

Stability of a high-voltage ionic liquid with a substituted piperidinium cation and a TFSI anion, promising for electrochemical applications

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Nuclear magnetic resonance spectroscopy.

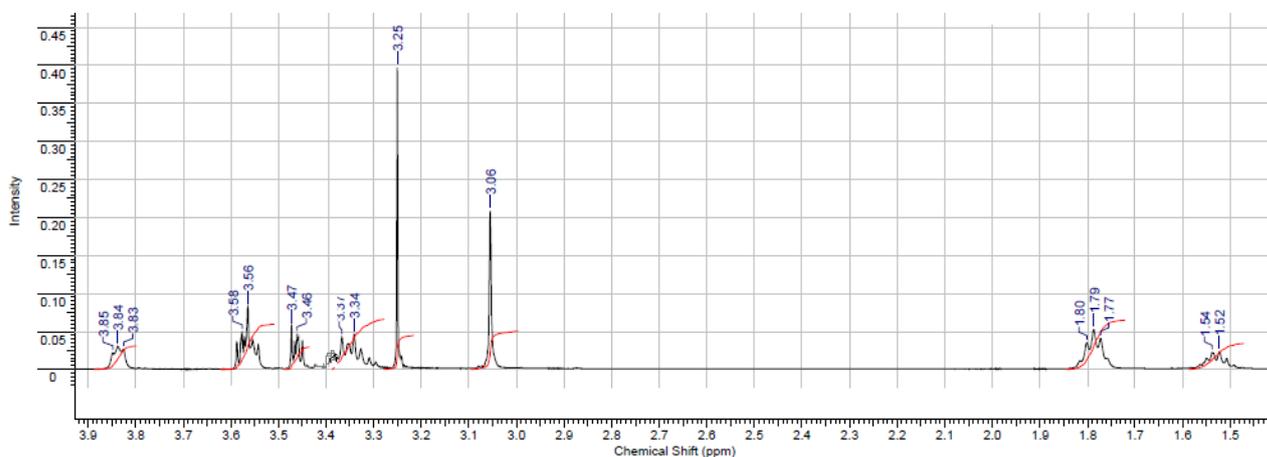


Figure S1 ¹H NMR spectrum of *N*-methyl *N*-[2-(2-methoxyethoxy)ethyl]piperidinium bis(trifluoromethylsulfonyl)imide.

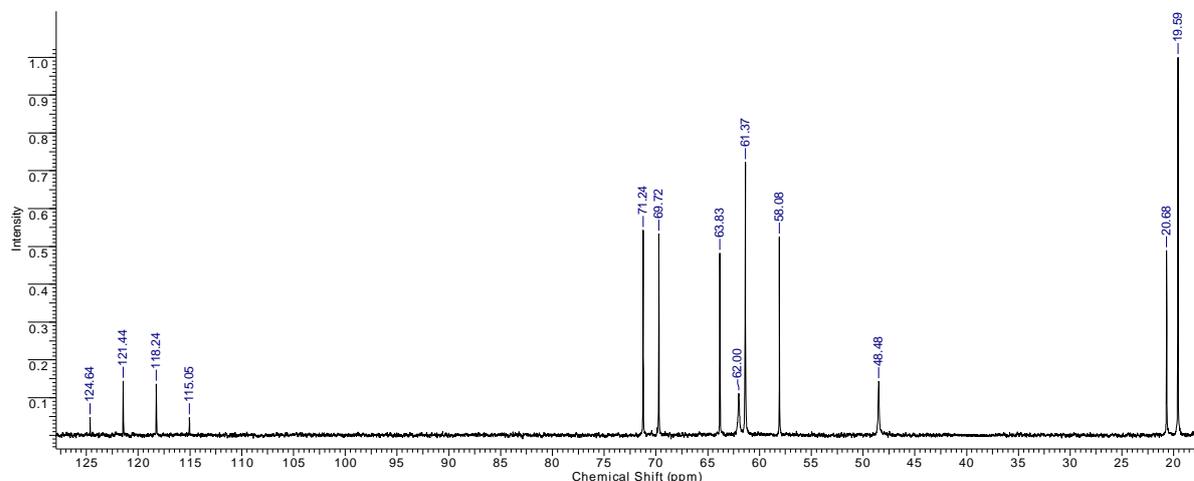


Figure S2 ¹³C NMR spectrum of *N*-methyl *N*-[2-(2-methoxyethoxy)ethyl]piperidinium bis(trifluoromethylsulfonyl)imide.

Simultaneous thermal analysis (TG-DSC-MS).

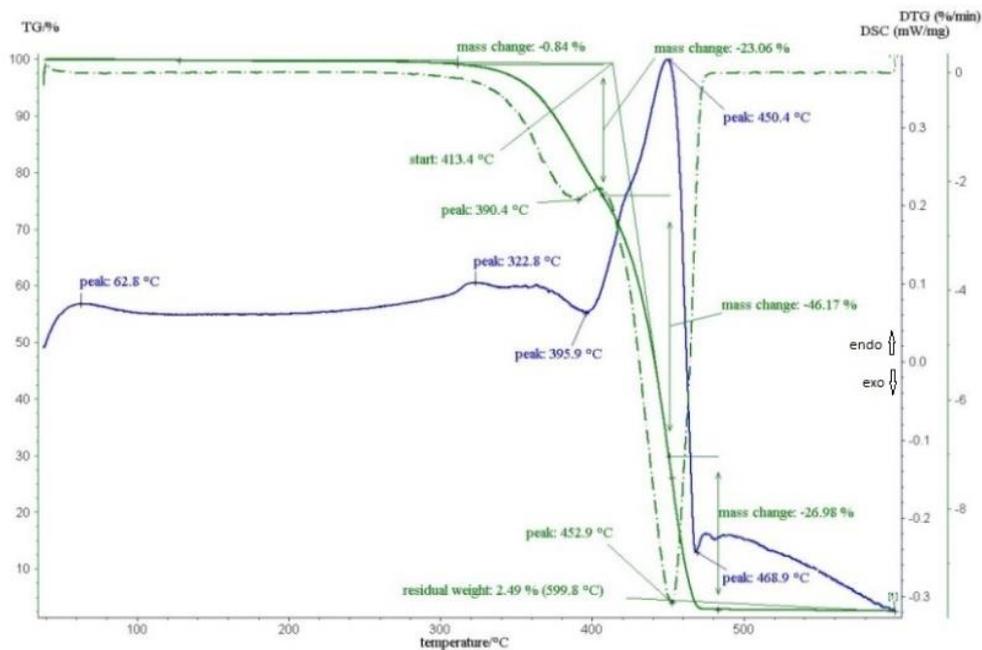


Figure S3 The results of TG-DSC analysis of *N*-methyl *N*-[2-(2-methoxyethoxy)-ethyl]piperidinium bis(trifluoromethylsulfonyl)imide.

Low-temperature DSC.

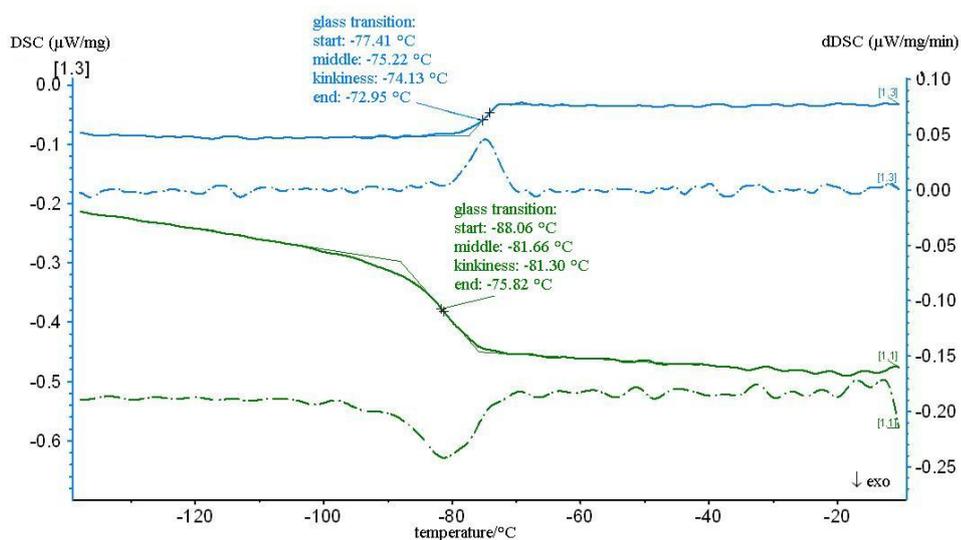


Figure S4 The results of low-temperature DSC of *N*-methyl *N*-[2-(2-methoxyethoxy)-ethyl]piperidinium bis(trifluoromethylsulfonyl)imide.

Table S1 A description of the characteristic peaks of the mass spectrum.

m/z	Tm ax	fragment	putative mechanism of formation fragments
15	386 455	CH_3^+	
29	386 455	CH_3CH_2^+	
30	386 455 495	CH_2O^+	$\text{H}_2\text{C}=\text{OH}^+ \xrightarrow{-\text{H}} \text{H}_2\text{C}=\text{O}^+$
31	386 455 495	CH_3O^+	
39	455	C_3H_3^+	
41	455	$\text{C}_2\text{H}_3\text{N}^+$	
42	386 455	$\text{CH}_2\text{N}^+\text{CH}_2$	
43	386 455	$\text{C}_2\text{H}_5\text{N}^+$	
44	386 455 495	$\text{C}_2\text{H}_6\text{N}^+$	
45	386	$\text{C}_2\text{H}_5\text{O}^+$	
51	455	CHF_2^+	
52	455	C_4H_4^+	
53	455	$\text{CH}_2^+\text{CCCH}_3$	
54	455	C_4H_6^+	
55	455	$\text{CH}_2^+\text{CHCHCH}_3$	
56	455	C_4H_8^+	
57	386 455	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2^+$	
58	386 455	$\text{C}_3\text{H}_6\text{N}^+$	
59	386 455	$\text{CH}_3\text{OCH}_2\text{CH}_2^+$	
69	386 455 495	CF_3^+	
80	495	SO_2NH_2^+	
89	386 455	$\text{C}_4\text{H}_9\text{O}_2^+$	
133	455	CF_3SO_2^+	
162	386 455	$\text{C}_8\text{H}_{20}\text{NO}_2^+$	