

Supplementary

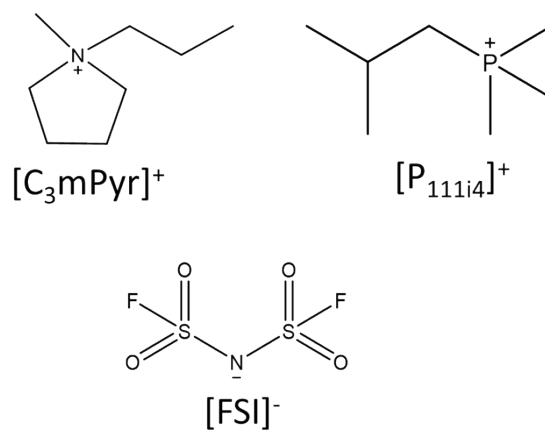


Figure S1. Structures of the ionic liquid

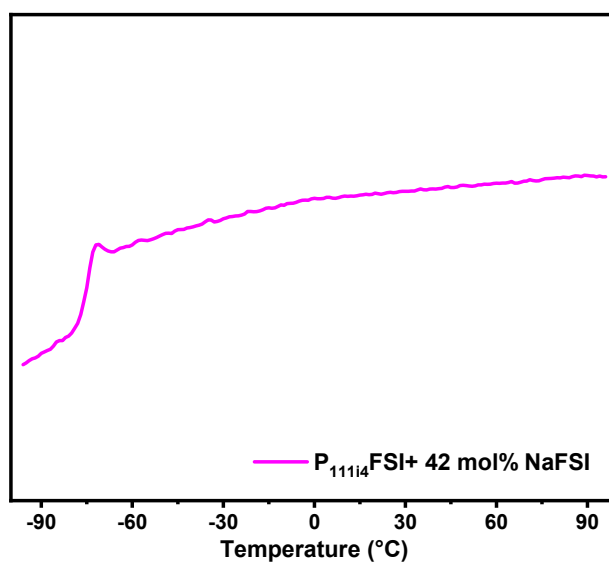


Figure S2. DSC heating trace of the $P_{111i4}FSI + 42 \text{ mol\% NaFSI}$ from -90 °C to 90 °C

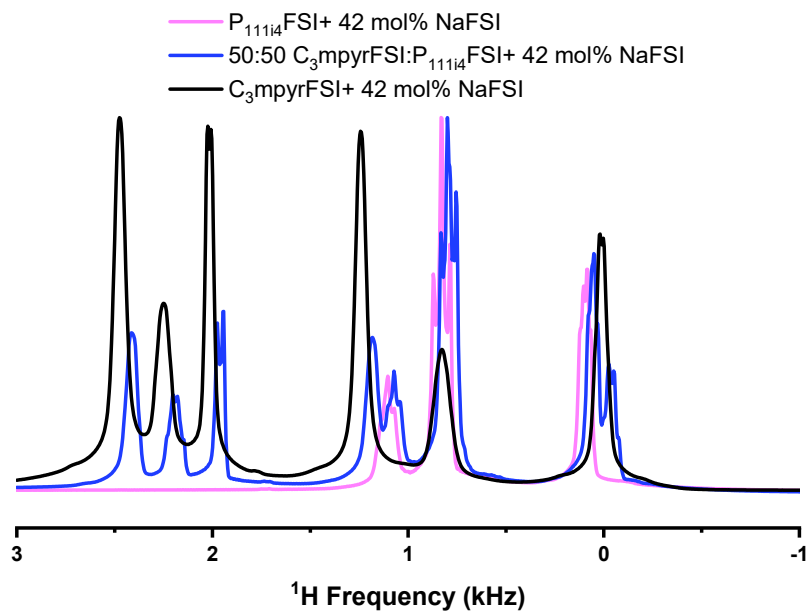


Figure S3. ^1H spectra for the mixed $\text{P}_{111i4}\text{FSI}$ and $\text{C}_3\text{mpyrFSI}$ with 42mol% NaFSI system

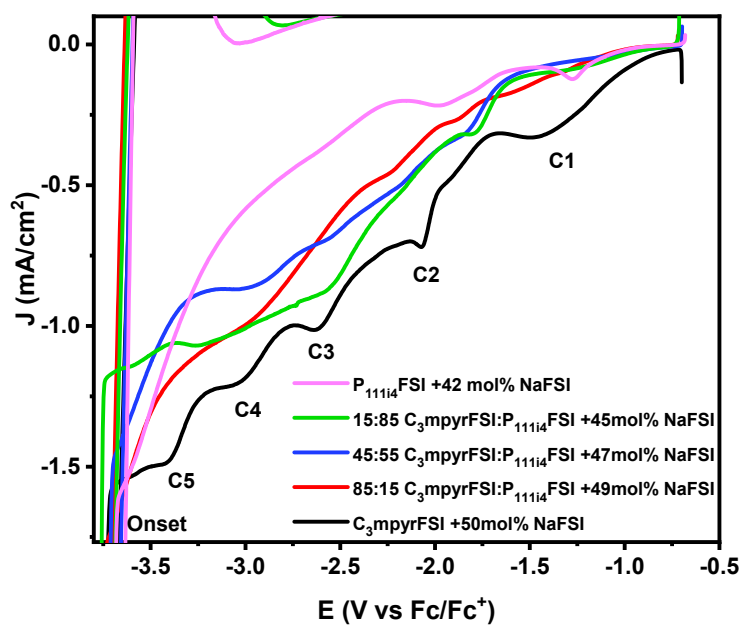


Figure S4. The enlarged reduction process of the cyclic voltammetry curves for the mixed $\text{P}_{111i4}\text{FSI}$ and $\text{C}_3\text{mpyrFSI}$ with saturated NaFSI system at 1st cycle

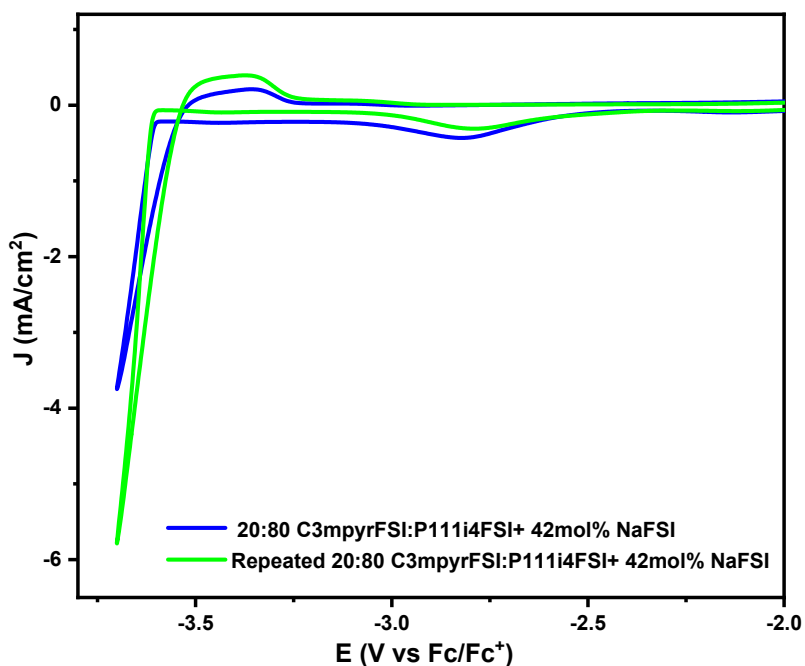


Figure S5. Cyclic voltammety curves for the repeated 20:80 C₃mpyrFSI: P_{111i4}FSI+ 42mol% NaFSI at 1st cycle.

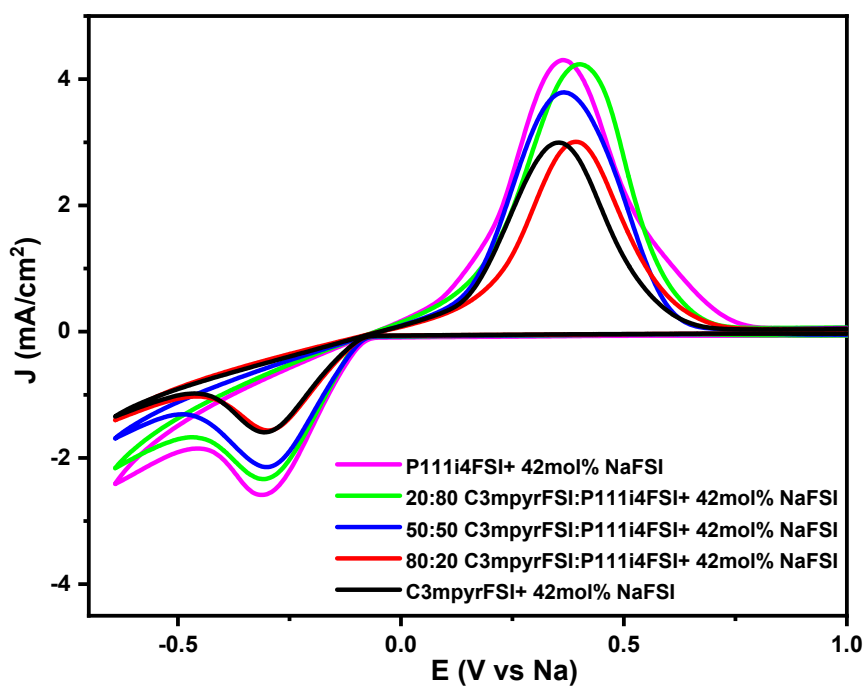


Figure S6. Cyclic voltammety curves for the mixed P_{111i4}FSI and C₃mpyrFSI with 42 mol% NaFSI system at 2nd cycle