Supporting information

Environment-friendly degradable zinc-ion battery based on guar gum-cellulose aerogel electrolyte

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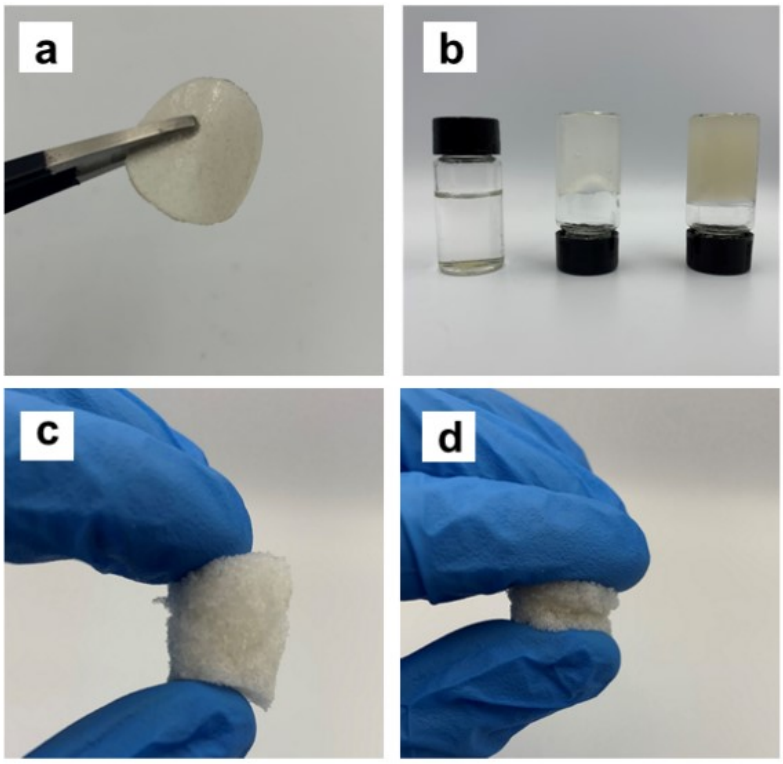

Fig. S1 Optical photos of guar gum and cellulose aerogel. (a) The guar gum electrolyte film. (b) The aqueous solutions of 2 M $ZnSO_4$ and 0.1 M $MnSO_4$, guar gum and guar gum dissolved in the mixture solution of 2 M $ZnSO_4$ and 0.1 M $MnSO_4$. (from left to right). (c) The cellulose aerogel. (d) The

compressed cellulose aerogel.

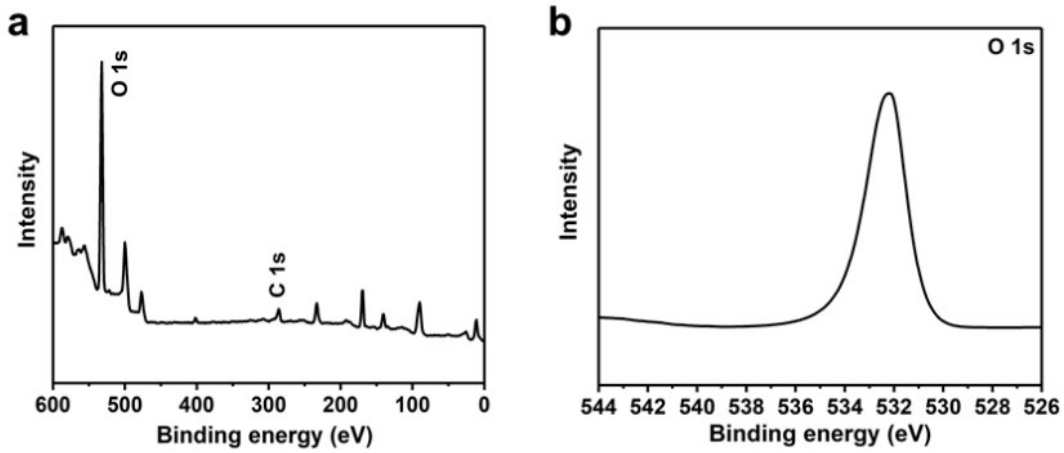

Fig. S2 (a) XPS survey spectra. (b) XPS of O 1s spectra of the GCA.

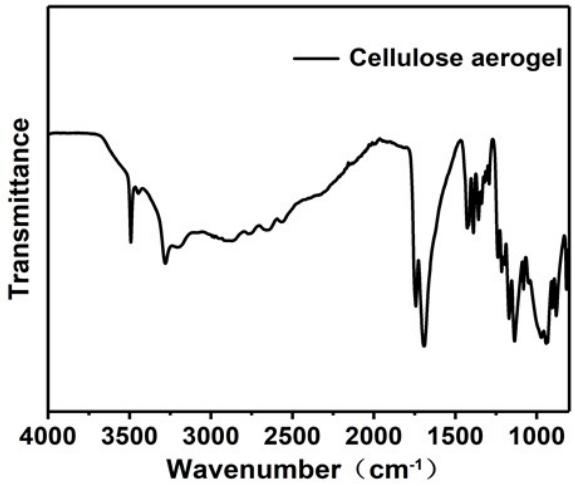

Fig. S3 FTIR spectra of the cellulose aerogel.

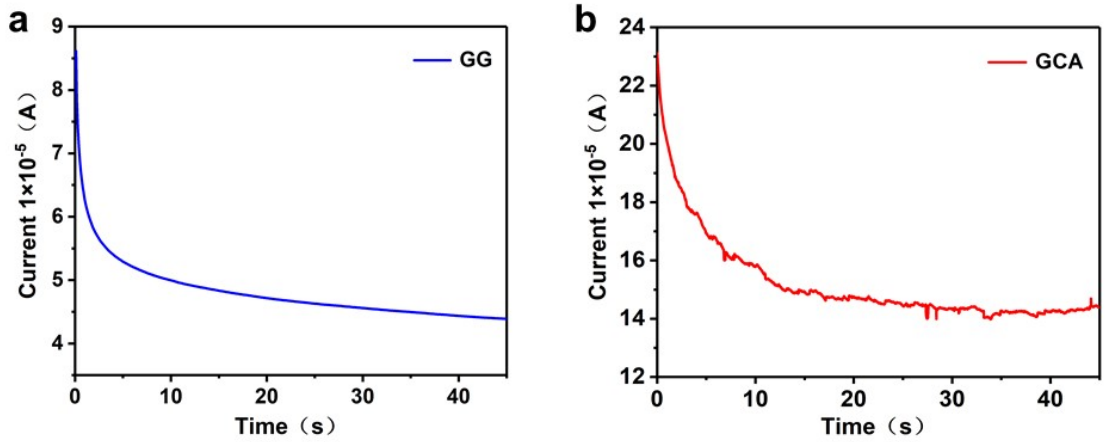

Fig. S4 (a) The i-t curve of GG. (b) The i-t curve of GCA.

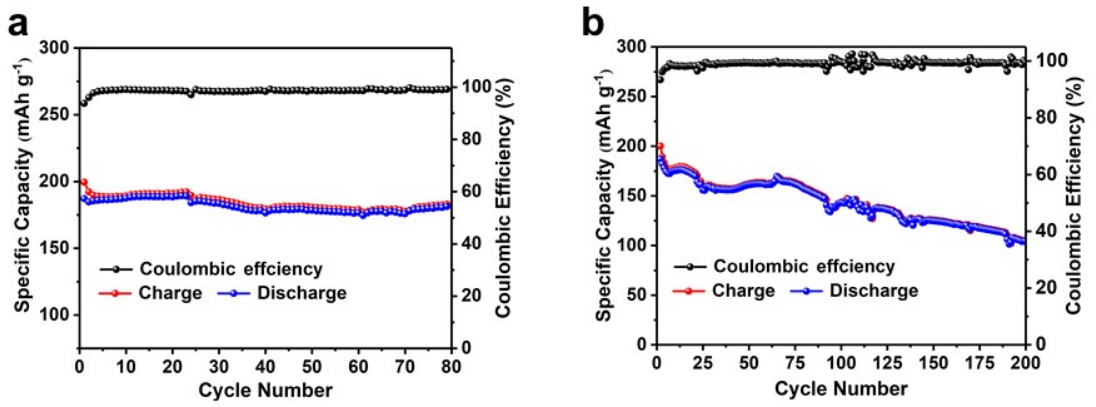

Fig. S5 Long-term cycling performance and the corresponding coulombic efficiency at 308 mA g^{-1} use (a) zinc foil and (b) zinc particles.

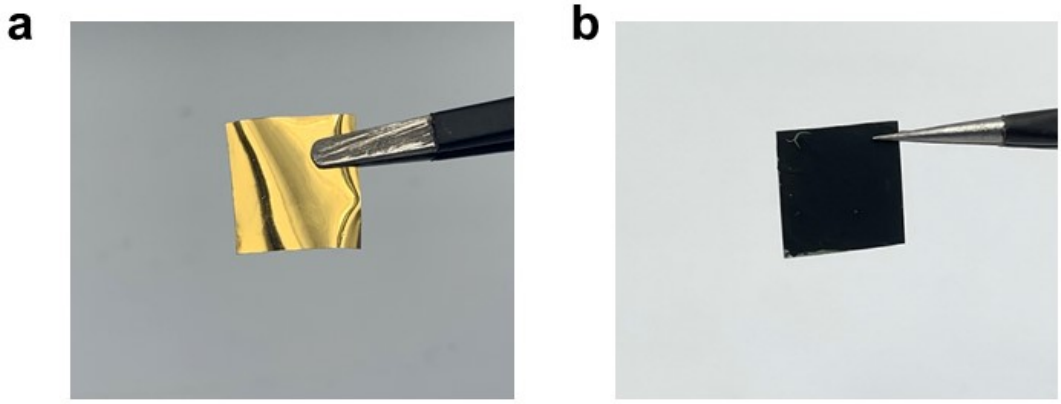

Fig. S6 The optical photos of the chitosan/Au film (a) and chitosan/Au film coated with α-MnO_2/CNT (b).

Fig. S7 The open-circuit voltage of the TZIB device.

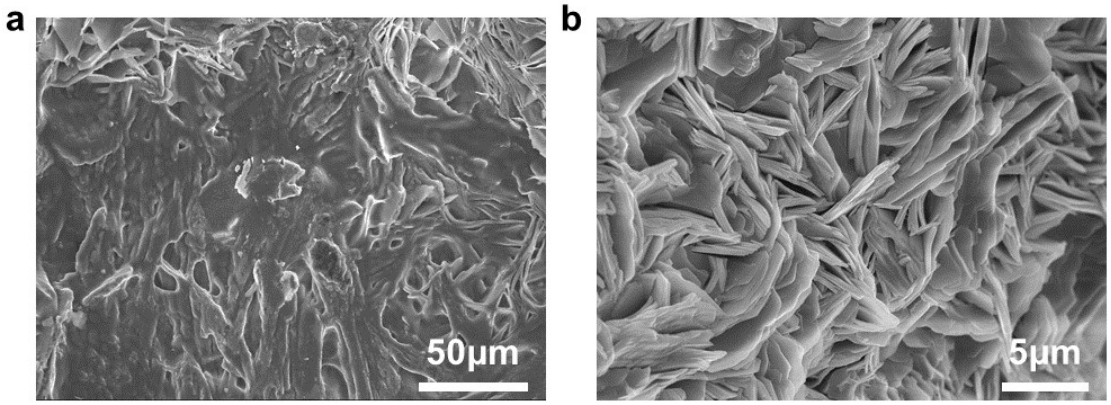

Fig. S8 (a) The SEM image of zinc particles in GCA after 200 cycles. (b) The SEM image of zinc particles in aqueous electrolyte after 200 cycles.

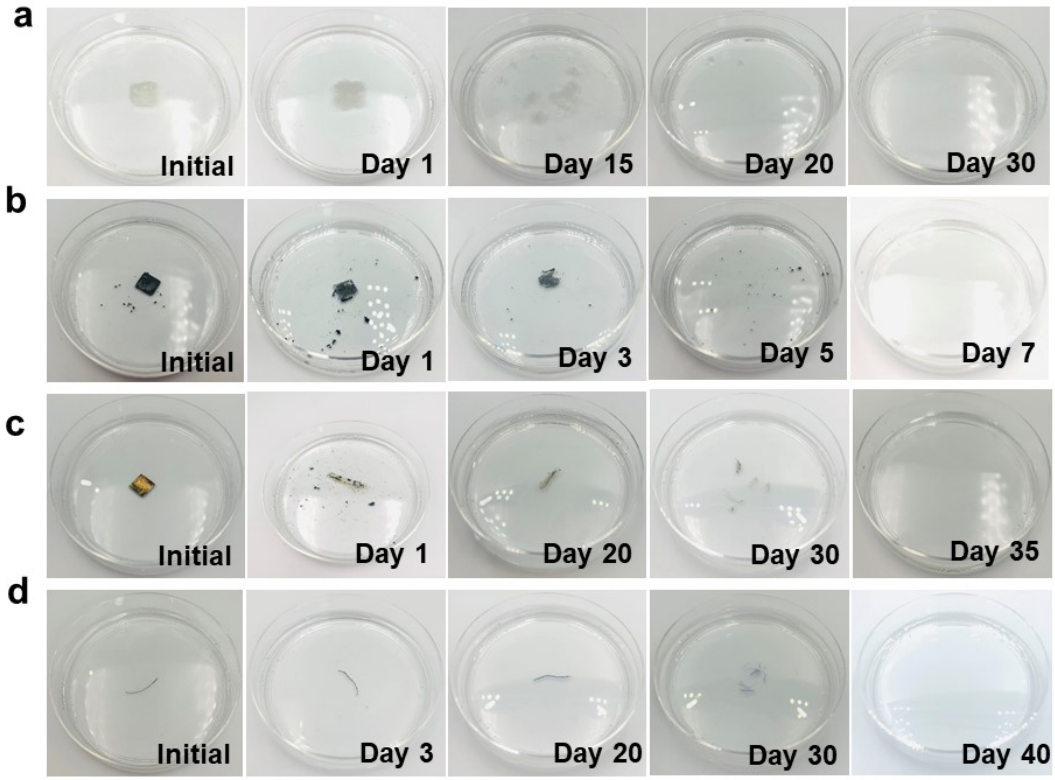

Fig. S9 The biodegradation profile of the GCA (a), silk fibroin coated with zinc microparticles (b), chitosan/Au film coated with α-MnO_2/CNT (c) and PGA/Au (d) in buffered protease solution at 45ºC.