

Supplementary Information

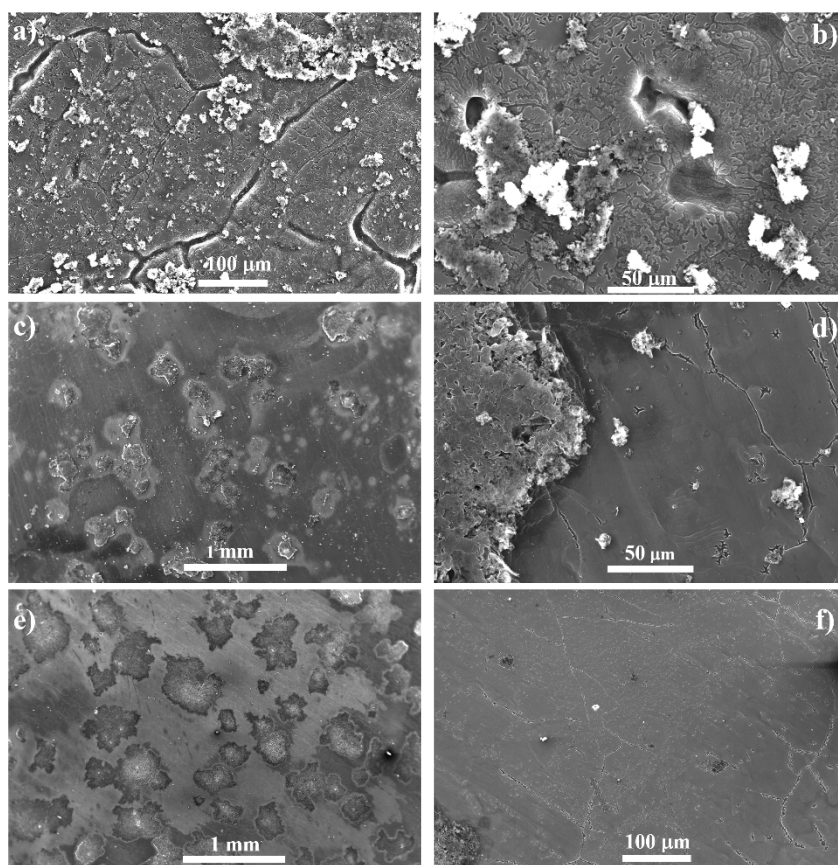


Figure S1: SEM images of the Li anode from disassembled Li||LFP cells after they have finished cycling at their lowest temperature (a-b) COM at 200x and 500x, (c-d) T-FFN at 30x and 500x, (e-f) F-FFN at 30x and 200x

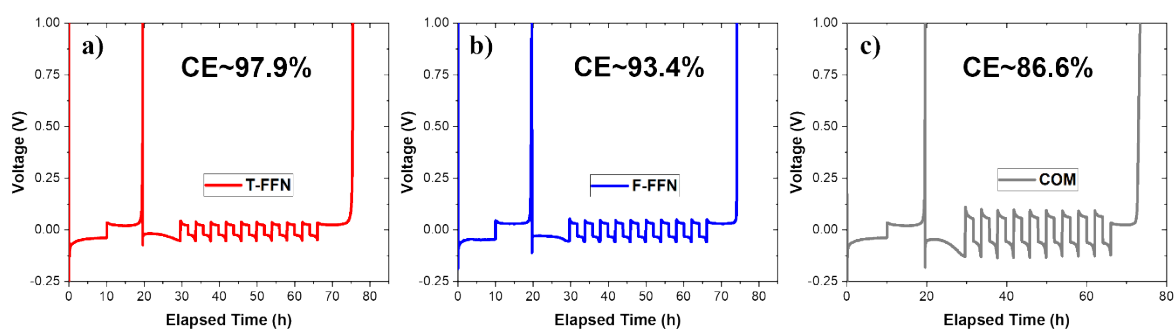


Figure S2: Li metal columbic efficiency of Li|Cu cells at RT of: (a) T-FFN, (b) F-FFN, (c) COM

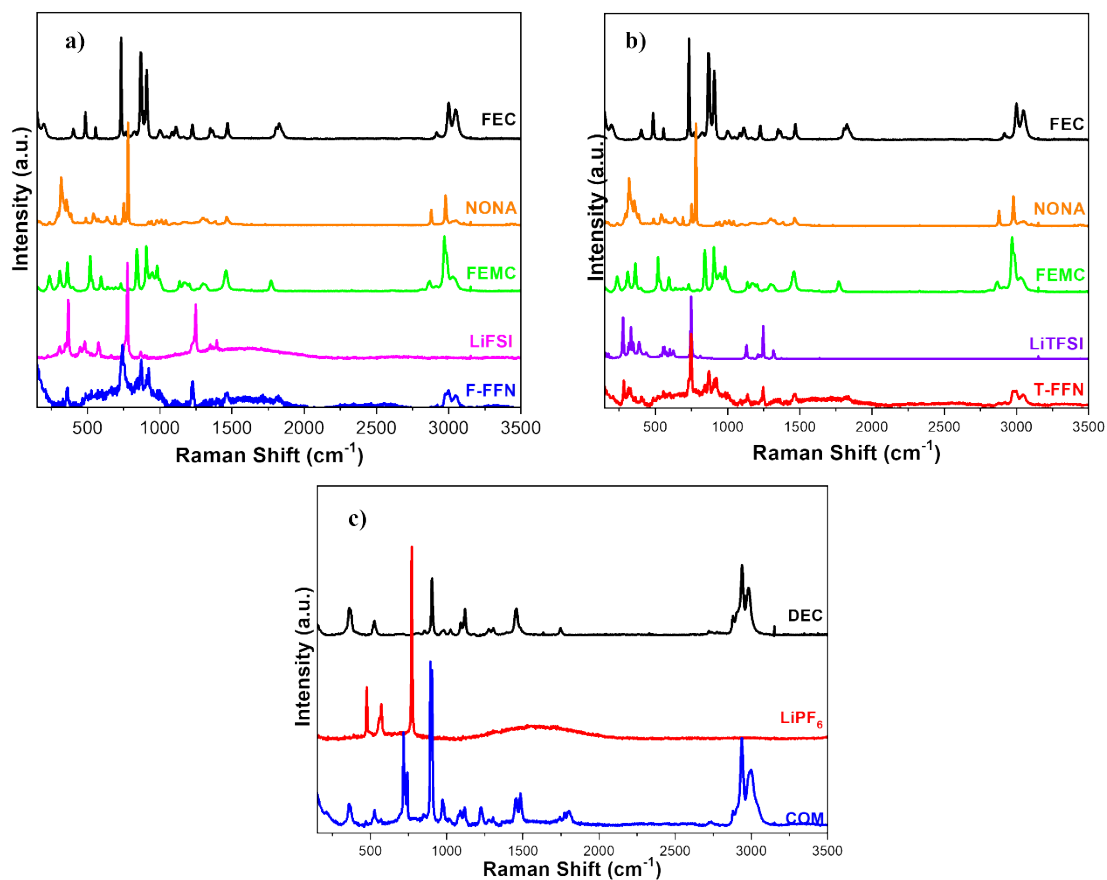


Figure S3: Full Raman spectra of: (a) T-FFN, (b) F-FFN, (c) COM

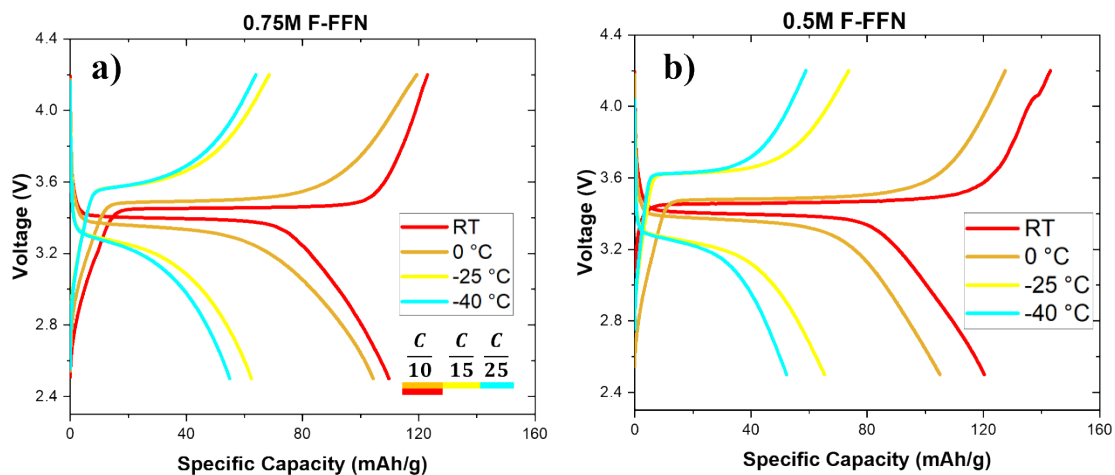


Figure S4: Temperature cycling studies performed at different temperatures of two different molarities F-FFN: (a) 0.75M F-FFN, (b) 0.5M F-FFN ,

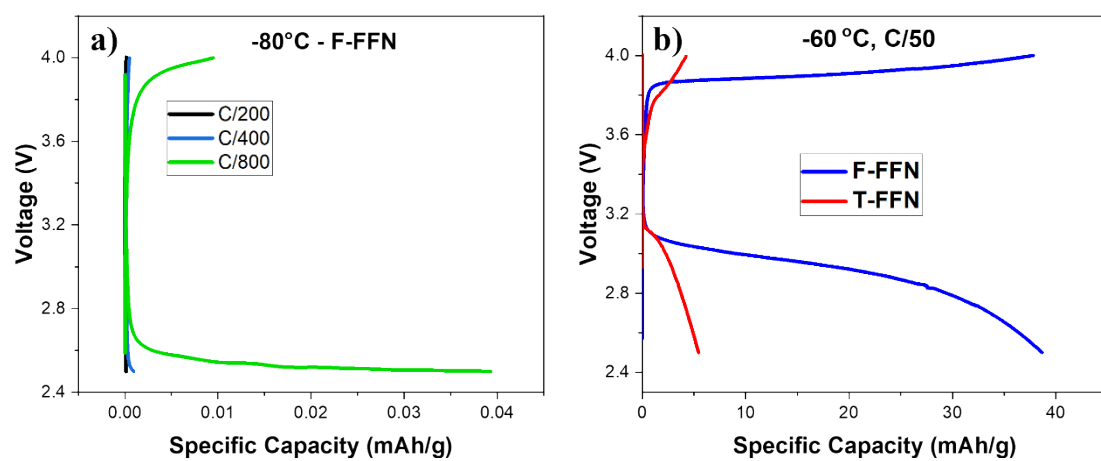


Figure S5: Single charge/discharge cycle at ultra-low temperature for F-FFN and T-FFN: **(a)** -80 °C, **(b)** -60 °C