Figure S1. Parent ZIF-8 TEM micrographs ((a) low magnification and (b) high magnification).

Figure S2. SEM micrographs ((Left) pristine Celgard PP separator and (Right) ZHC-coated Celgard PP separator).

Figure S3. (a) N₂ adsorption-desorption isotherms and (b) NLDFT pore size distribution curves for ZHC.
Figure S4. (a) CV curve for ZHC contained LSBs and (b) its respective rate-dependent diffusion curves.

Figure S5. DFT calculation of Zn and N with (a) Li$_2$S, (b) Li$_2$S$_2$ and (c) Li$_2$S$_8$.

Figure S6. (a) XRD of CNT-70 and sulfur powders. (b) TGA analysis of CNT-70 - showing 70 wt % loss after 300 °C.