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The influence of alkyl chain branching on the properties of pyrrolidinium-based ionic electrolytes

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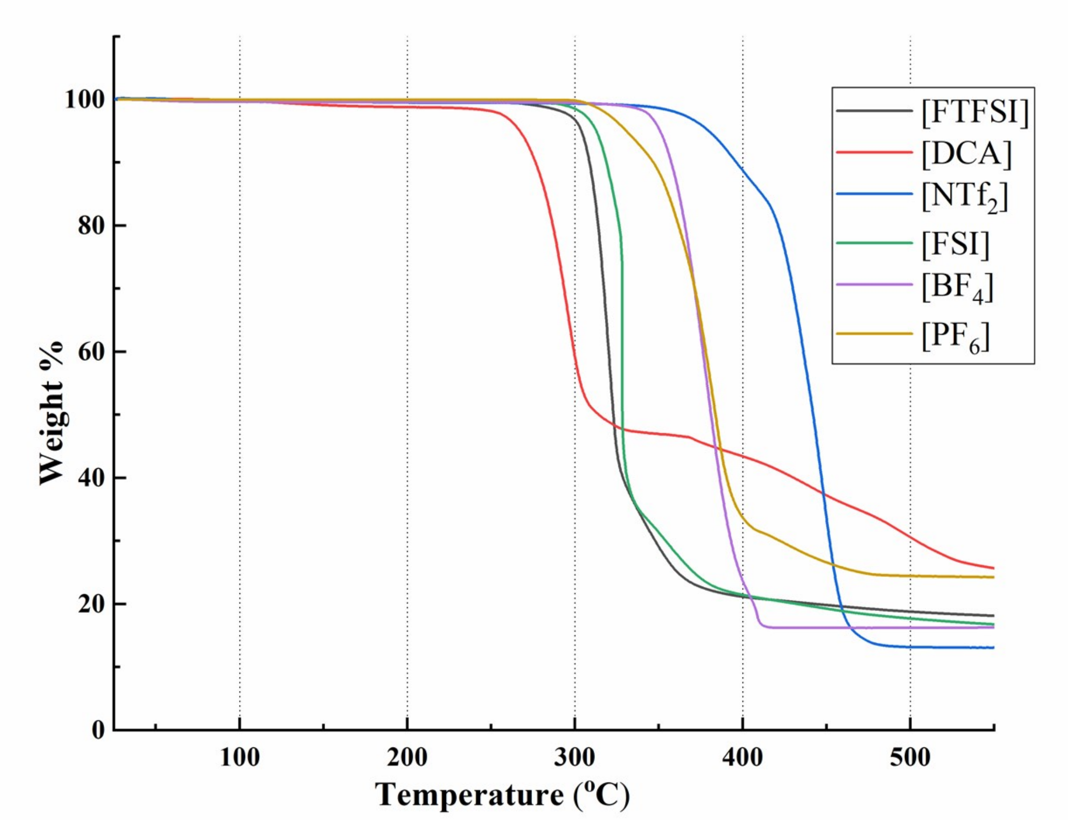

Figure S1. TGA analysis of $[C_{(i3)}mpyr]^+$ salts.

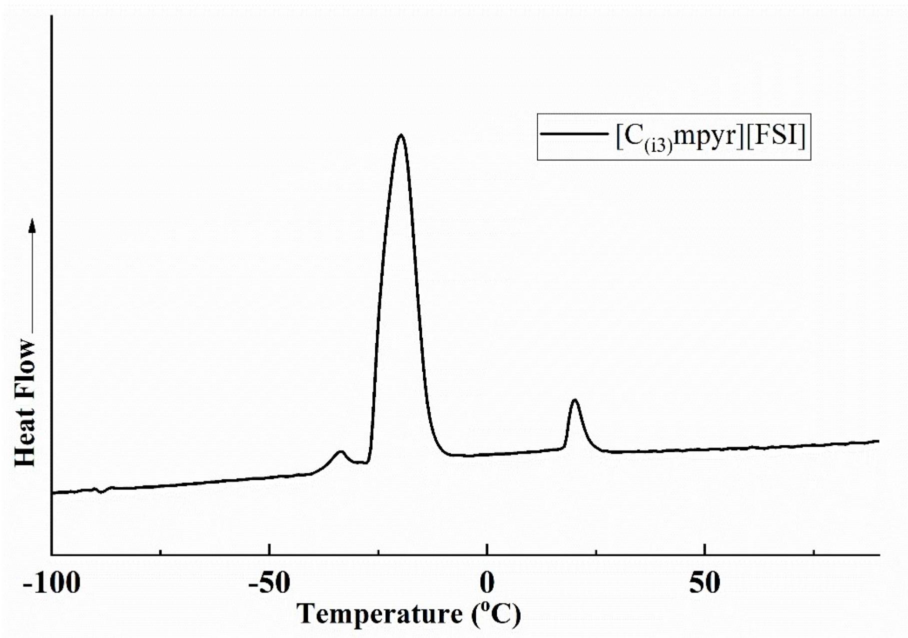

Figure S2. DSC of [$C_{(i3)}$mpyr][FSI] at 2 °C/min from -100 to 90 C

Table S1. Ionic conductivity, activation energy and viscosity for [$C_{(i3)}$mpyr]$^+$ salts. The activation energies for most of the salts were measured between 30 to 90 °C, unless stated otherwise.

	Conductivity/ S cm^{-1} (± 5%) at 30 °C	**E_a/kJ mol^{-1}**	**Viscosity (cP) at 30 °C**
[$C_{(i3)}$mpyr][DCA]	1.1×10^{-2}	18 (Melt)	40
[$C_{(i3)}$mpyr][FTFSI]	4.9×10^{-3}	20 (Melt)	34
[$C_{(i3)}$mpyr][FSI]	1.7×10^{-6}	35 (phase I) (30 to 80 °C)	-
[$C_{(i3)}$mpyr][BF_4]	2.6×10^{-9}	60 (phase I)	-
[$C_{(i3)}$mpyr][PF_6]	2.9×10^{-10}	45 (phase I) (90 to 120 °C)	-
[$C_{(i3)}$mpyr][NTf_2]	8.0×10^{-10}	40 (phase I) (30 to 80 °C)	-
[C_2epyr][FSI] [1]	1.9×10^{-5}	-	-

References

1. R. Yunis, T. W. Newbegin, A. F. Hollenkamp and J. M. Pringle, *Materials Chemistry Frontiers*, 2018, **2**, 1207-1214.