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Supplementary Information

Electrochemical behaviors of graphene nanosheets in alkylimidazolium tetrafluoroborate ionic liquids electrolytes: influences of organic solvents and the alkyl chains

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NMR data:

$MMIMBF_4$: ^{1}H NMR (400 MHz, Acetone-d_6): δ = 8.83 (s, 1 H), 7.66 (s, 2 H), 4.02 (s, 6 H) ppm; ^{13}C NMR (Acetone-d_6): δ = 138.12, 124.48, 124.48, 36.37, 36.37 ppm.

$EMIMBF_4$: ^{1}H NMR (400 MHz, Acetone-d_6): δ = 8.98 (s, 1 H), 7.76 (s, 1 H), 7.66 (s, 1 H), 4.38 (t, J = 7.3 Hz, 2 H), 4.03 (s, 3 H), 1.55 (t, J = 7.4 Hz, 3 H) ppm; ^{13}C NMR (Acetone-d_6): δ = 137.27, 124.64, 122.96, 45.57, 36.41, 15.54 ppm.

$BMIMBF_4$: ^{1} H NMR (400 MHz, Acetone-d_6): δ = 8.99 (s, 1 H), 7.76 (s, 1 H), 7.70 (s, 1 H), 4.24 (t, J = 7.6 Hz, 2 H), 4.04 (s, 3 H), 1.92 (quintet, J = 7.6 Hz, 2 H), 1.38 (quartet, J = 7.6 Hz, 2 H), 0.94 (t, J = 7.4 Hz, 3 H) ppm; ^{13} C NMR (Acetone-d_6): δ = 137.52, 124.68, 123.30, 50.07, 36.48, 32.68, 19.88, 13.60 ppm.

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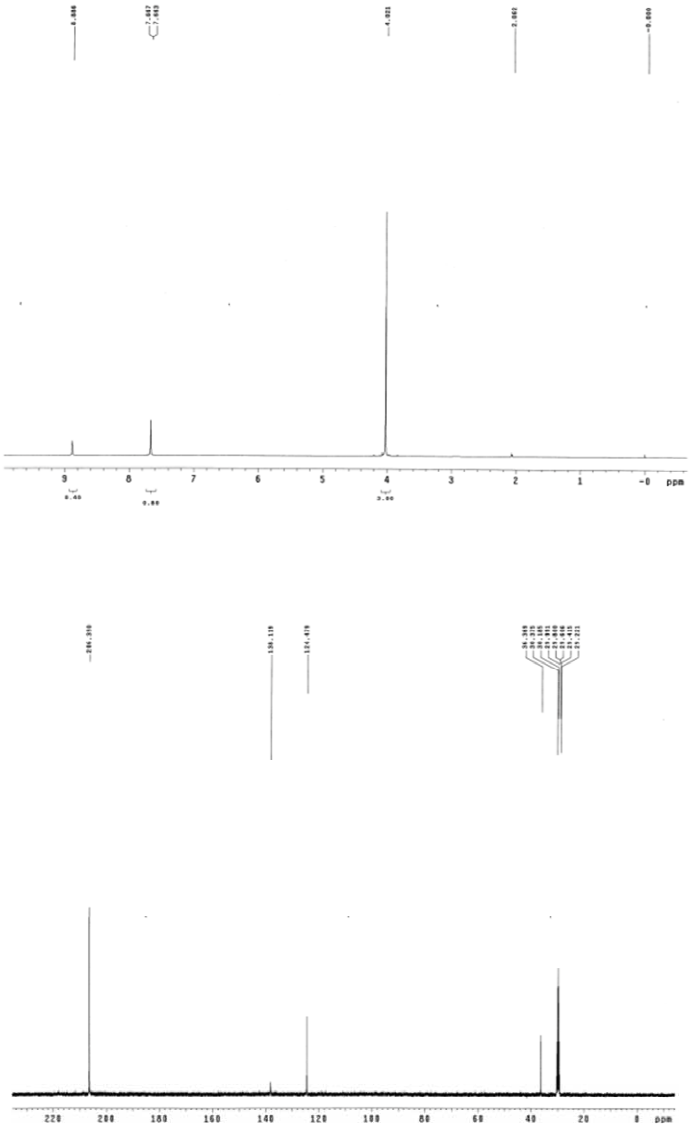
^{1}H and ^{13}C NMR spectra:



^{13}C NMR spectroscopy of the $MMIMBF_4$ ionic liquid

Fig. 1 The ^{1}H (top) and ^{13}C (bottom) NMR spectra of the $MMIMBF_4$ ionic liquid

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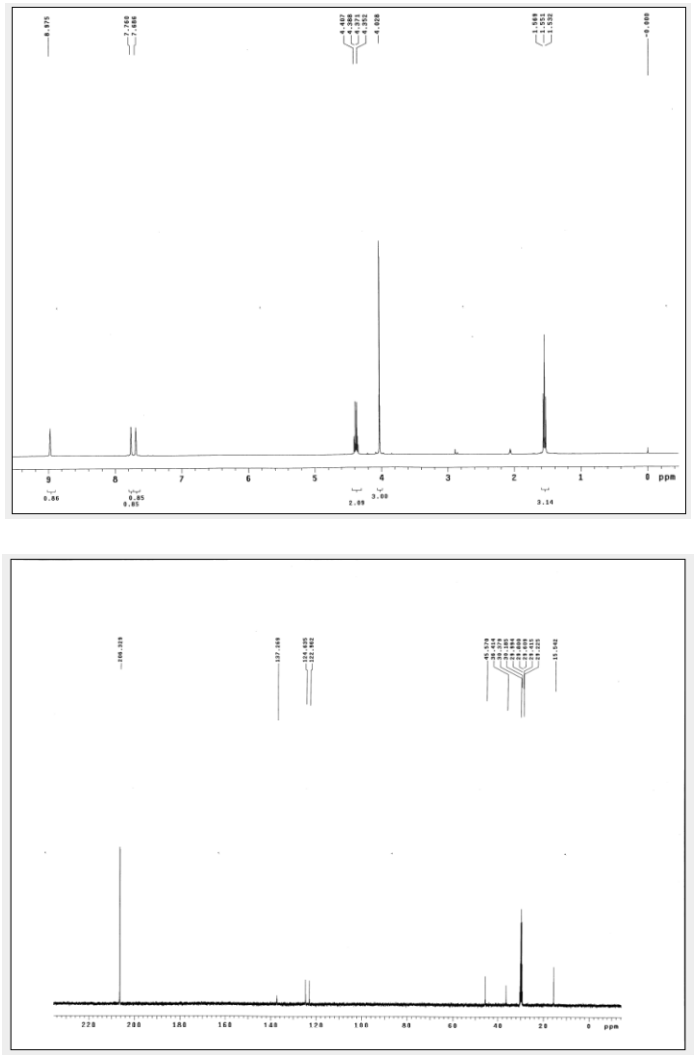

Fig. 2 The ^{1}H (top) and ^{13}C (bottom) NMR spectra of the $EMIMBF_4$ ionic liquid

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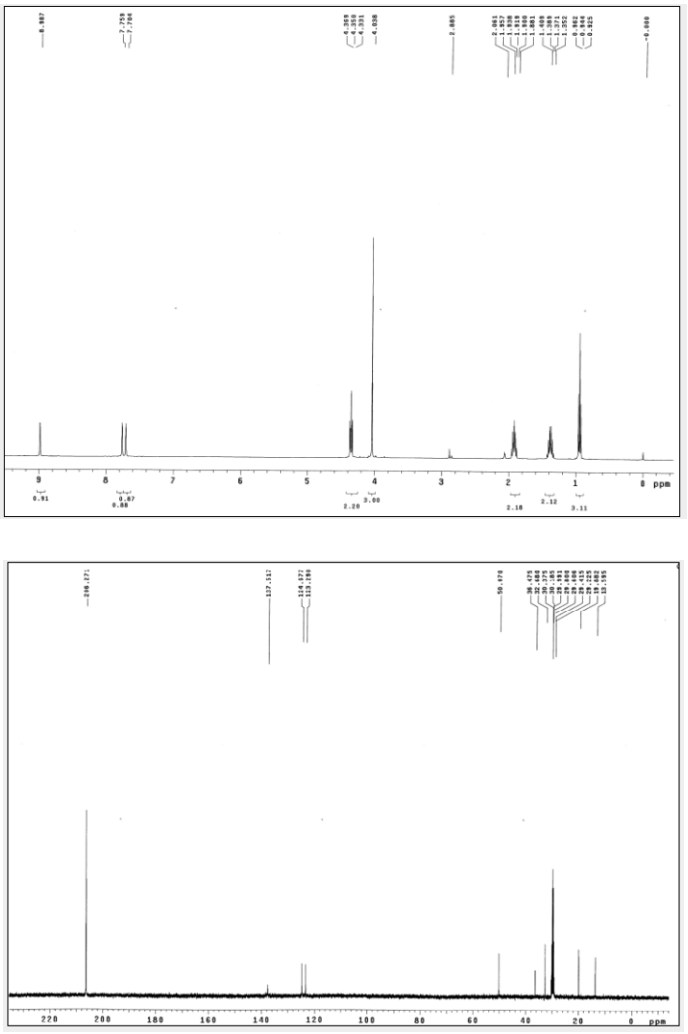

Fig. 3 The ^{1}H (top) and ^{13}C (bottom) NMR spectra of the $BMIMBF_4$ ionic liquid