Supporting Information

Isopiestic Studies on Mixed Ionic Liquid Aqueous Solutions at 298.15 K

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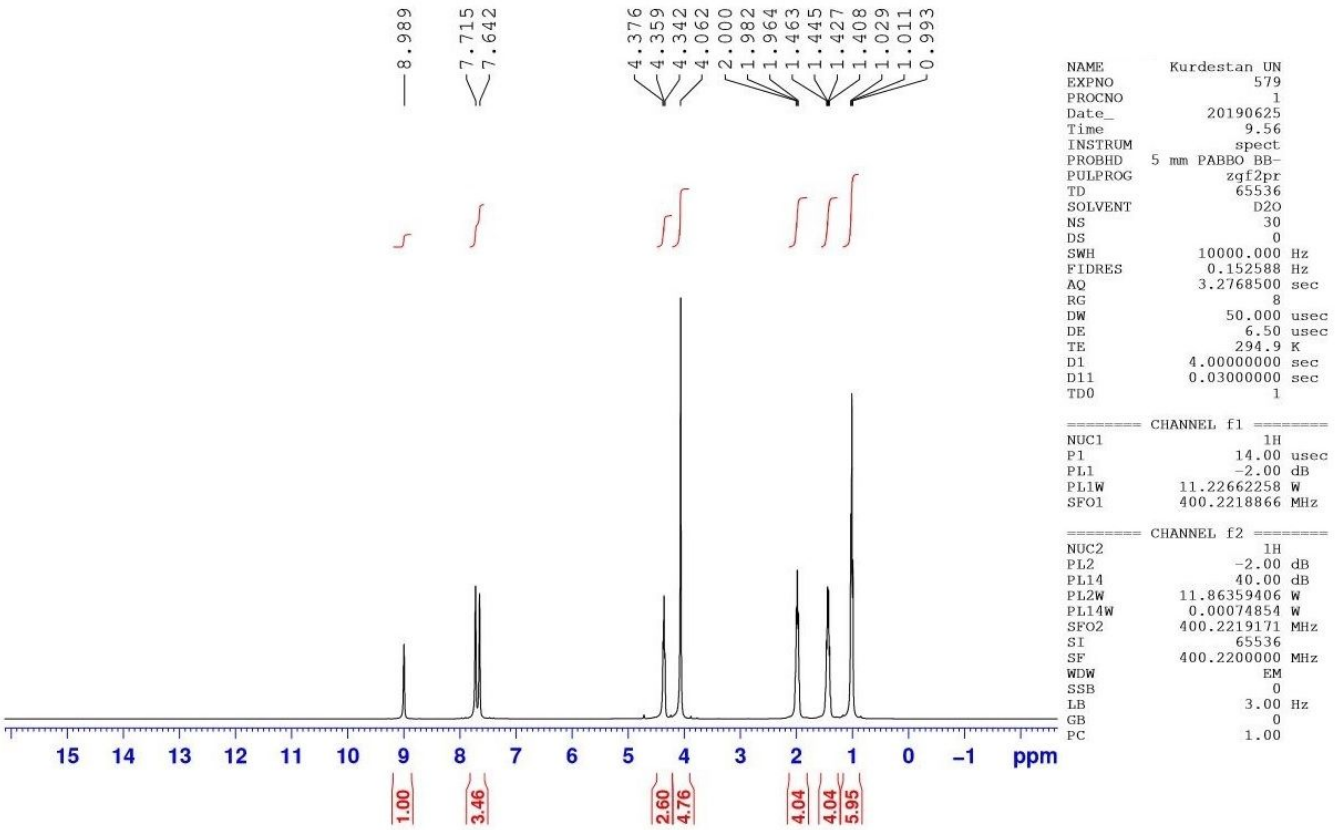

Figure S1: *^{1}H-NMR spectrum of [C_4MIM]I.*

^{1}H NMR δ_H (400 MHz, D_2O): δ 8.99 (s, 1H), 7.51 (s, 1H), 7.67 (s, 1H), 4.36 (t, 2H), 4.1(s, 3H), 1.99(m, 2H), 1.44(m, 2H), 1.00 (t, 3H)

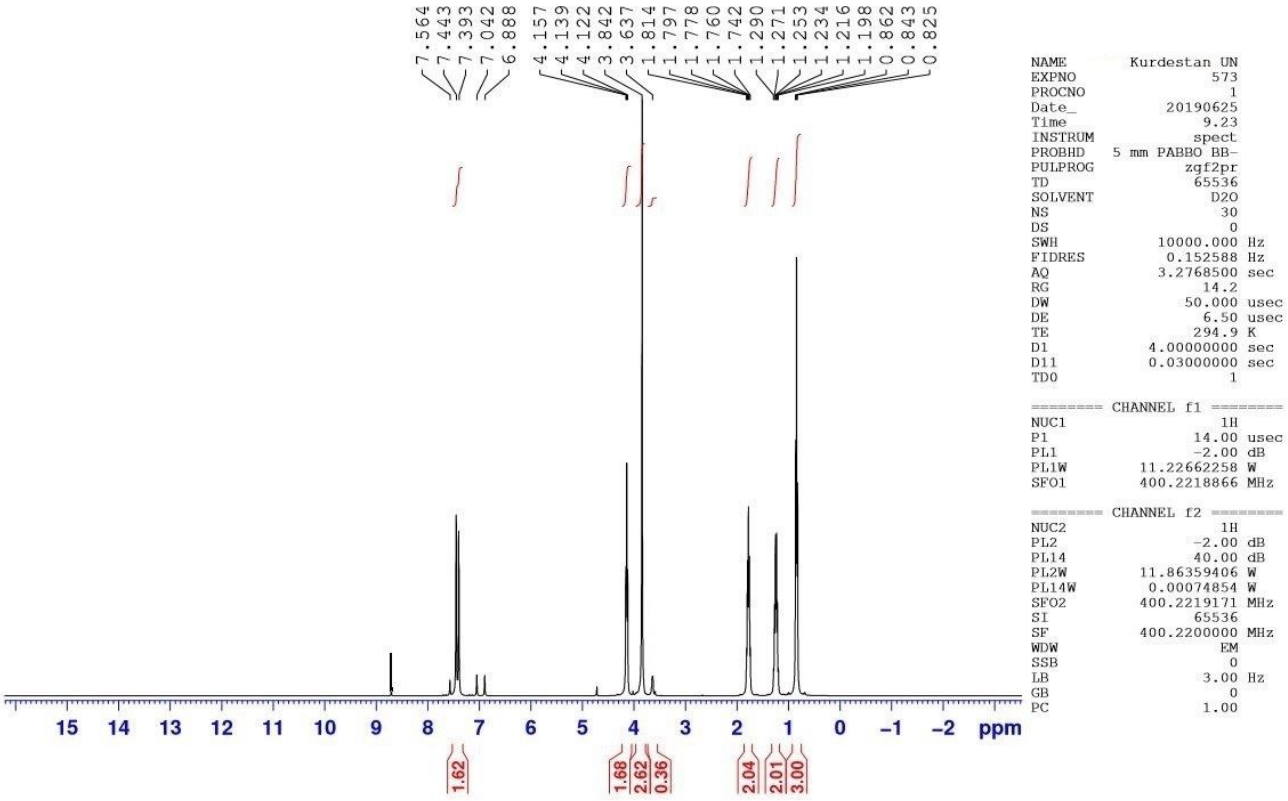

Figure S2: ^{1}H-NMR spectrum of [C_4MIM]Cl.

^{1}H NMR δ_H (400 MHz, D_2O): 8.7 (s, 1H), 7.47 (s, 1H), 6.97 (s, 1H), 4.14 (t, 2H), 3.74 (s, 3H), 1.8 (m, 2H), 1.24 (m, 2H) 0.84 (t, 3H).

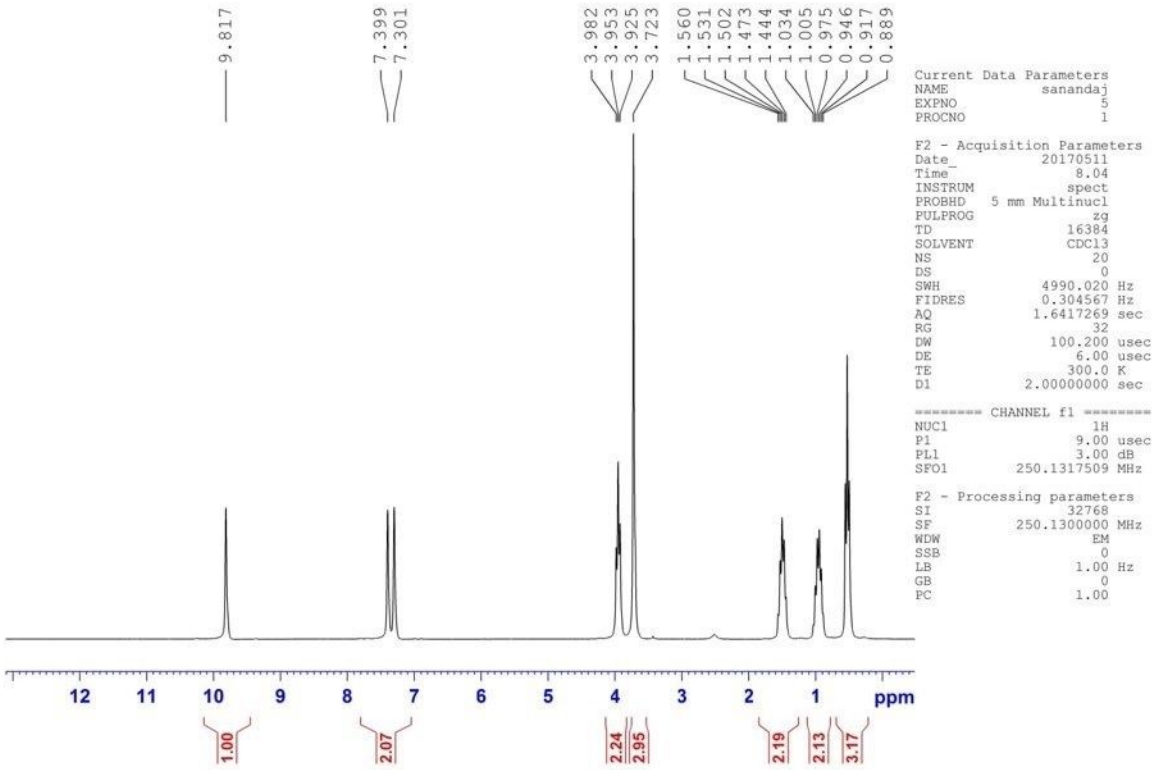

Figure S3: ^{1}H-NMR spectrum of [C_4MIM]Br.

^{1}H NMR δ_H (250 MHz, $CDCl_3$): 9.82 (s, 1H), 7.4 (s, 1H), 7.3 (s, 1H), 3.95 (t, 2H), 3.72 (s, 3H), 1.88 (m, 2H), 0.964 (m, 2H), 0.53 (t, 3H).

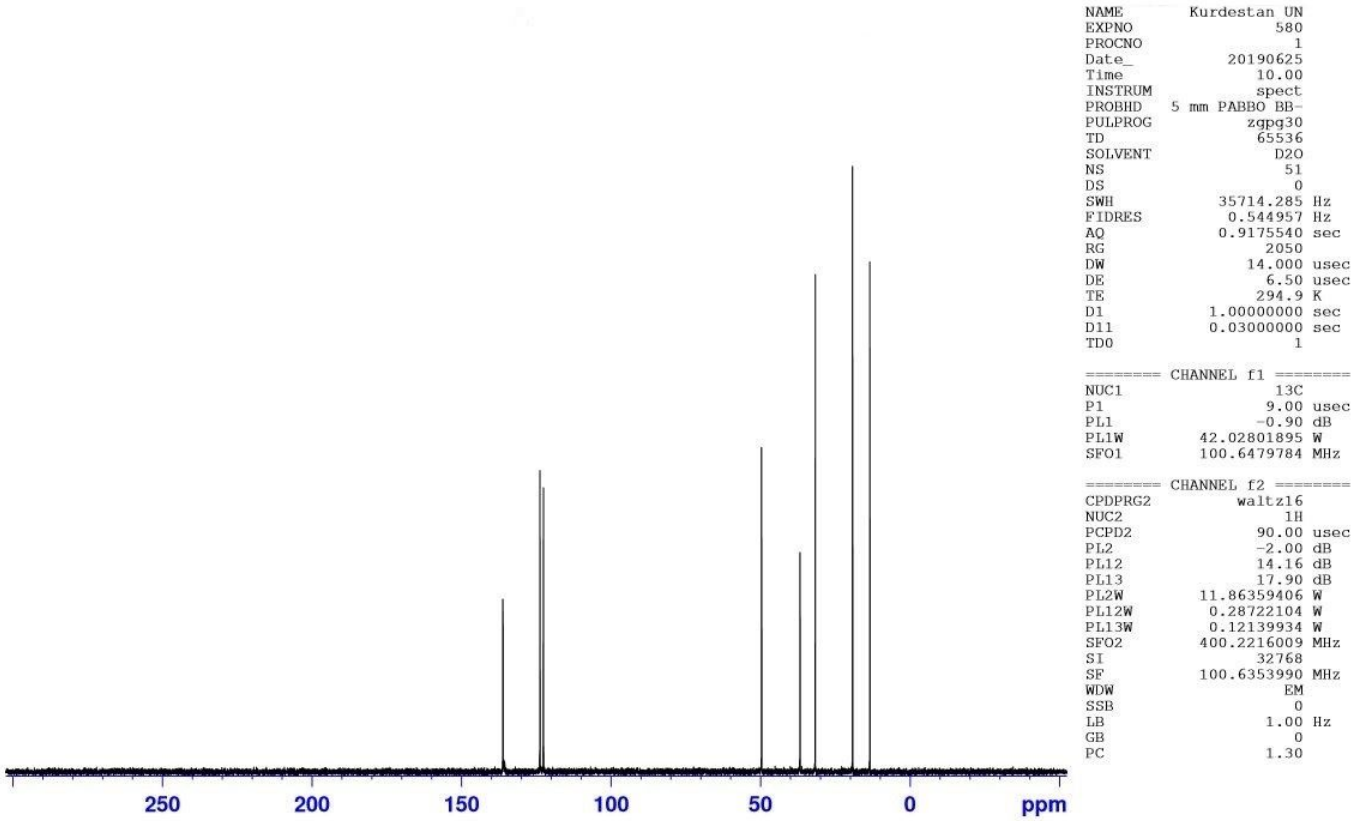

Figure S4: ^{13}C-NMR spectrum of [C_4MIM]I.

^{13}C NMR (D_2O): 135.92, 123.85, 122.66, 49.73, 36.85, 31.72, 19.27, 13.50.

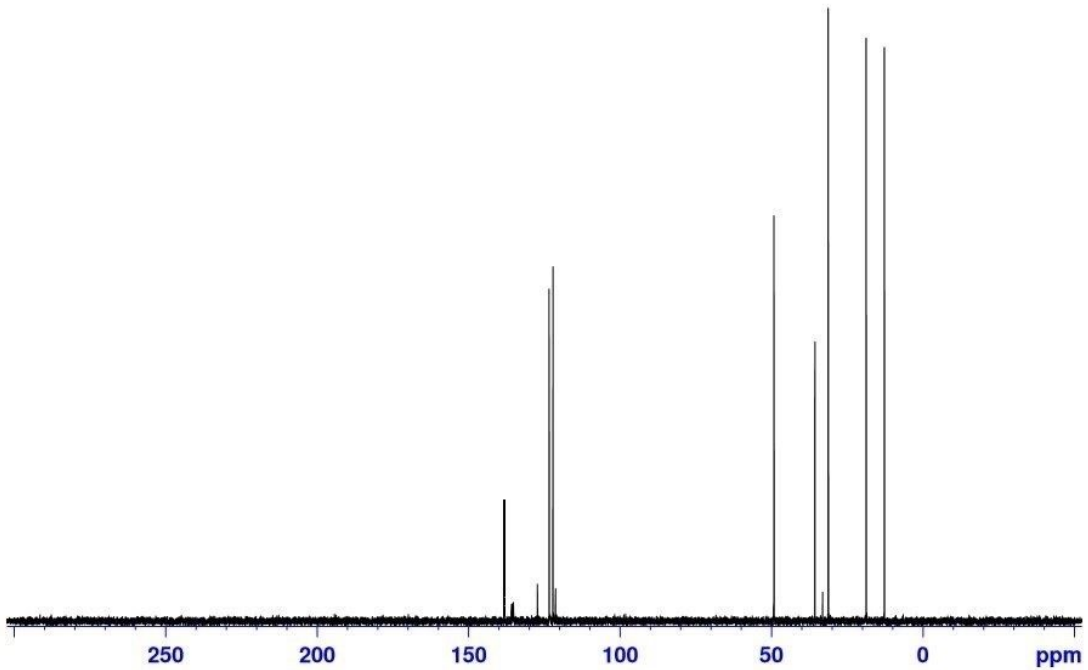


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Figure S5: ^{13}C-NMR spectrum of [C_4MIM]Cl.

^{13}C NMR (D_2O): δ 138.12, 123.46, 122.21, 49.27, 35.73, 31.31, 18.80, 12.77.

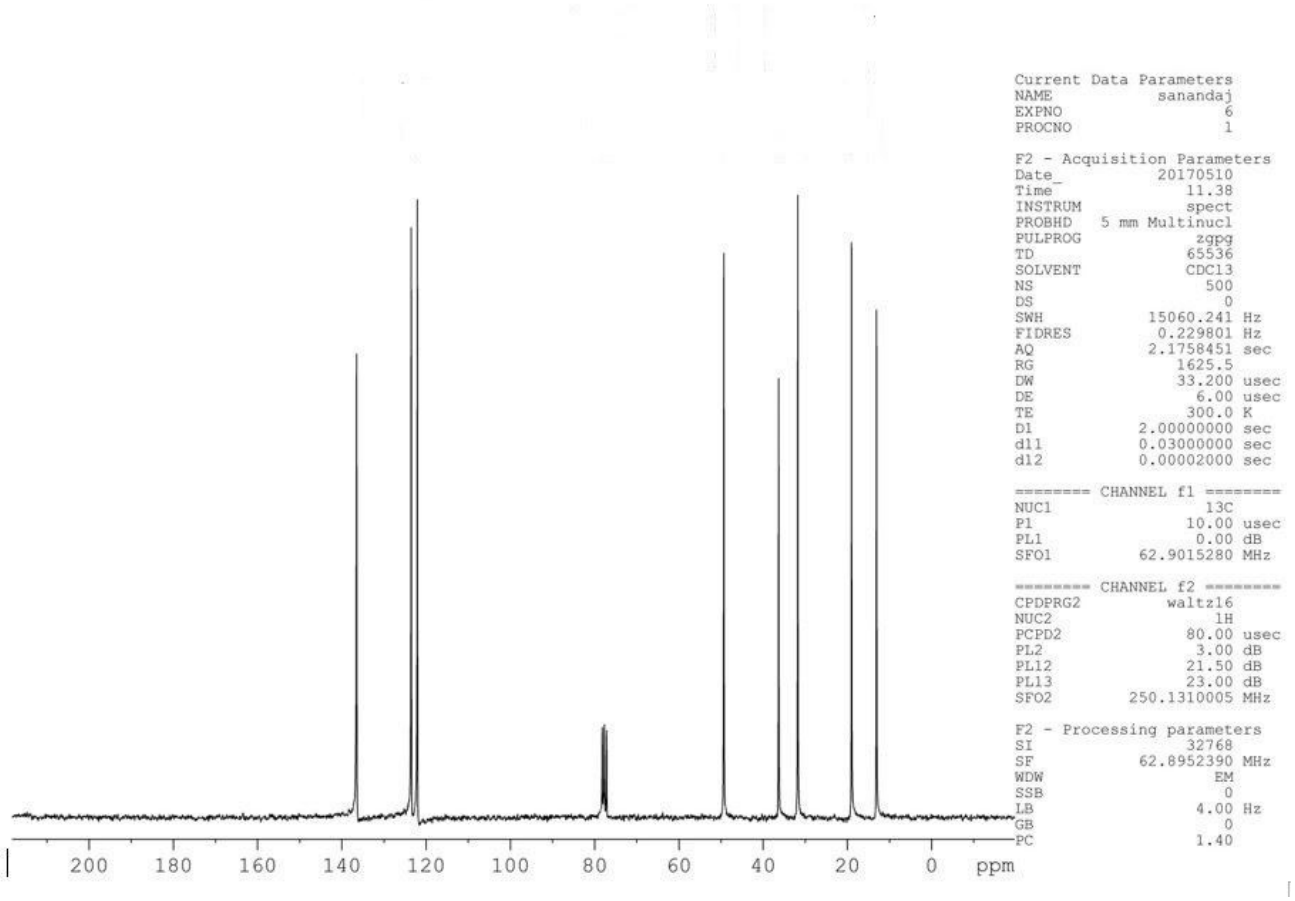

Figure S6: ^{13}C-NMR spectrum of [C_4MIM]Br.

^{13}C NMR ($CDCl_3$): δ 136.54, 123.56, 122.12, 49.35, 36.32, 31.79, 19.02, 13.11.

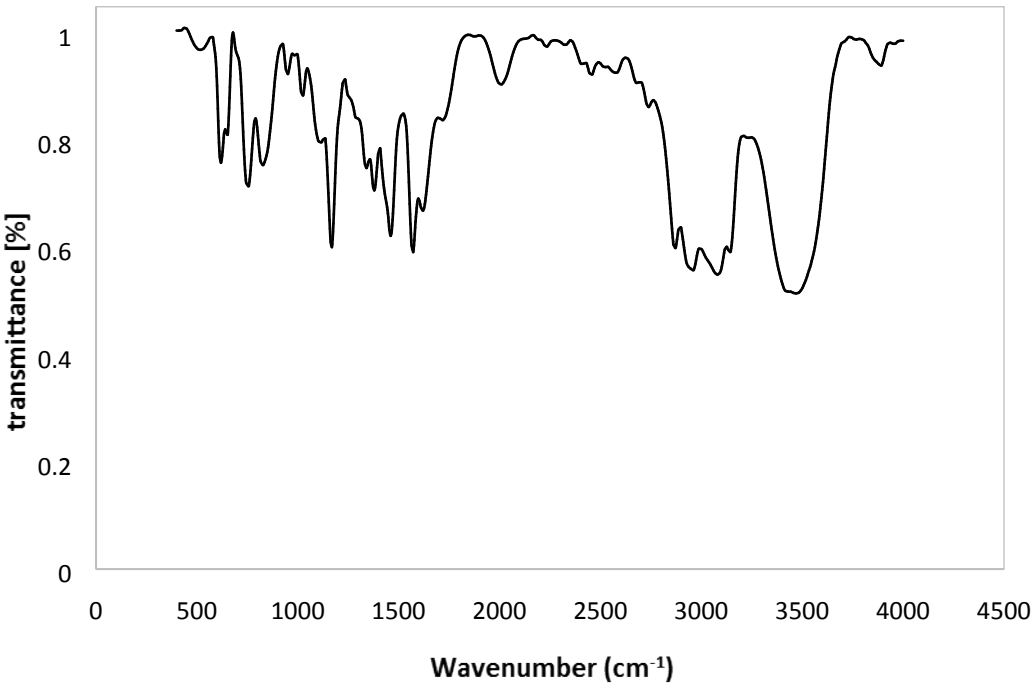

Figure S7: FT-IR spectrum of $[C_4MIM]I$.

ν/cm^{-1}, 2960 (s, aliphatic C-H stretch), 1623 (w, C=C), 1569 (s, sym. ring stretch), 1461 (s, sym ring stretch), 1143 (w, sym. ring stretch), 1380 (m, CH_3 bending vibration), 1169 (s, C−N vibration).

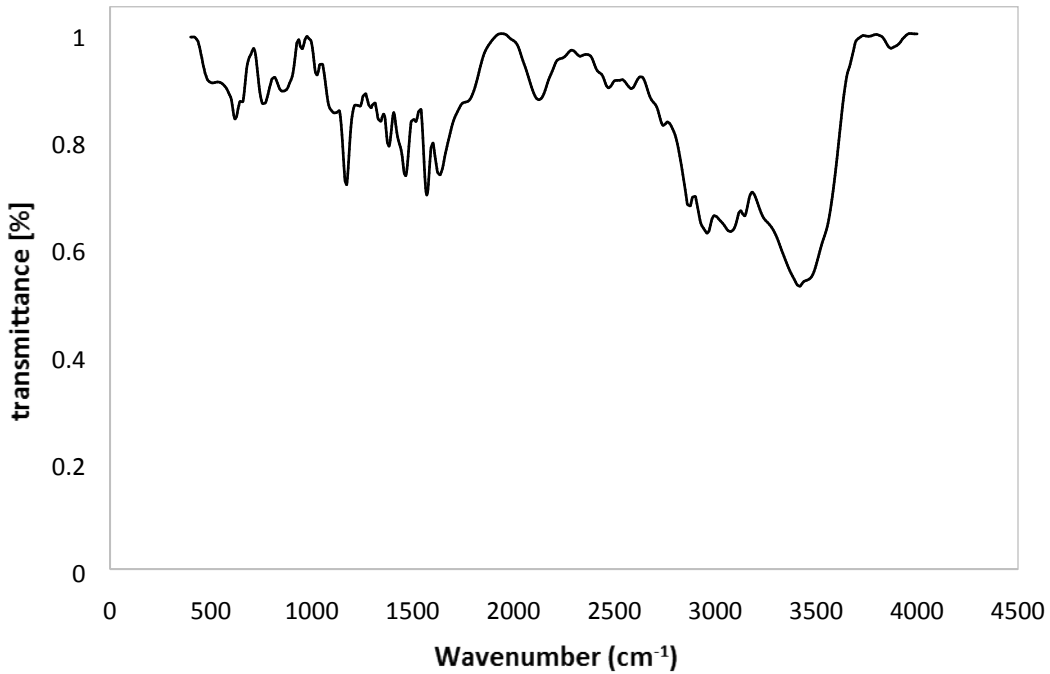

Figure S8: FT-IR spectrum of $[C_4MIM]Cl$.

ν/cm^{-1}, 2962 (s, aliphatic C-H stretch), 1633 (w, C=C), 1572 (s, sym. ring stretch), 1463 (s, sym ring stretch), 1066 (w, sym. ring stretch), 1380 (m, CH_3 bending vibration), 1172 (s, C−N vibration).

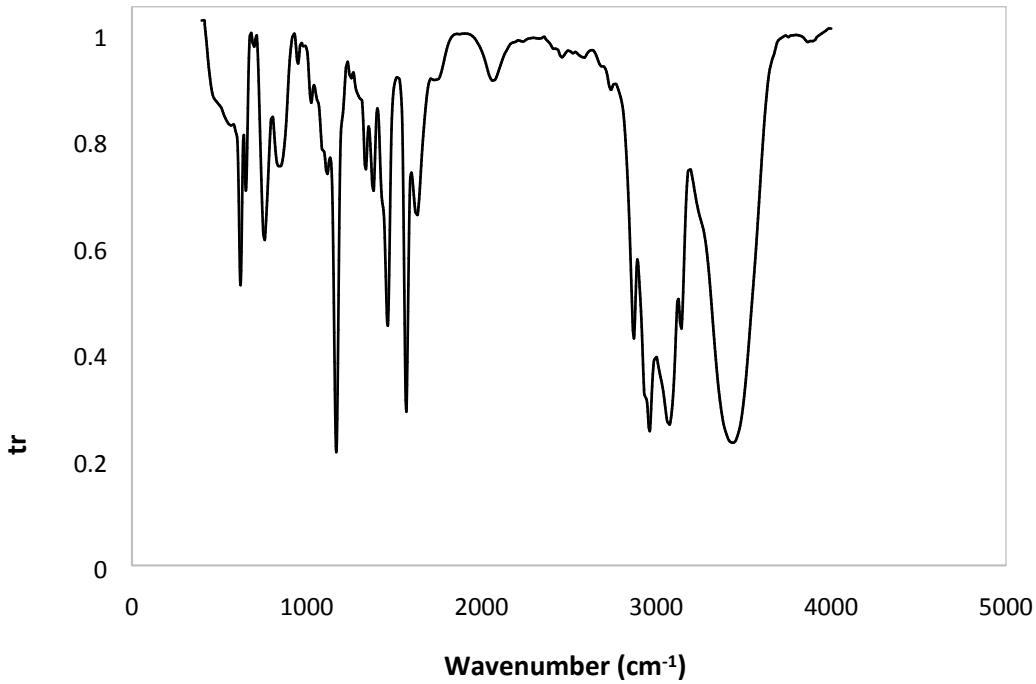

Figure S9: FT-IR spectrum of [C_4MIM]Br.

ν/cm^{-1}, 2960 (s, aliphatic C-H stretch), 1628 (w, C=C), 1568 (s, sym. ring stretch), 1463 (s, sym ring stretch), 1114 (w, sym. ring stretch), 1380 (m, CH_3 bending vibration), 1168 (s, C−N vibration).