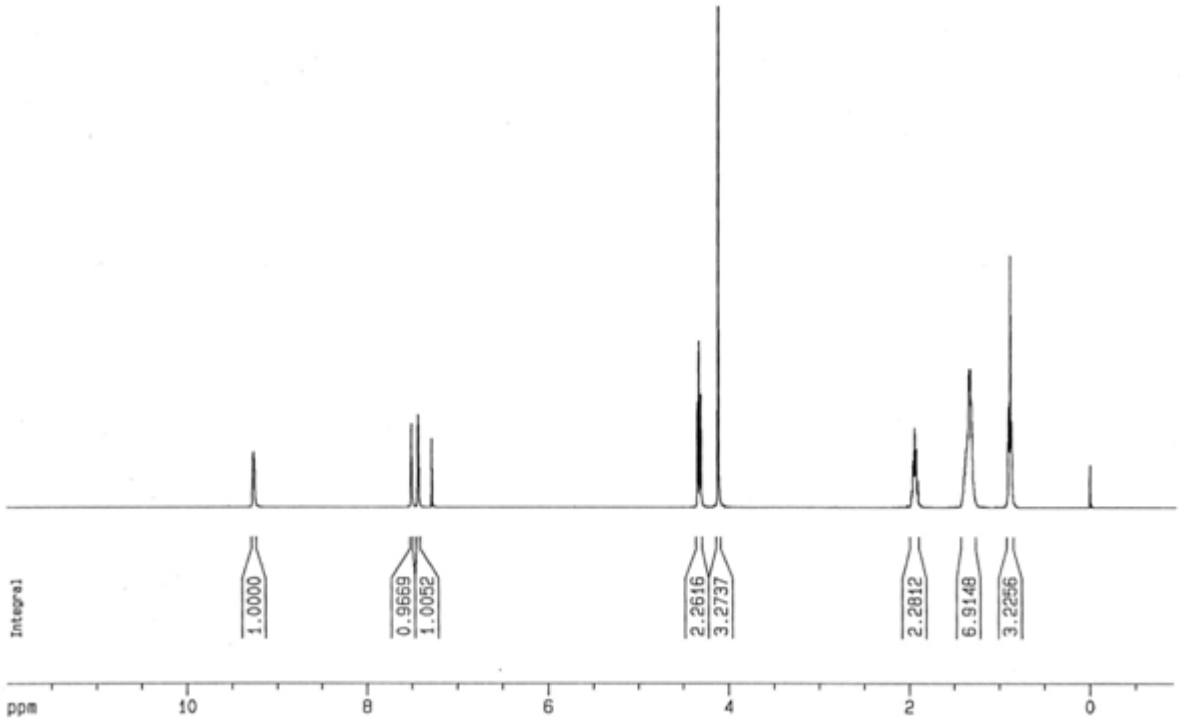

Fig. S4. ^{1}HNMR data of 1-hexyl-3-methylimidazolium thiocyanate: ^{1}HNMR (400 MHz: $CDCl_3$; δ/ppm relative to TMS): 0.88 (3H, hex-CH_3), 1.33 (6H, CH_2), 1.94 (2H, CH_2), 4.11 (3H, NCH_3), 4.33 (2H, NCH_2), 7.29 (1H, NCH), 7.48 (1H, NCH), 9.26 (1H, NCHN).

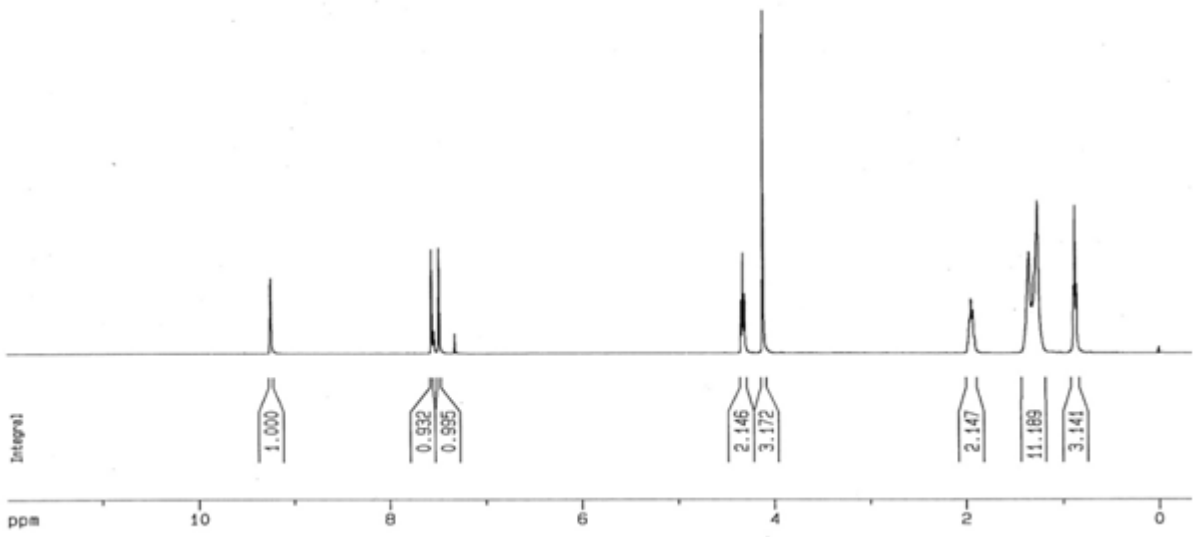

Fig S5: ^{1}HNMR data of 1-ocyl-3-methylimidazolium thiocyanate: ^{1}HNMR (400 MHz: $CDCl_3$; δ/ppm relative to TMS): 0.871 (3H, oct-CH_3), 1.31 (10H, CH_2), 1.96 (2H, CH_2), 4.09 (3H, NCH_3), 4.33 (2H, NCH_2), 7.48 (1H, NCH), 7.56 (1H, NCH), 9.24 (1H, NCHN).

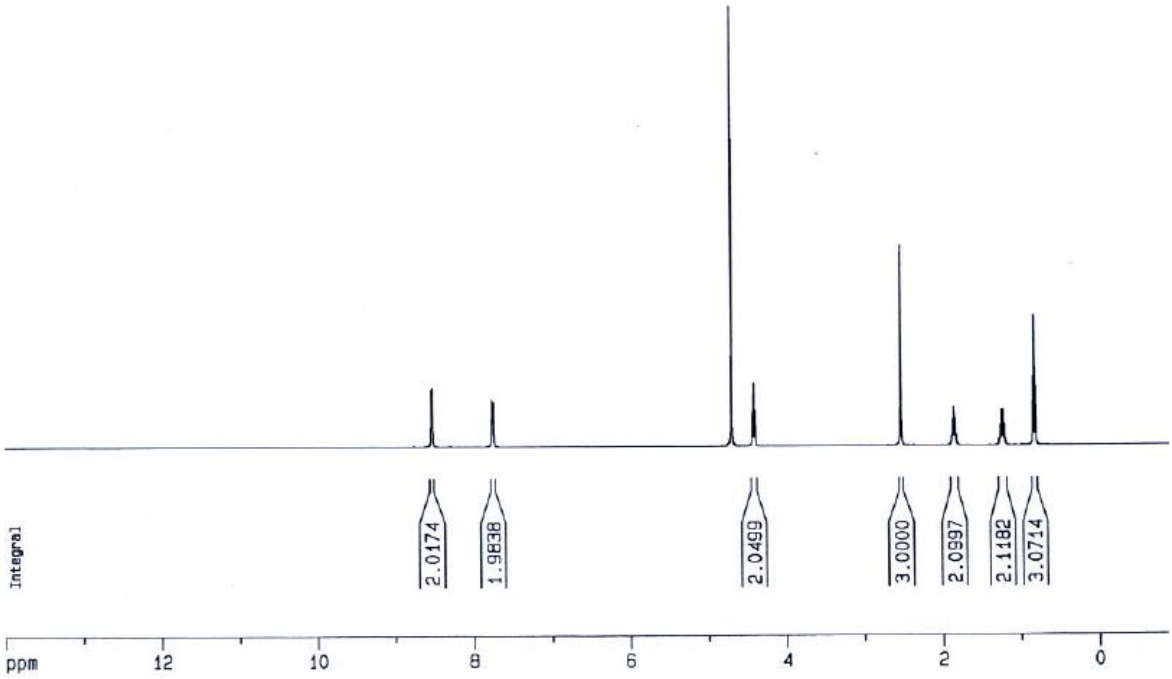

Fig. S6. ^{1}H-NMR data of 1-butyl-4-methylpyridinium bromide: ^{1}H-NMR (400 MHz: D_2O; δ/ppm relative to TMS): 0.81 (3H, but-CH_3), 1.24 (2H, CH_2), 1.85 (2H, CH_2), 2.53 (3H, C-CH_3), 4.42 (2H, N-CH_2), 7.75(2H, CH), 8.53 (2H, N-CH).

Additionally, the spectrum shows a signal at 4.7 ppm (D_2O, HDO).

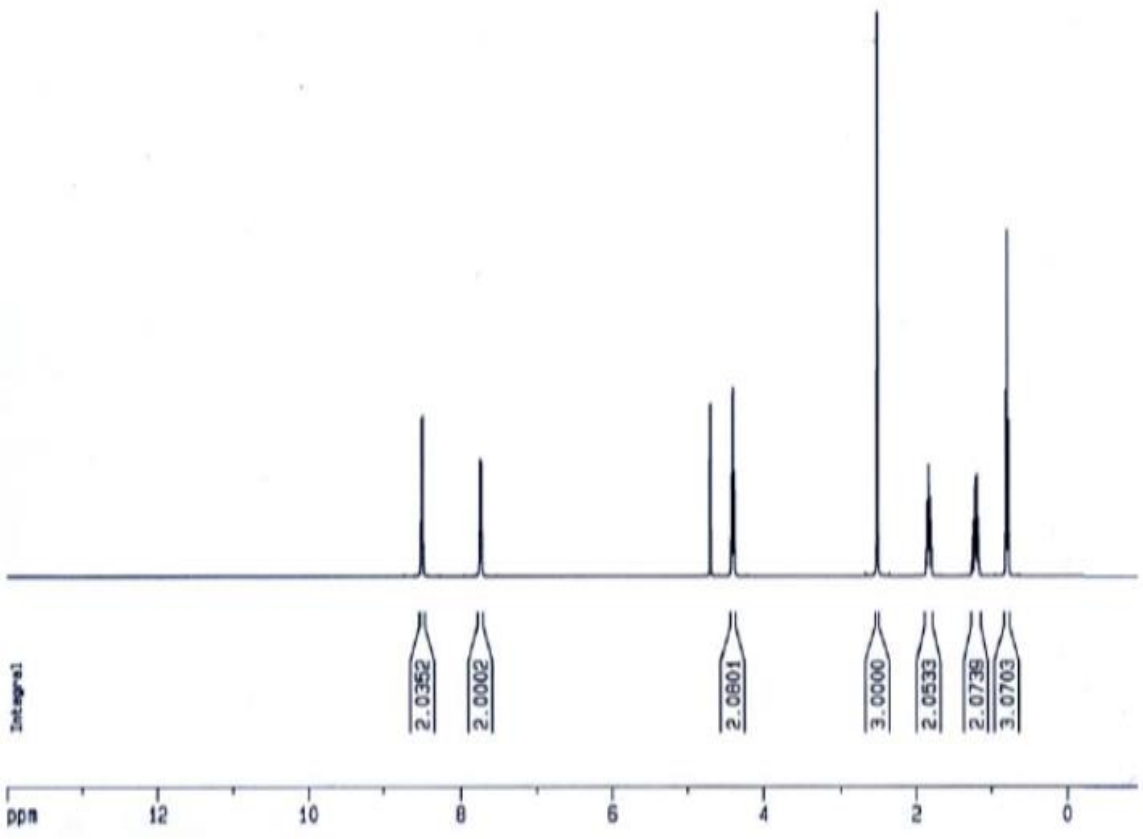

Fig. S 7. ^{1}HNMR data of 1-butyl-4-methylpyridinium chloride: ^{1}HNMR (400 MHz: D_2O; δ/ ppm relative to TMS): 0.79 (3H, but-CH_3), 1.22 (2H, CH_2), 1.82 (2H, CH_2), 251 (3H, C-CH_3), 4.40 (2H, N-CH_2), 7.73 (2H, CH), 8.51 (2H, N-CH).

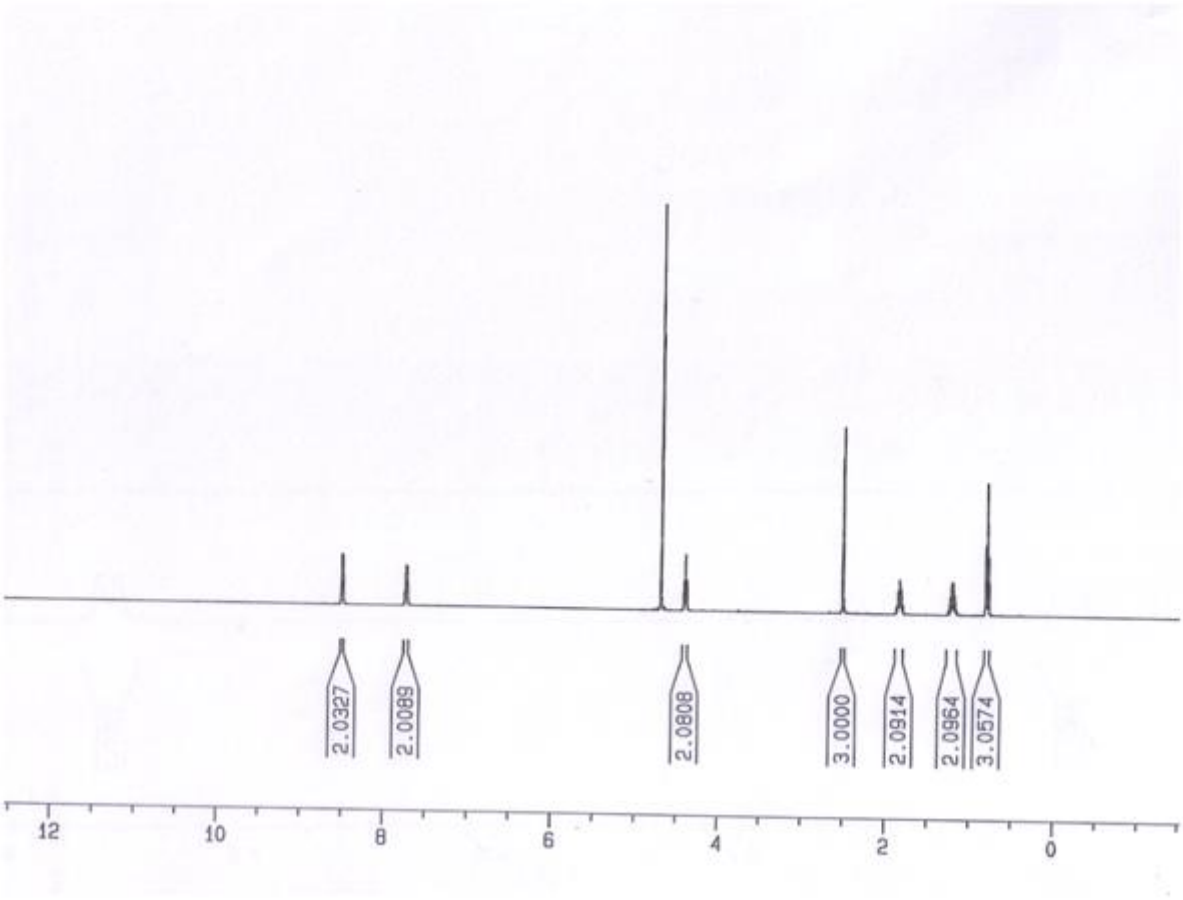

Fig. S8. ^{1}HNMR data of 1–butyl–4–methylpyridinium thiocyanate: ^{1}HNMR (400 MHz: D_2O; δ/ ppm relative to TMS): 0.80 (3H, but-CH_3), 1.22 (2H, CH_2), 1.84 (2H, CH_2), 2.51 (3H, C-CH_3), 4.70 (2H, N-CH_2), 7.73 (2H, CH), 8.51 (2H, N-CH).

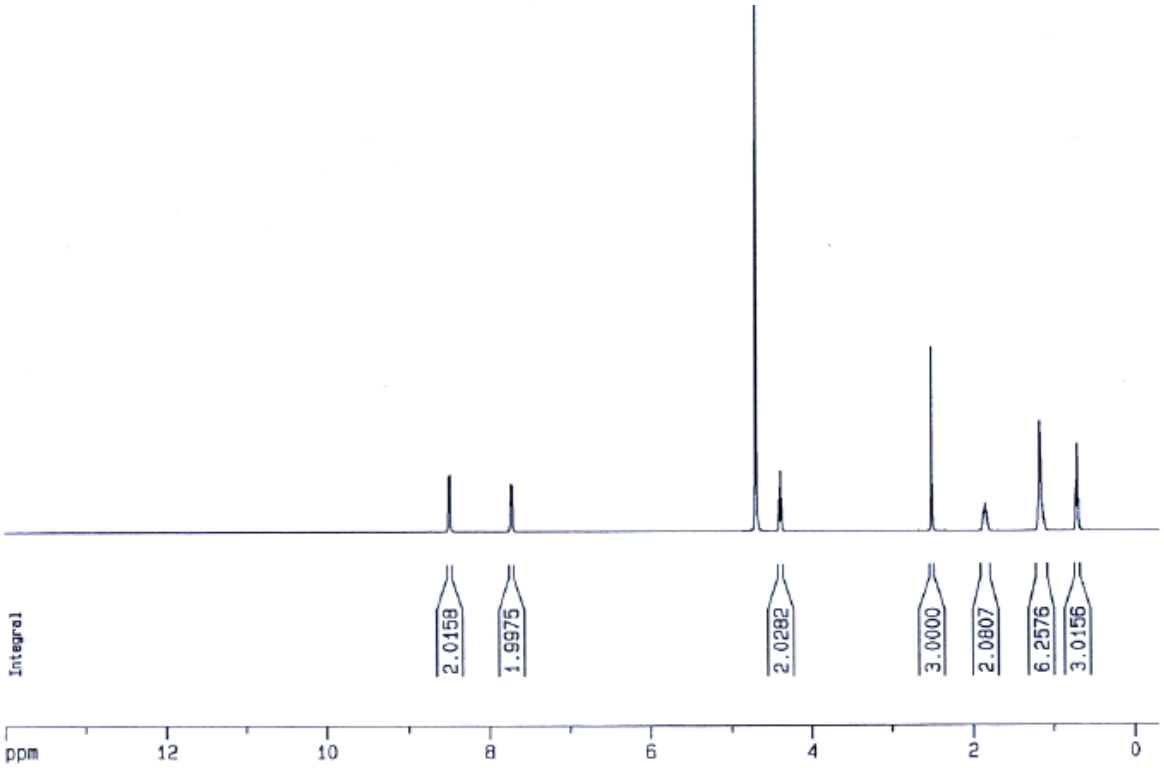

Figure S9. ^{1}H-NMR data of 1-hexyl-4-methylpyridinium bromide: ^{1}H-NMR (400 MHz: D_2O; δ/ppm relative to TMS): 0.71 (3H, hex-CH_3), 1.15 (6H, CH_2), 1.85 (2H, CH_2), 2.51 (3H, C-CH_3), 4.39 (2H, N-CH_2), 7.73 (2H, CH), 8.50 (2H, N-CH).

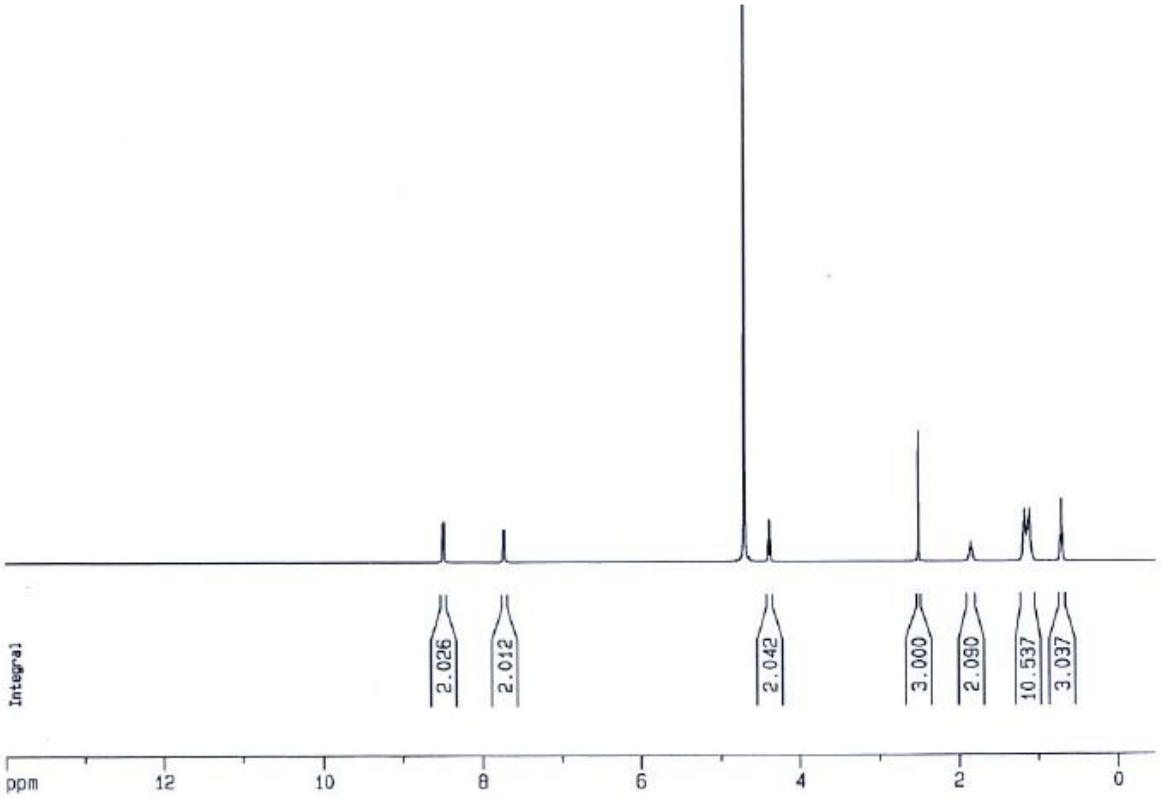

Figure S10. ^{1}H-NMR data of 1-octyl-4-methylpyridinium bromide: ^{1}H-NMR (400 MHz: D_2O; δ/ppm relative to TMS): 0.71 (3H, oct-CH_3), 1.14 (10H, CH_2), 1.85 (2H, CH_2), 2.51 (3H, C-CH_3), 4.39 (2H, N-CH_2), 7.73 (2H, CH), 8.50 (2H, N-CH).