Electronic Supplementary Information

Ion-Transporting Channel-Embedded MOF-in-COF Structure as Composite Quasi-Solid Electrolytes with Highly Enhanced Electrochemical Properties

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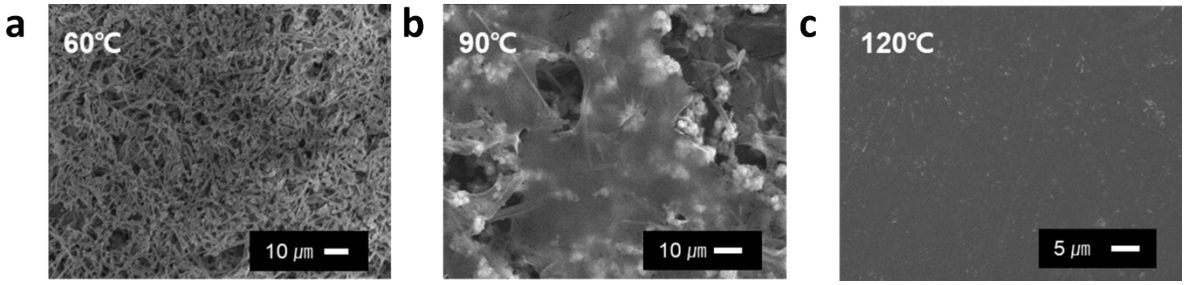

Figure S1. FE-SEM images of surface of the TpPa COF at (a) 60 °C showing fibrous structure, (b) 90 °C showing aggregation and formation of film, (c) 120 °C showing a smooth film structure.

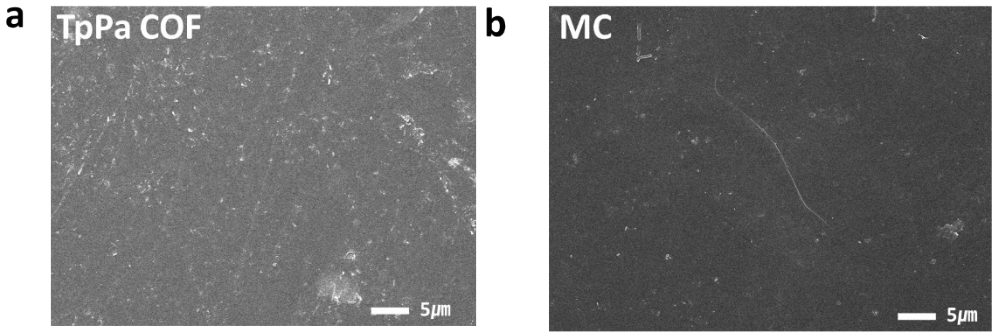

Figure S2. SEM images of film surfaces for (a) TpPa COF and (b) MC.

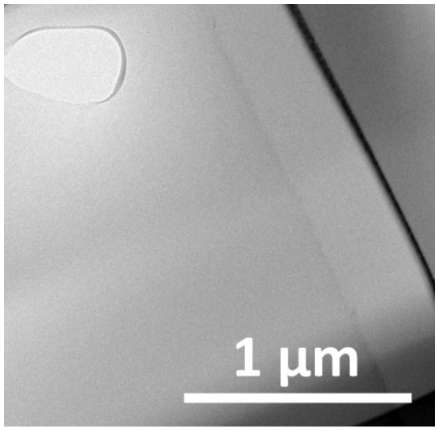

Figure S3. FIB-TEM image of MC film surface.

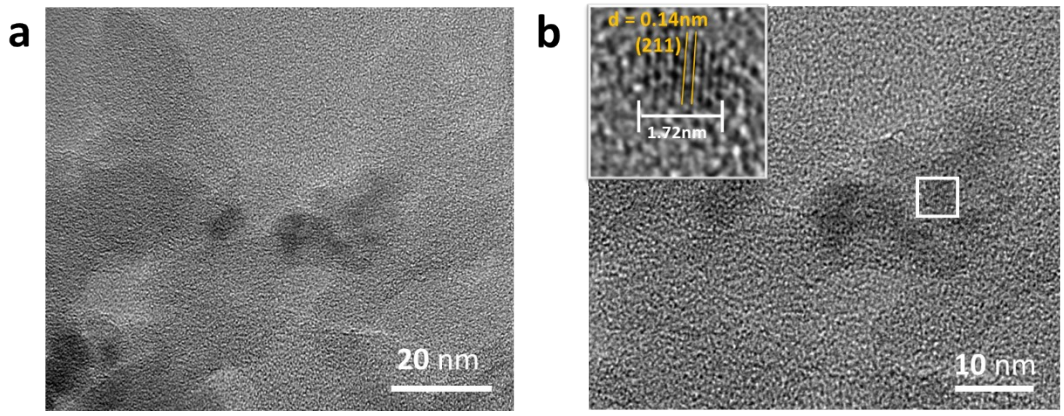

Figure S4. (a)TEM image and (b)HR-TEM image of MC film grinded to powder with inset image showing the presence of (211) lattice fringe of ZIF-8 in TpPa COF.

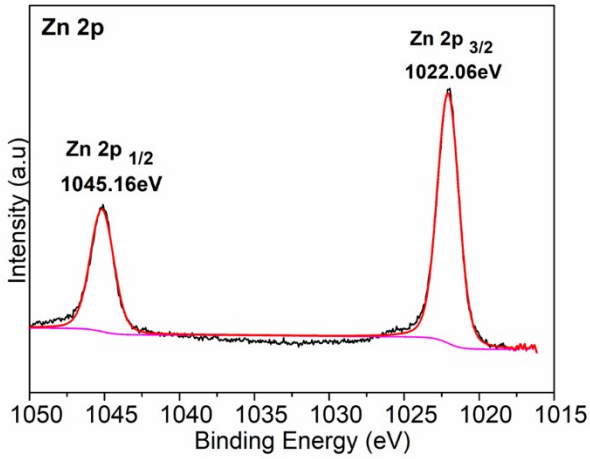

Figure S5. High resolution XPS for Zn 2p element in MC film.

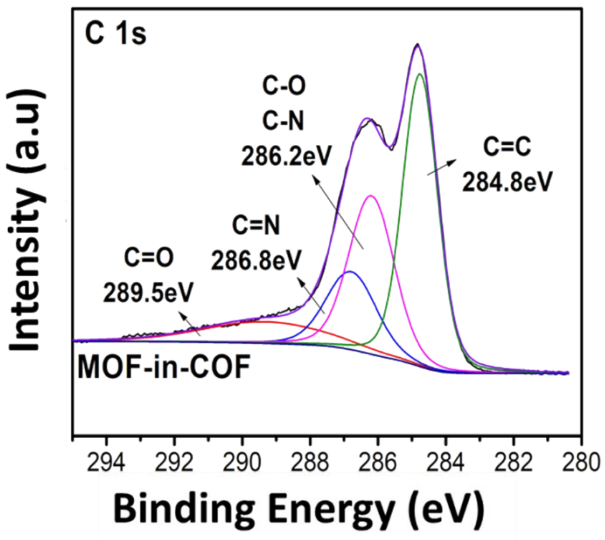

Figure S6. High resolution XPS for C 1s element in MC film.

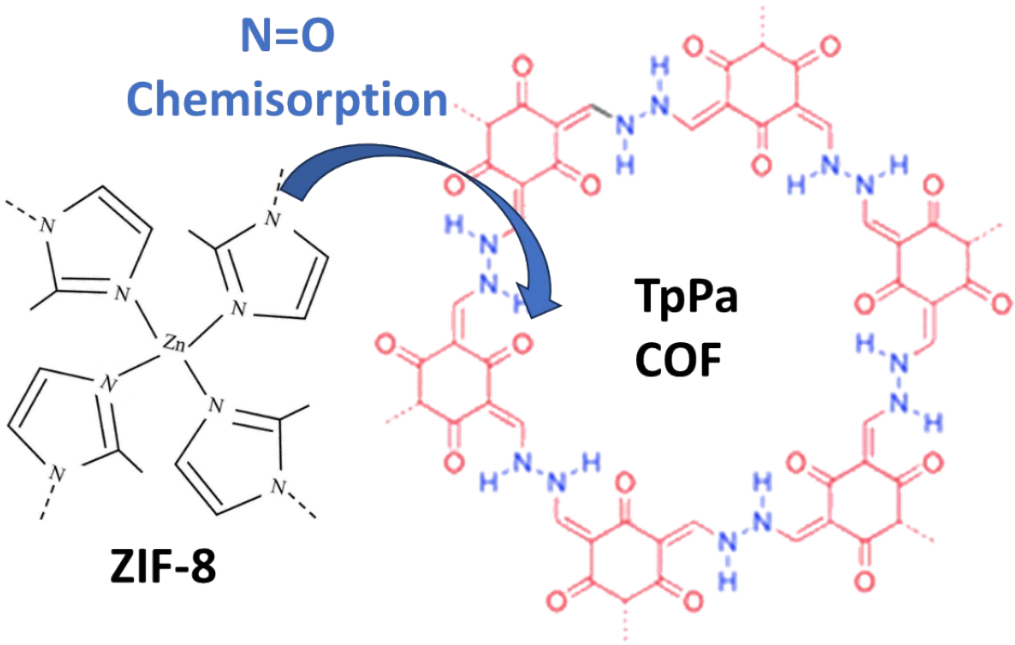

Figure S7. Scheme of the mechanism for ZIF-8 incorporation into TpPa COF pore by N=O chemisorption**.**

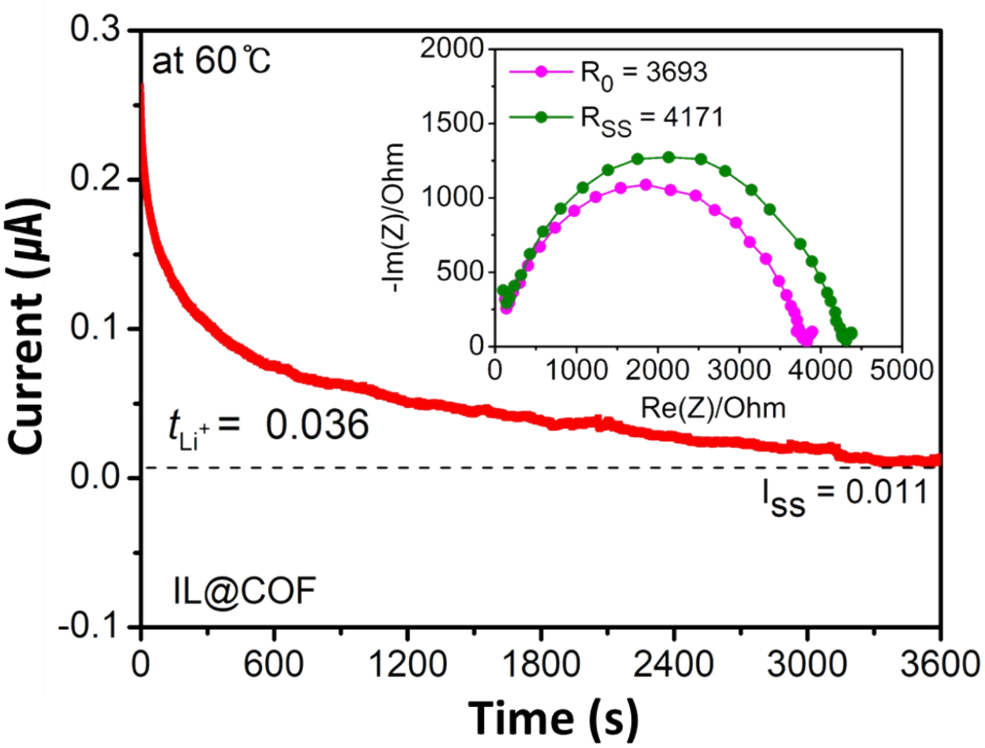

Figure S8. Chronoamperometry curve of a Li|IL@COF|Li symmetric cell under 10 mV polarization at 60°C. Inset: Nyquist plots of IL@COF before and after polarization.

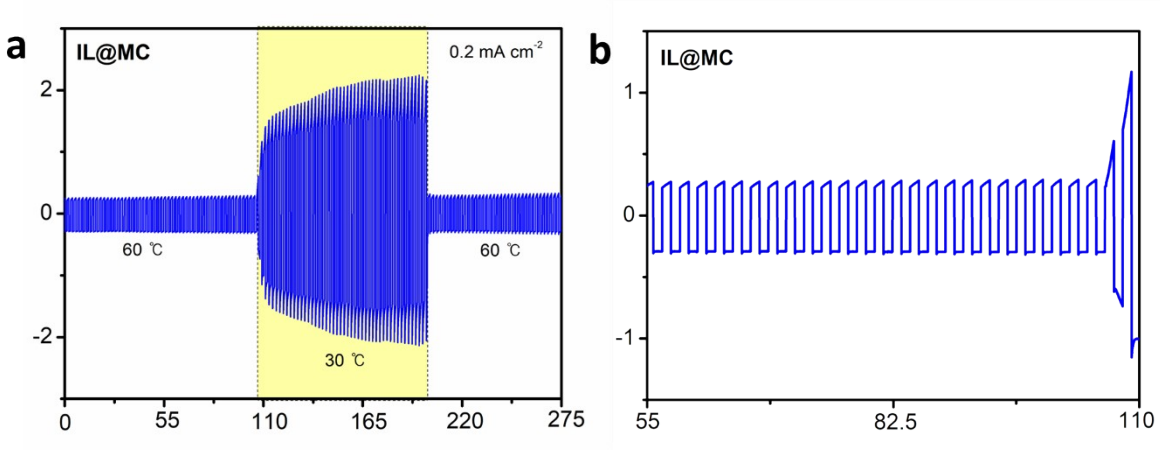

Figure S9. (a) Lithium plating and stripping of IL@MC at different temperature. (b) The enlarged view of the graph between 55 and 110 h reveals a steady overpotential up until the moment when the temperature began to gradually decrease to 30°C after the 100 h.

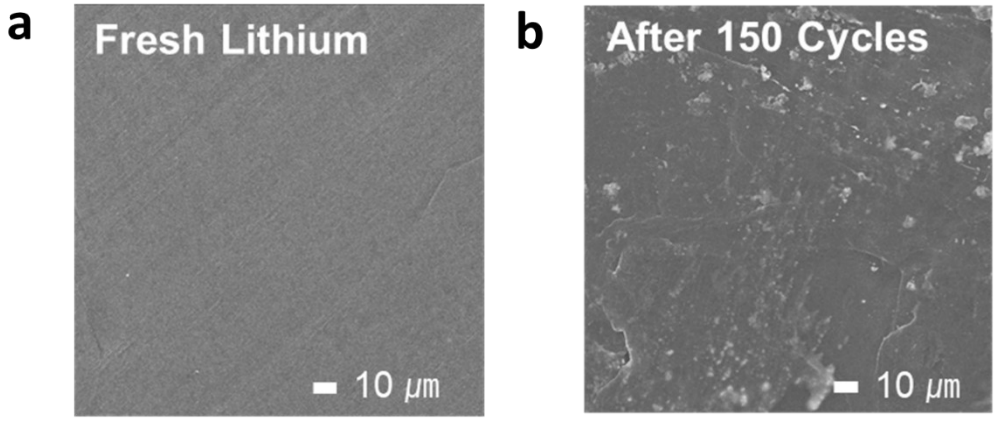

Figure S10. Surface FE-SEM image of (a) fresh lithium and (b) lithium anode of Li|IL@MC|Li cell after 100 cycles.

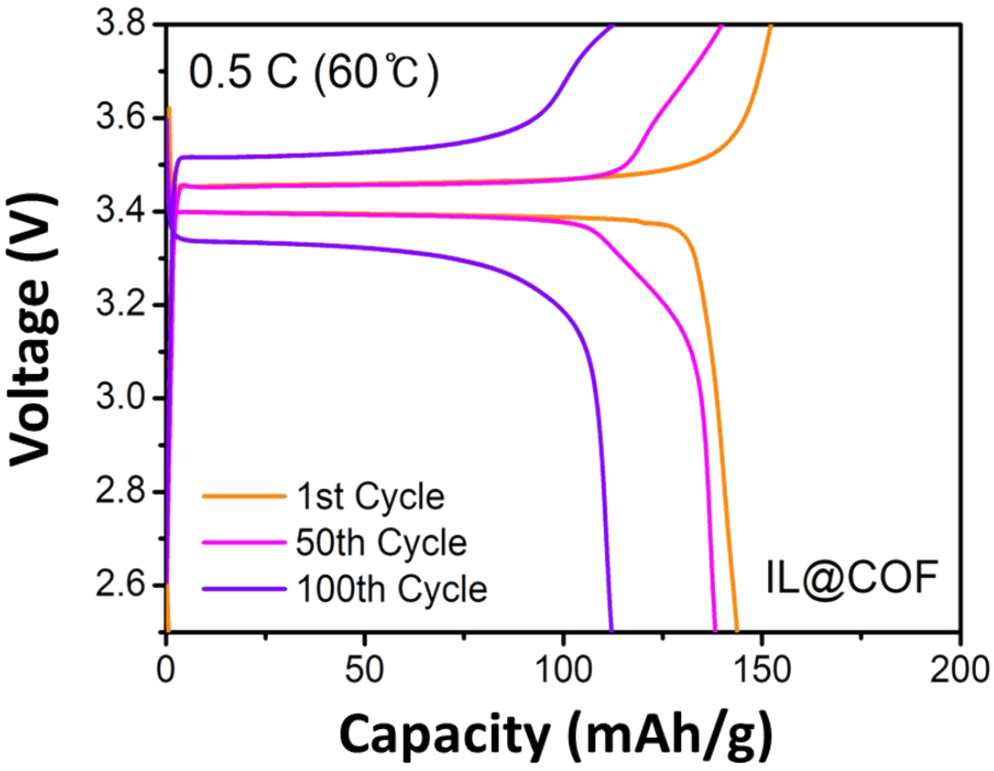

Figure S11. Charge-discharge profile of LFP|IL@COF|Li at various cycle.