

Supplementary Information

Synthesis of Nickel Sulphide Nanosheets using Imidazolium Based Chloronickellate Ionic Liquids as Precursor/Template for Sunlight Assisted Degradation of Organic Dyes

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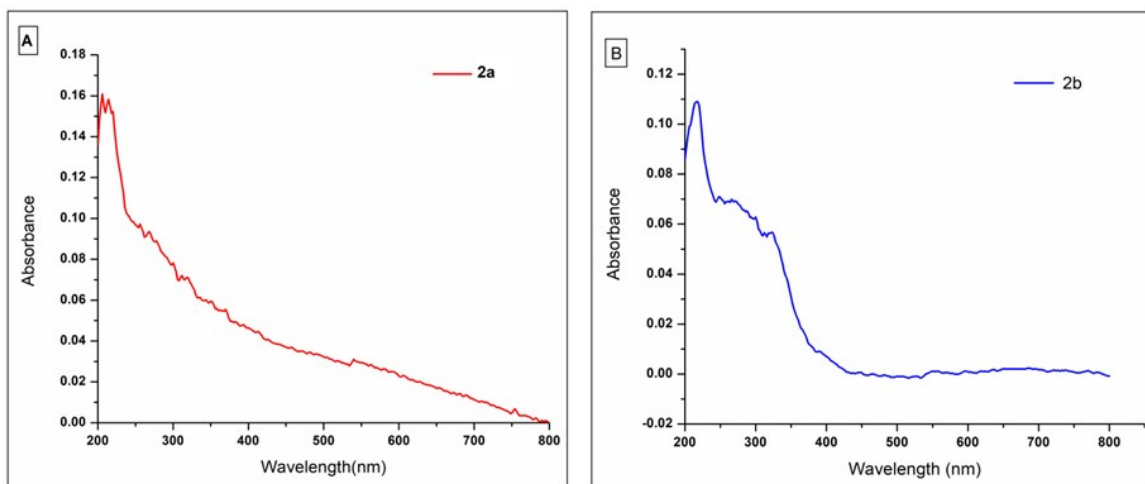


Fig. S1: UV-vis spectra of (A) **2a** and (B) **2b**.

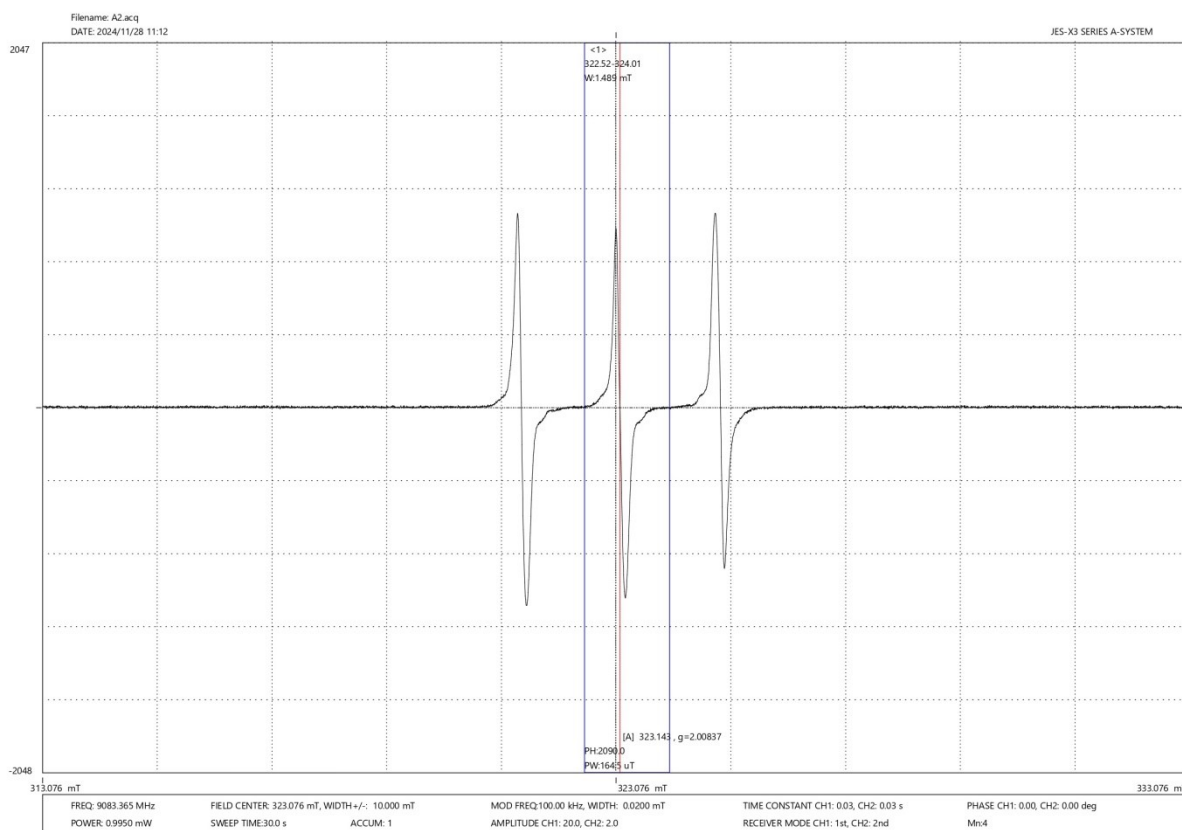


Fig. S2: (A) EPR spectra of radical adducts trapped by TEMPO (h^+) at the start of the MB degradation (0 min)

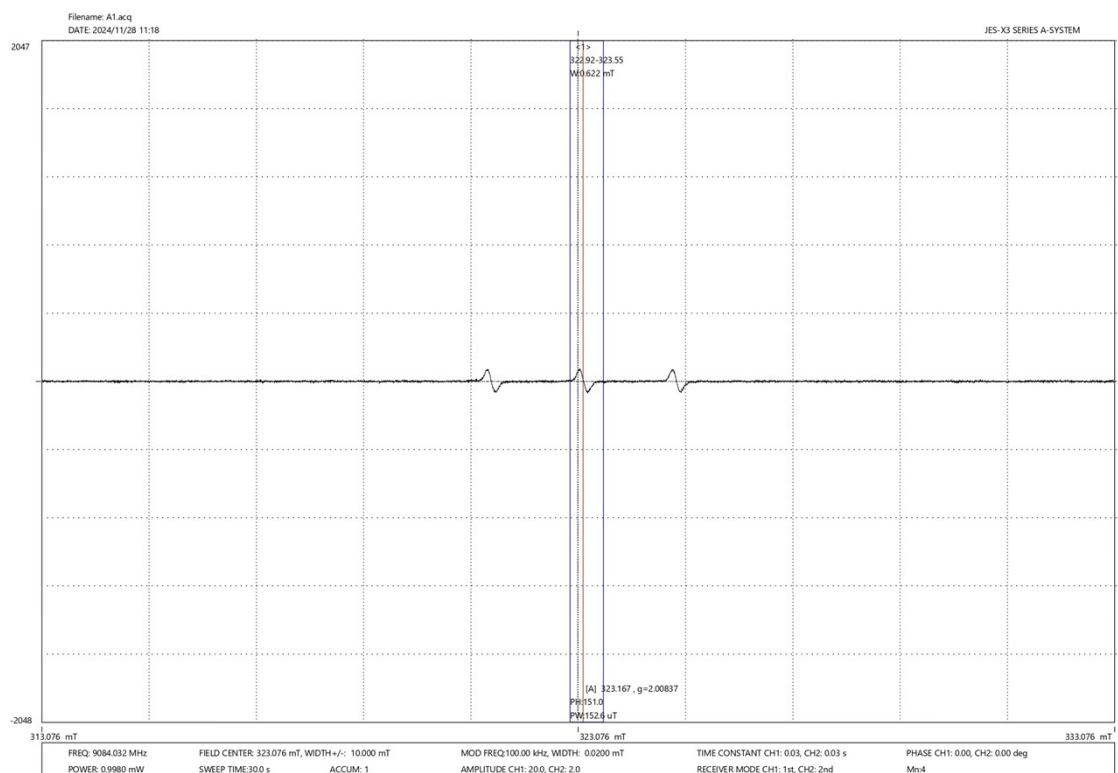


Fig. S2: (B) EPR spectra of radical adducts trapped by TEMPO (h^+) in 15 min after start of the MB degradation

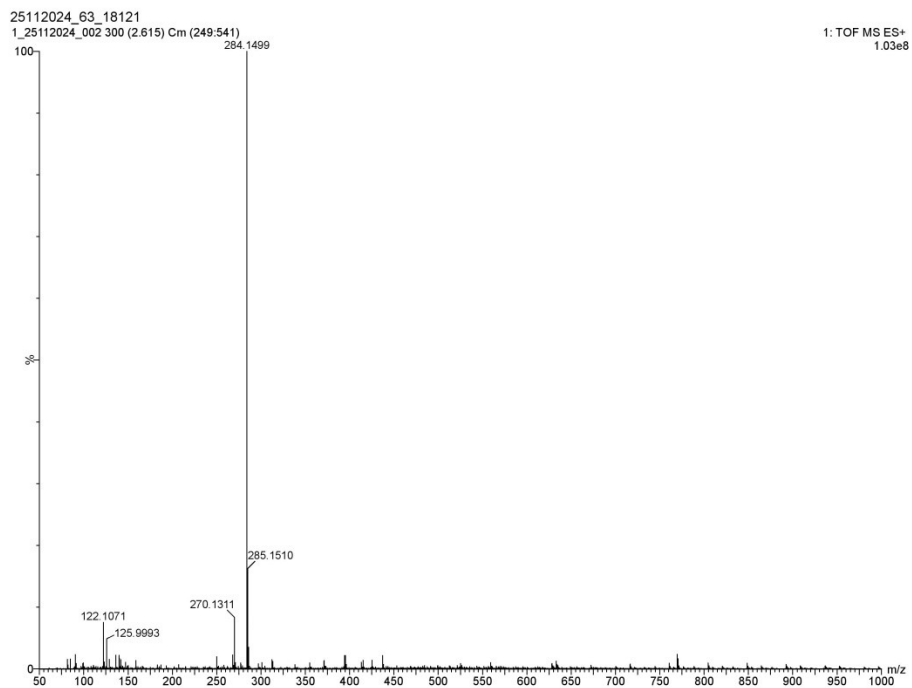


Fig S3: (A) HR Mass spectra of methylene blue at time zero minutes.

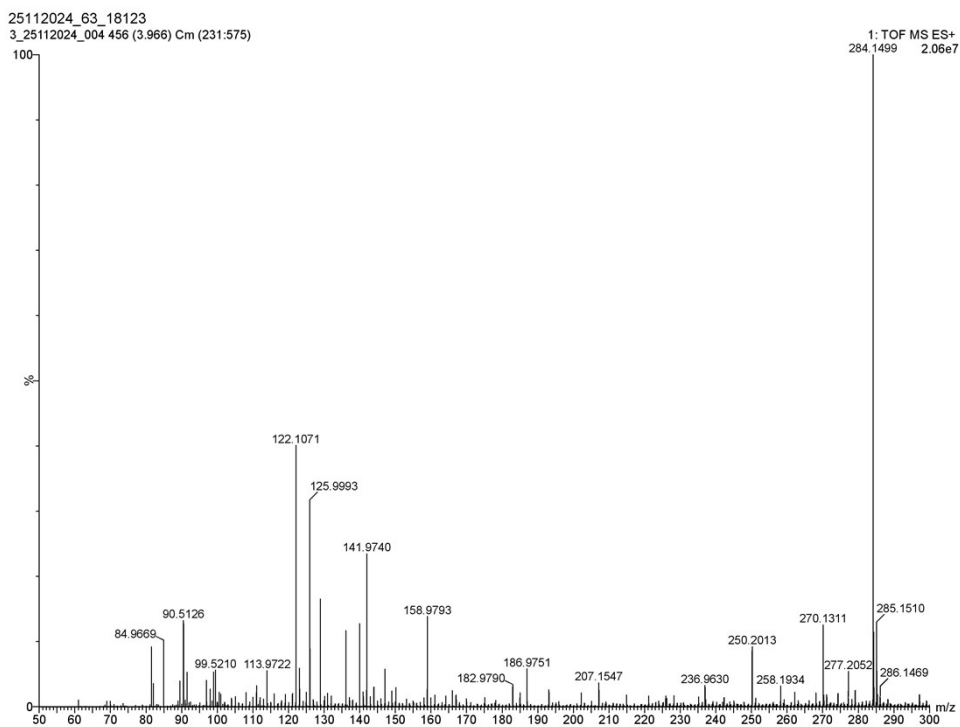


Fig S3: (B) HR Mass spectra of methylene blue at time 15 minutes.

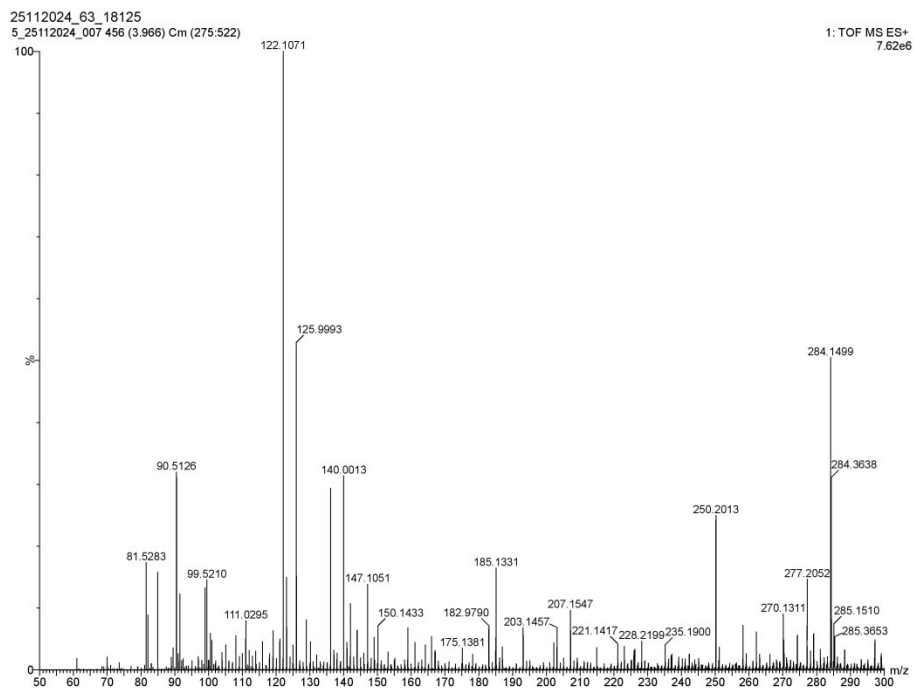


Fig S3: (C) HR Mass spectra of methylene blue at time 30 minutes.

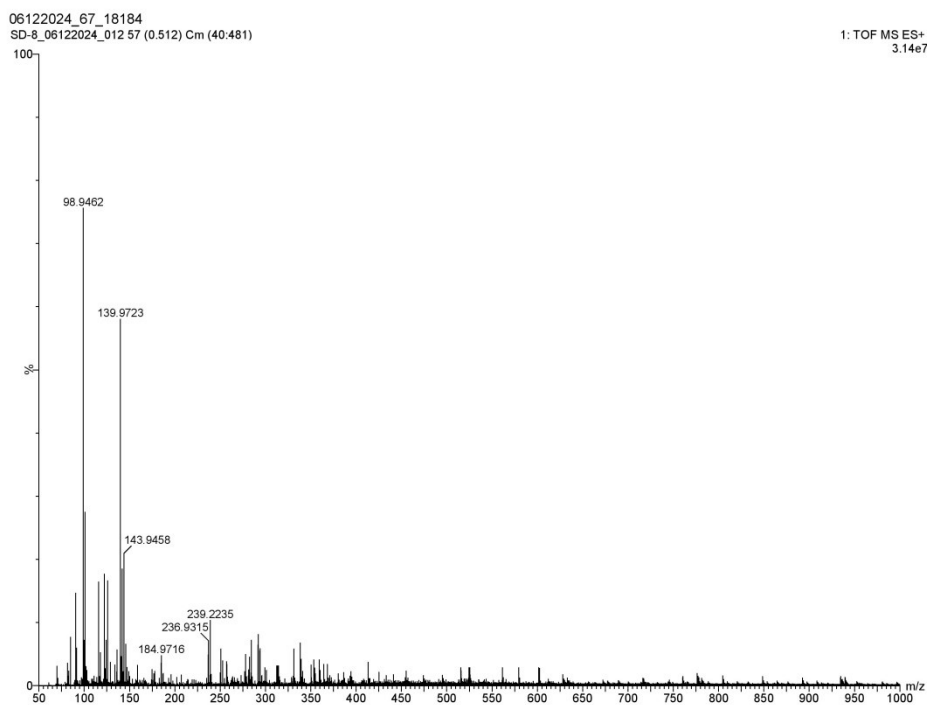
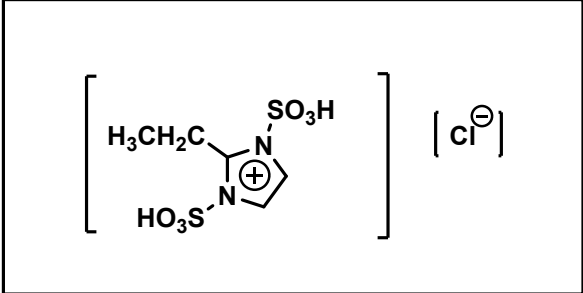
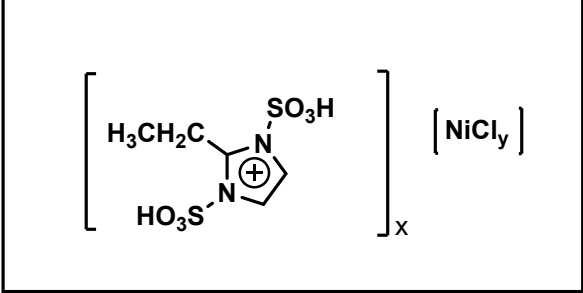
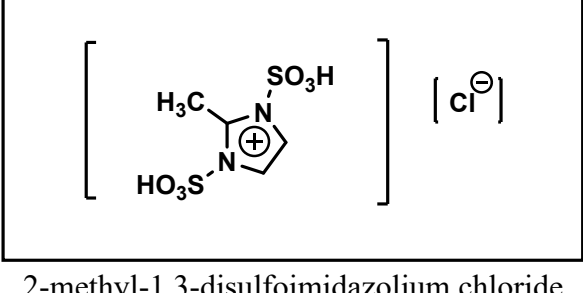
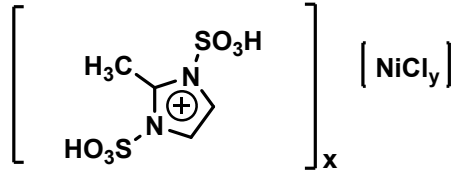


Fig S3: (D) HR Mass spectra of methylene blue at time 60 minutes.

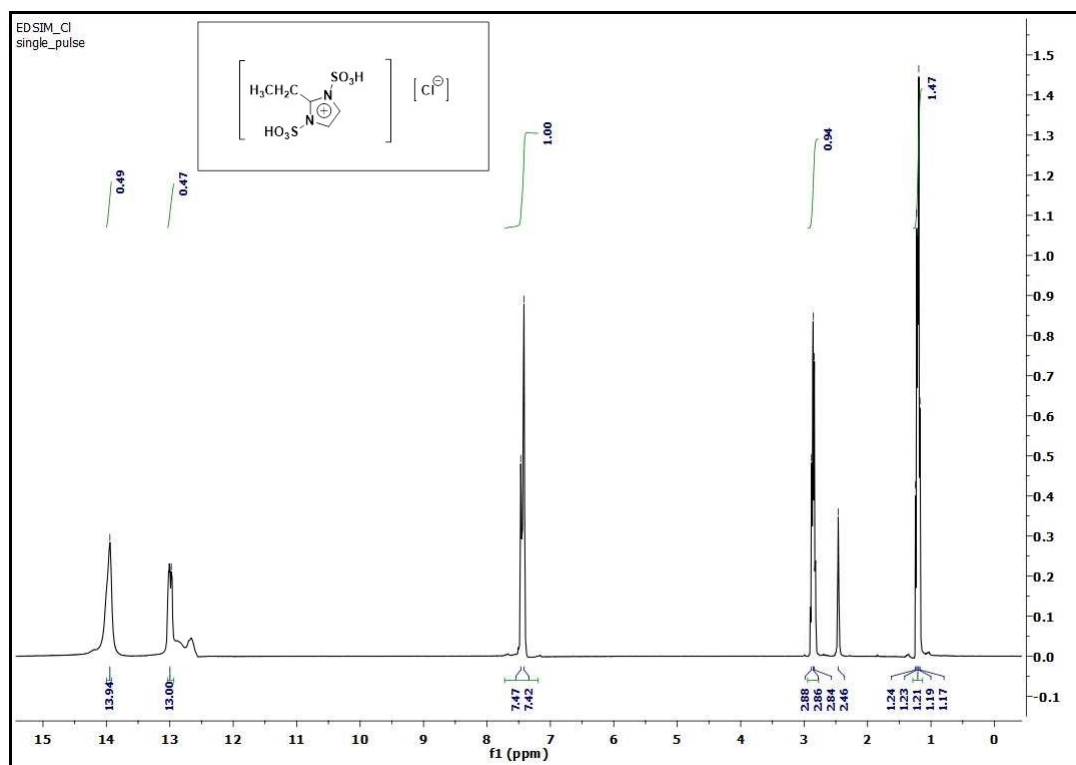
Spectral data of the ionic liquids

Sl.No.	Ionic liquid	Spectral data
1	<div style="text-align: center;">  <p>2-ethyl-1,3- disulfoimidazolium chloride [EDSIM][Cl]</p> </div>	<p>Yellow viscous liquid; FT-IR (KBr) ν cm^{-1} : 3437, 2929, 2860, 1629, 1453, 1176, 1054, 872, 750, 581; ^1H NMR (DMSO-d_6, 400 MHz): δ 13.94 (s, 1H) 13.00 (s, 1H), 7.47-7.42 (m,2H), 2.88-2.84 (m, 2H), 1.24-1.17 (m, 3H); ^{13}C NMR (DMSO-d_6, 100 MHz): δ 149.1, 119.1, 19.2 and 11.7.</p>
2	<div style="text-align: center;">  <p>2-ethyl-1,3- disulfoimidazolium chloronickellate (1a)</p> </div>	<p>Light green paste; FT-IR (KBr) ν cm^{-1}: 3424, 2929, 2855, 1622, 1543, 1462, 1171, 1063, 875, 753 and 579; ^1H NMR (DMSO-d_6, 400 MHz): δ 13.95 (s, 1H) 12.96 (s, 1H), 7.47-7.42 (m,2H), 2.90-2.79 (m, 2H), 1.26-1.17 (m, 3H); ^{13}C NMR (DMSO-d_6, 100MHz): δ 149.1, 118.4, 19.6 and 11.3. ESI-HRMS m/z: 751.2576, 735.2849, 721.2721, 719.3081, 701.4686.</p>
3	<div style="text-align: center;">  <p>2-methyl-1,3-disulfoimidazolium chloride [MDSIM][Cl]</p> </div>	<p>Yellow viscous liquid; FT-IR (KBr) ν cm^{-1}: 3425, 3067, 2917, 1627, 1445, 1191, 1050, 873, 753 and 580; ^1H NMR (DMSO-d_6, 400 MHz): δ 13.91 (s, 1H), 11.93 (s, 1H), 7.43 (s, 2H), 2.51 (s, 3H); ^{13}C NMR (DMSO-d_6, 100 MHz): δ</p>

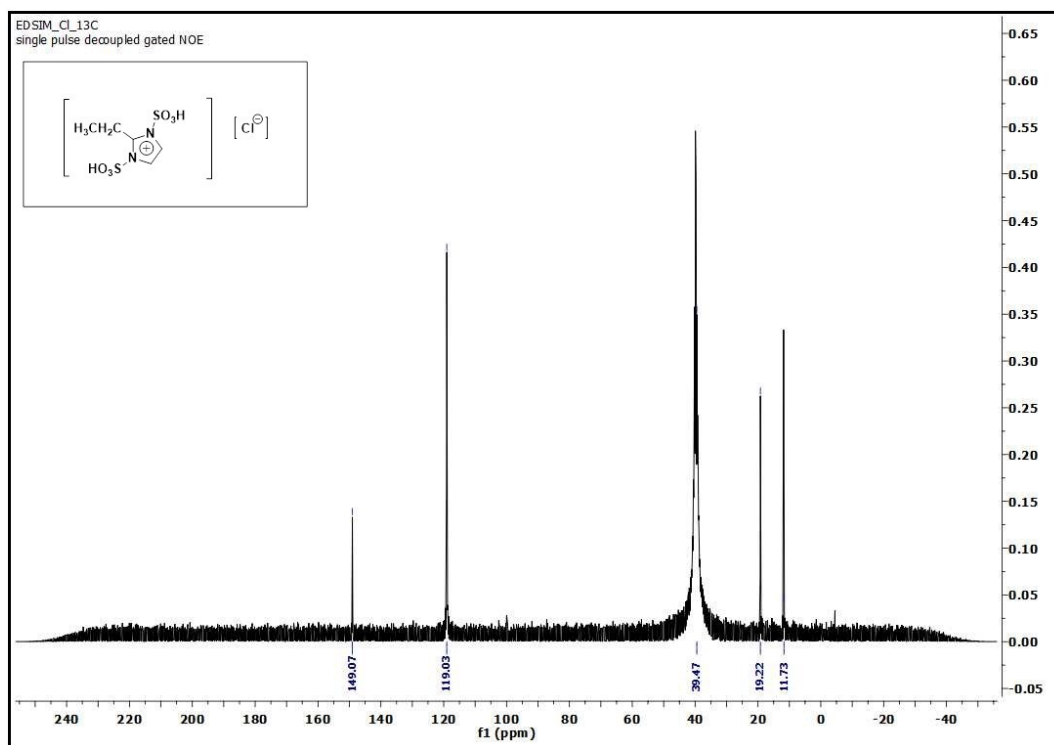
		144.9, 119.1 and 11.3.
4	<div style="border: 1px solid black; padding: 10px; display: inline-block; margin-bottom: 10px;">  </div> <p style="text-align: center;">2-methyl-1,3-disulfoimidazolium chloronickellate (1b)</p>	<p>Light green paste; FT-IR (KBr) ν cm^{-1}: 3477, 2919, 2865, 1622, 1441, 1194, 1047, 887, 746 and 584; ^1H NMR (DMSO-d_6, 400 MHz) δ 13.91 (s, 2H) 7.46 (s, 2H), 2.51-2.34 (m, 3H), ^{13}C NMR (DMSO-d_6, 100 MHz): δ 143.8, 119.4, and 11.3. ESI-HRMS m/z: 905.6121, 717.4169, 679.4618.</p>

^1H and ^{13}C NMR spectra of ionic liquids

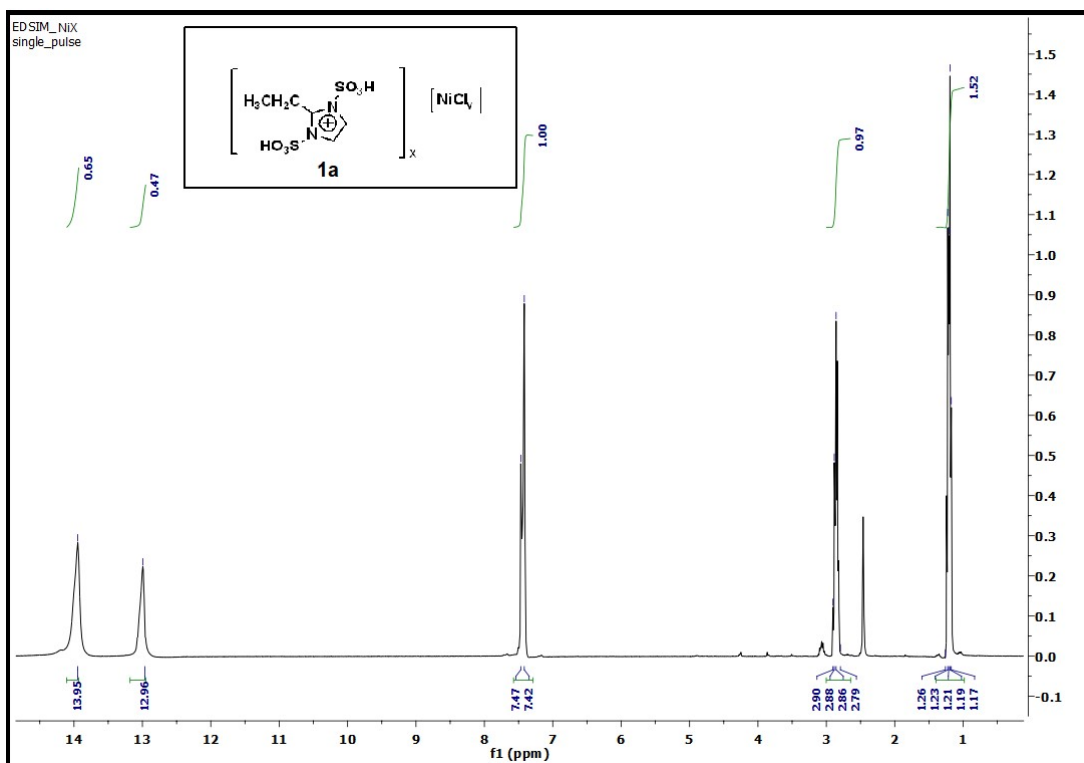
1. ^1H NMR spectrum of [EDSIM][Cl]



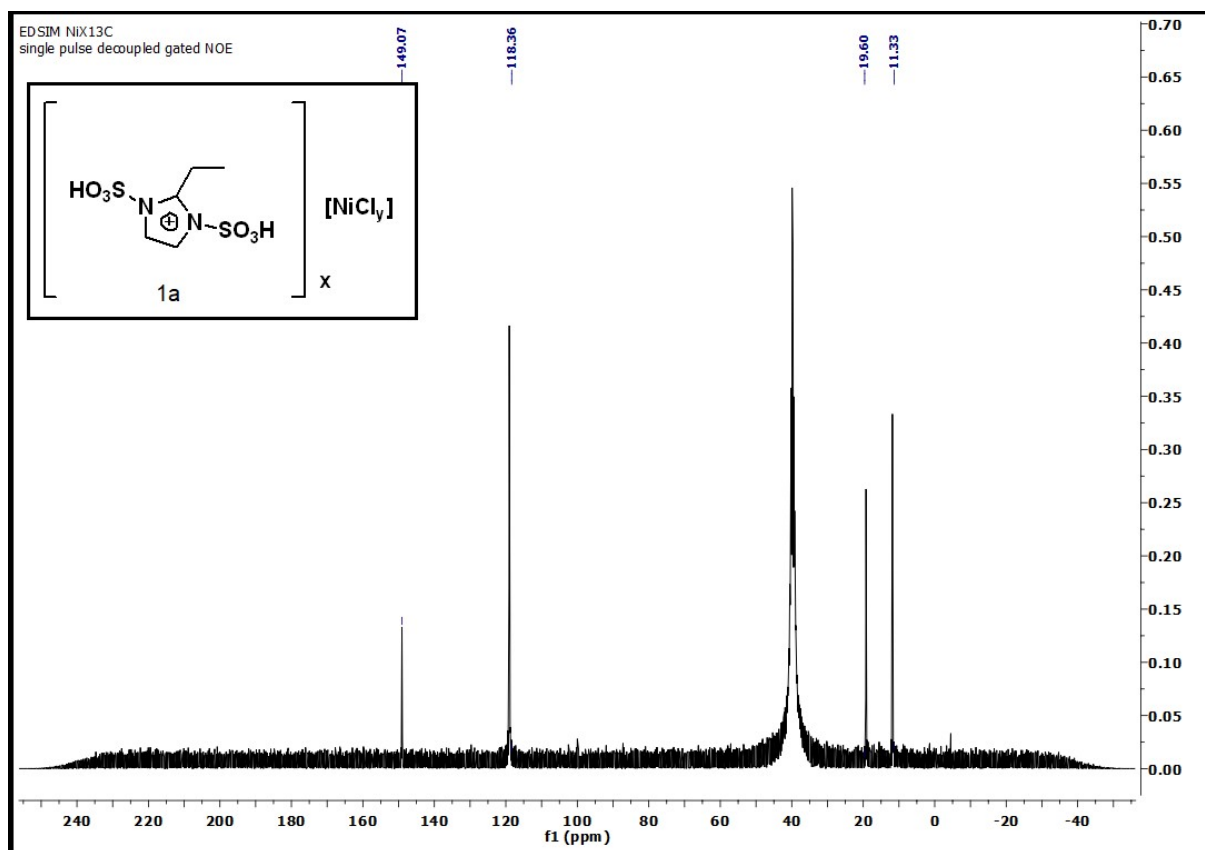
2. ^{13}C NMR spectrum of [EDSIM][Cl]



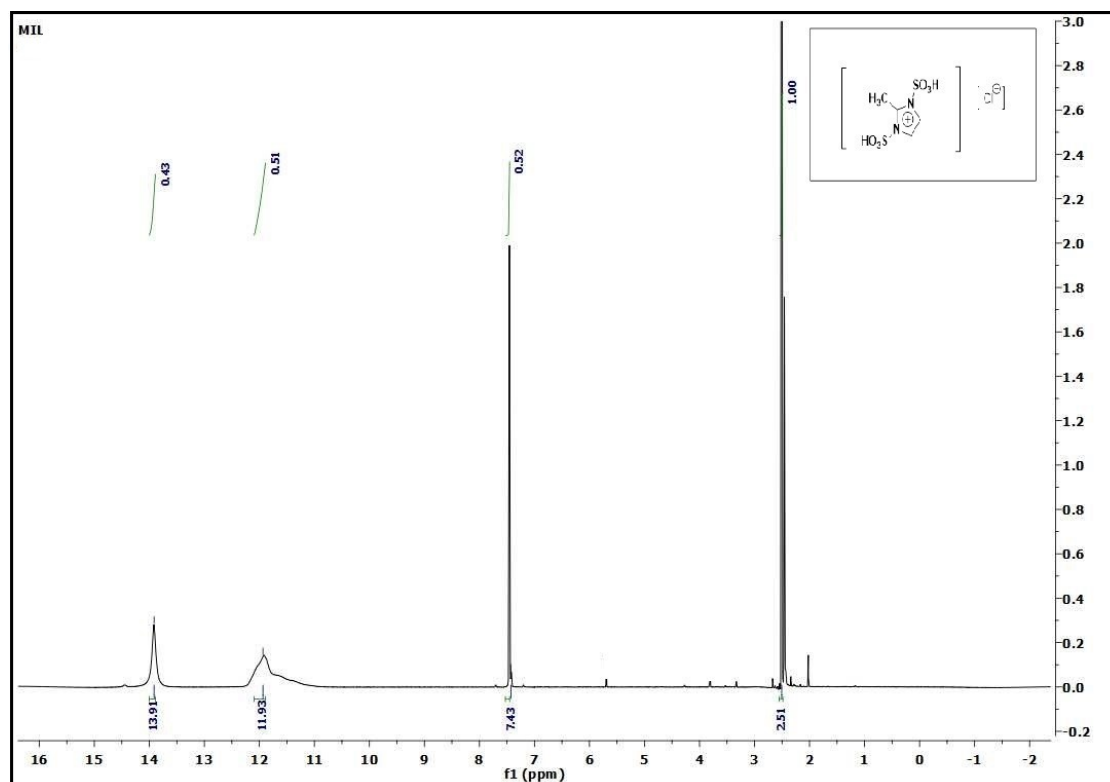
3. ^1H NMR spectrum of 1a



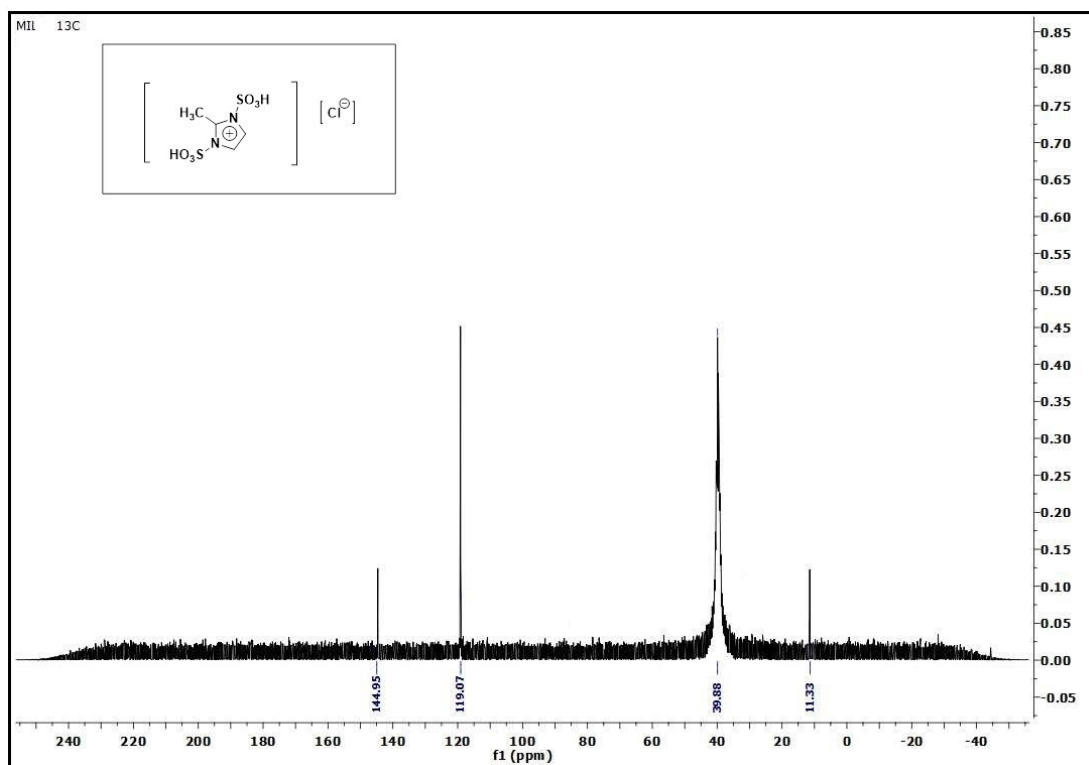
4. ^{13}C NMR spectrum of 1a



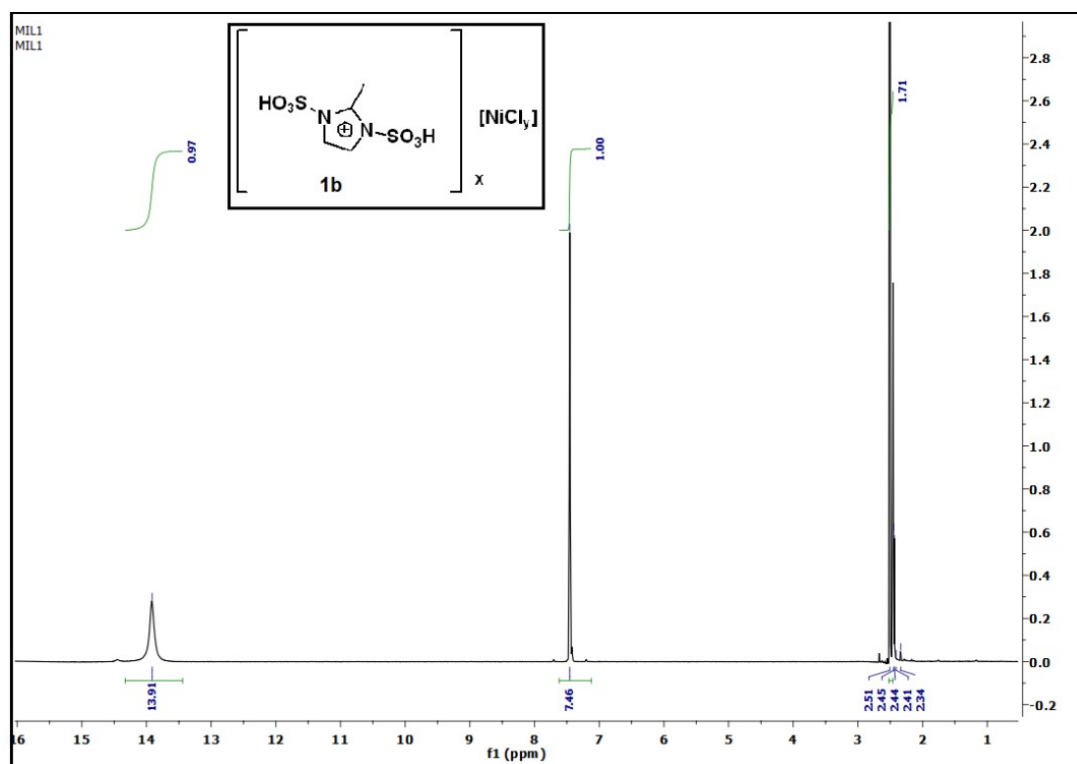
5. ^1H NMR spectrum of $[\text{MDSIM}][\text{Cl}]$



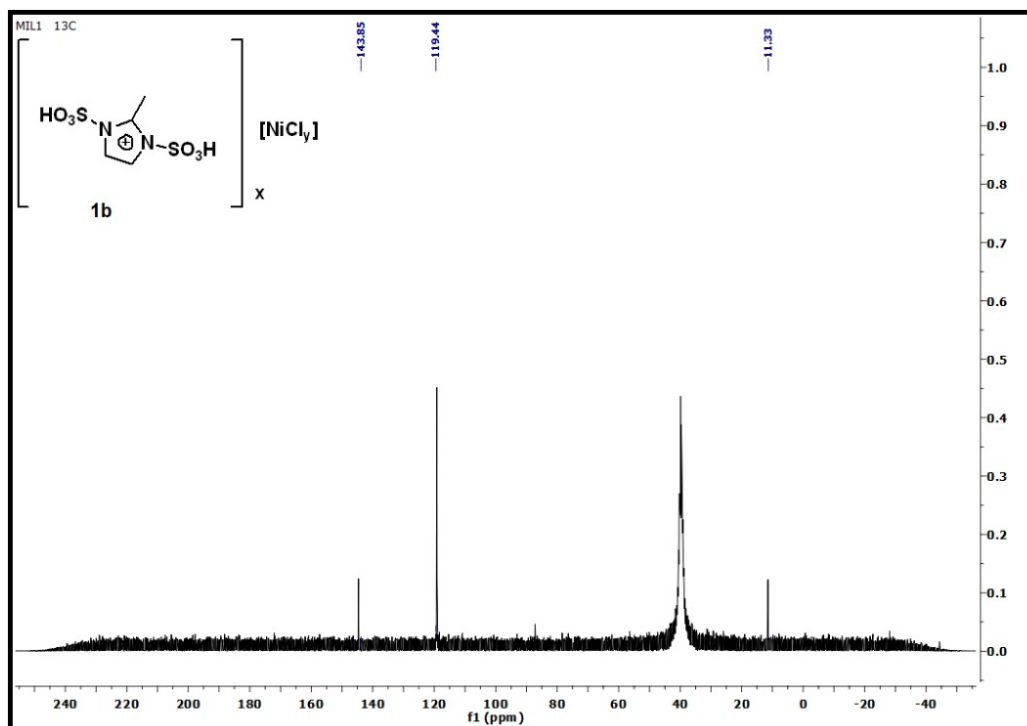
6. ^{13}C NMR spectrum of $[\text{MDSIM}][\text{Cl}]$



7. ^1H NMR spectrum of **1b**

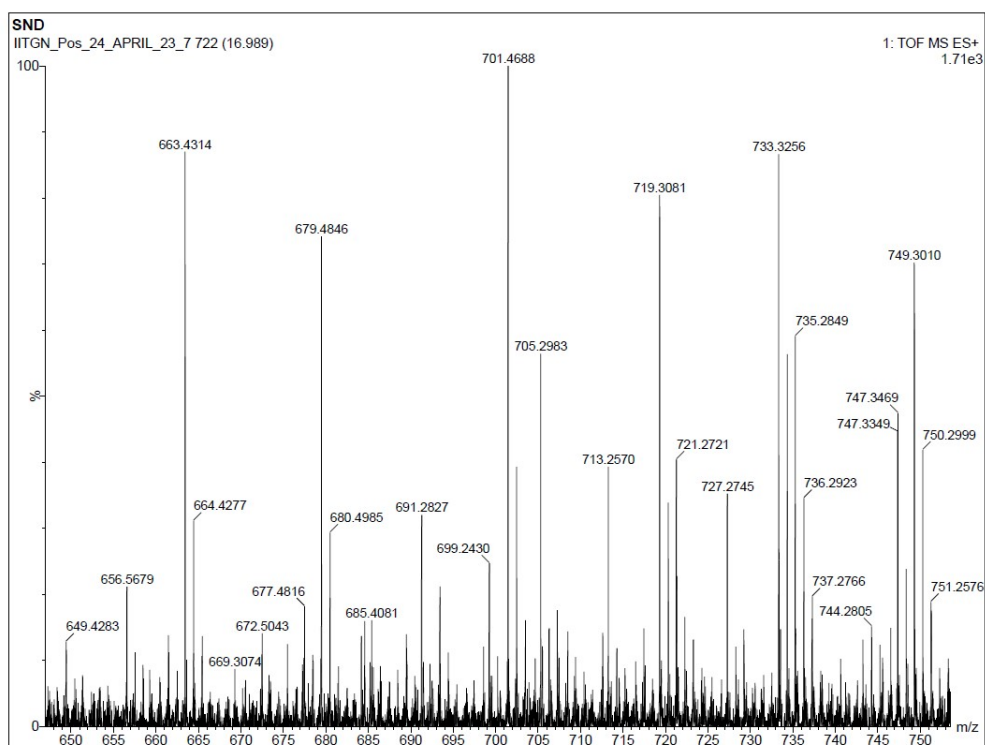


8. ^{13}C NMR spectrum of **1b**



ESI-Mass spectra of chloronickellate ionic liquids

1. ESI-mass spectrum of **1a**



2. ESI-mass spectrum of **1b**

