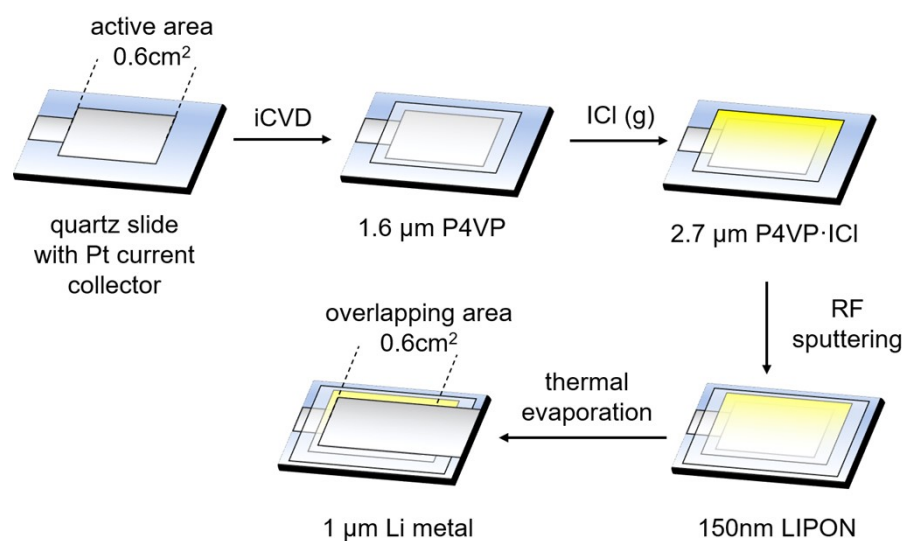


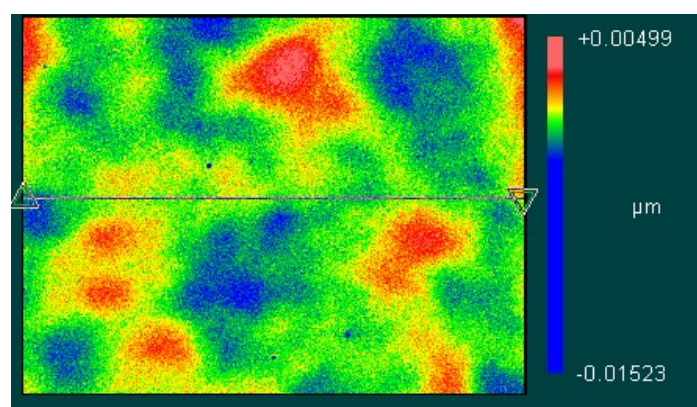
## Supplementary Information for Flexible Thin Film Lithium Battery with Chemical Vapor Deposited Organic Complex Cathode

Zhuo Li, Fei Hu, Ni Huo and Wyatt E. Tenhaeff<sup>a</sup>

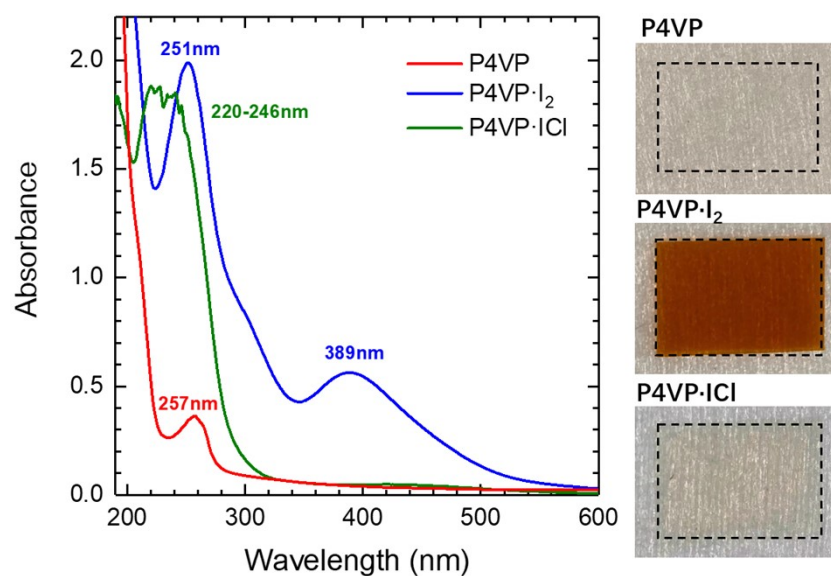
Department of Chemical Engineering, University of Rochester, Rochester, NY, United States, 14627



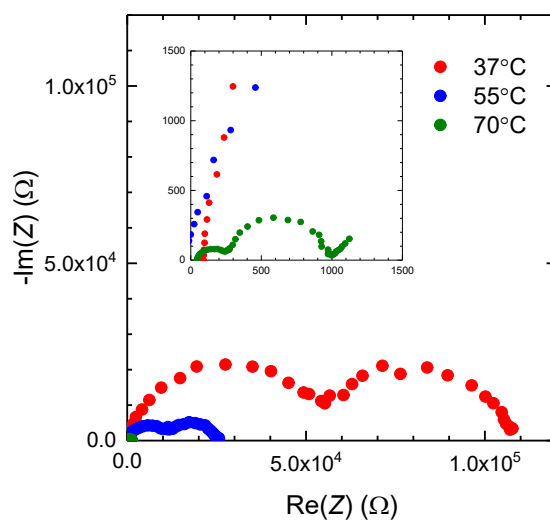
**Figure S1.** Schematic illustration of the thin film battery fabrication process.



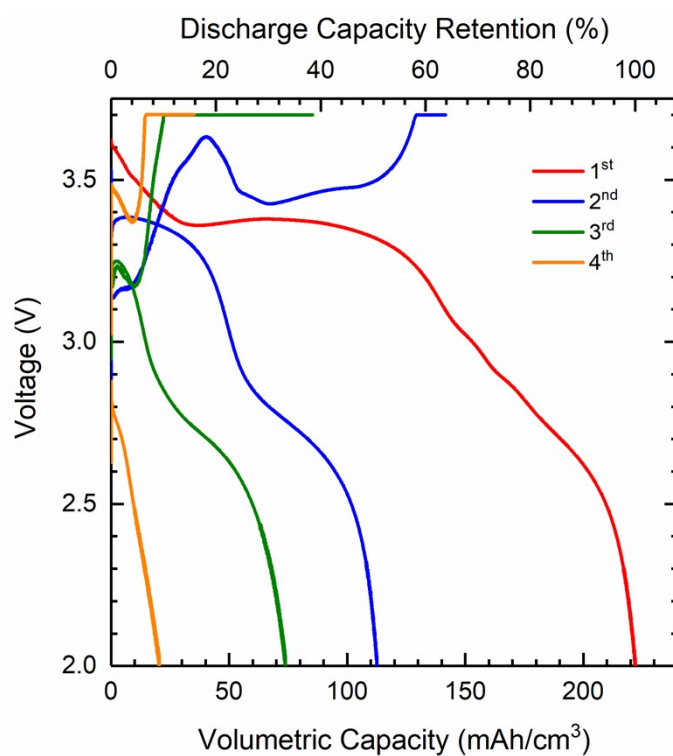
**Figure S2.** Surface roughness mapping of 1.6 μm thick P4VP film coated by iCVD.  
Root mean square roughness = 1.1 nm, roughness average = 1 nm.



**Figure S3.** (a) UV-Vis spectrum of P4VP, P4VP·ICl and P4VP·I<sub>2</sub>. (b) Appearance of 2 μm P4VP, P4VP·ICl and P4VP·I<sub>2</sub> coated on quartz, showing their color. Dashed rectangles show the approximate perimeter of the film.



**Figure S4.** Impedance of P4VP·ICl|LIPON|Li thin film cell at different temperatures.



**Figure S5.** Voltage profile of P4VP·ICl|LIPON|Li thin film cell discharged at 70°C. The cell was discharged at 10 $\mu$ A/cm<sup>2</sup> to 2.0V and recharged at 10 $\mu$ A/cm<sup>2</sup> to 3.7V followed by a constant voltage step at 3.7V at 70°C. The cell was prepared in charged state; thus, there is no charge step in the 1<sup>st</sup> cycle.