Supporting Information

Preparation of nanocellulose-based nitrogen-doped carbon aerogel electrocatalysts through hydrothermal pretreatment for Zinc-air batteries

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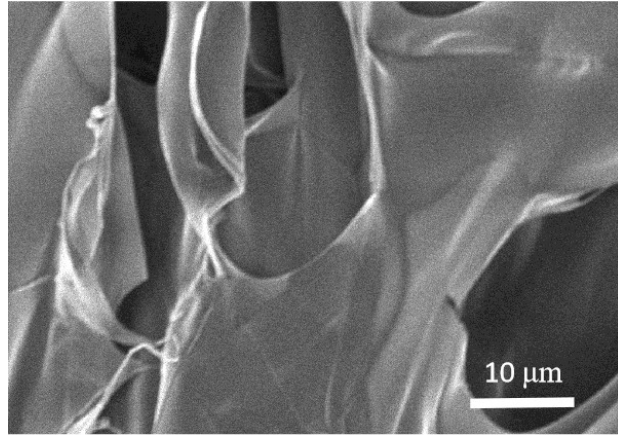[#] These two authors contributed equally to this work.
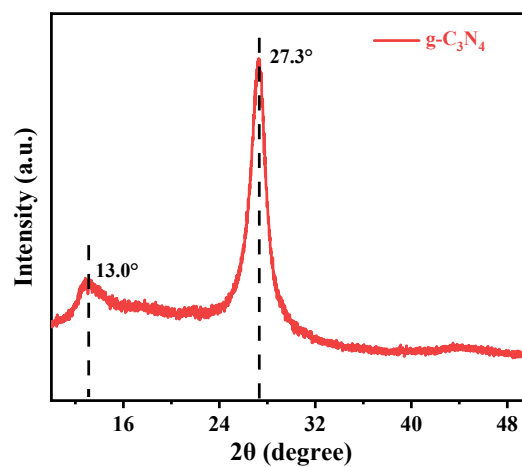
Figure S1. SEM image of g-C_3N_4.
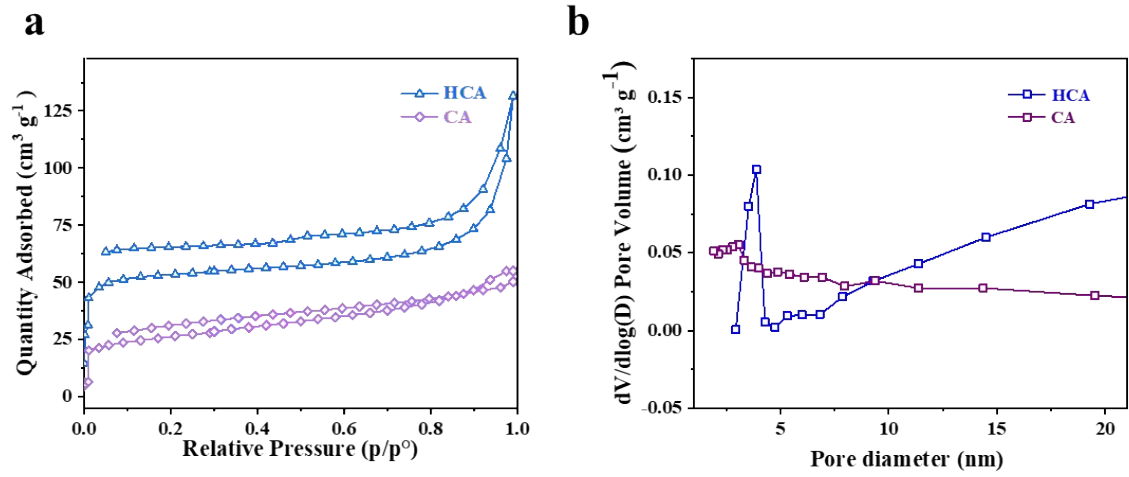
Figure S2. XRD spectrum of g-C_3N_4.

Figure S3 (a) N$_2$ adsorption and desorption isotherms of HCA and CA. (b) The BJH pore size distributions of HCA and CA.
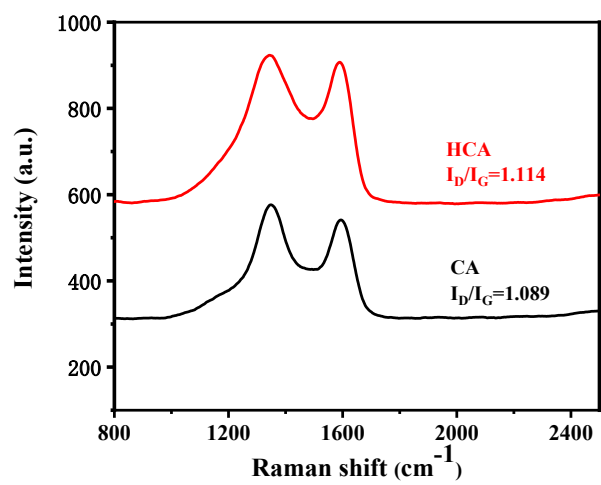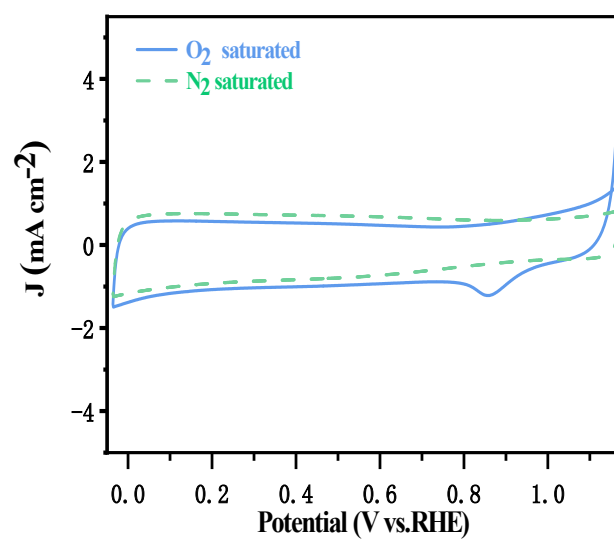
Figure S4. Raman spectra of HCA and CA.

Figure S5. CV curves of HNCA in N_2-saturated and O_2-saturated 0.1 M KOH aqueous solution.
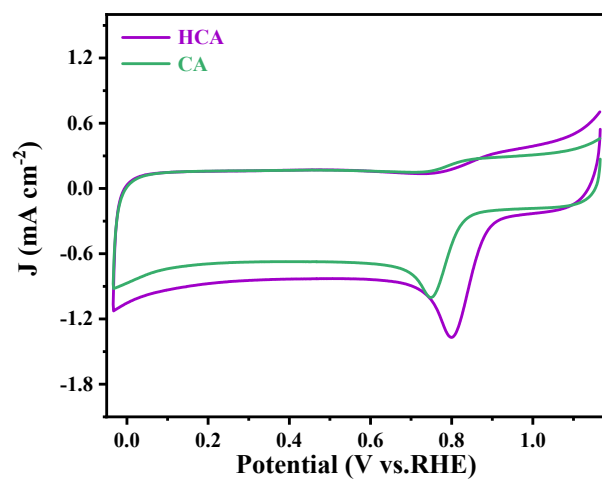
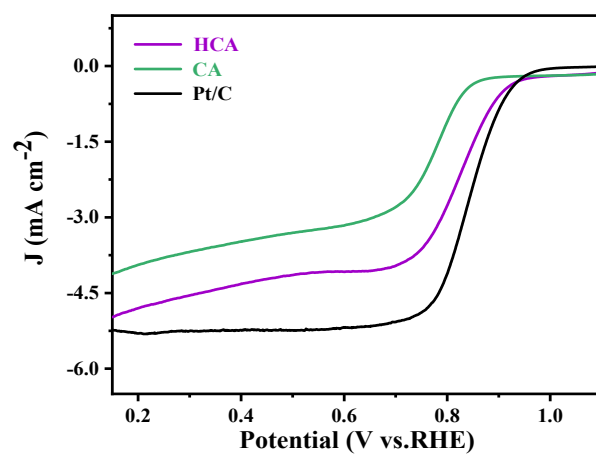**Figure S6.** CV patterns in O_2-saturated 0.1 M KOH aqueous solution of HCA and CA.

Figure S7. LSV curves of HCA and CA in an O_2-saturated electrolyte at 1,600 rpm, compared with commercial Pt/C catalyst.
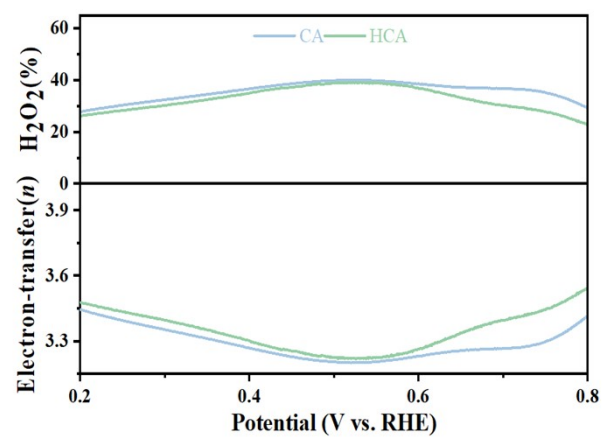
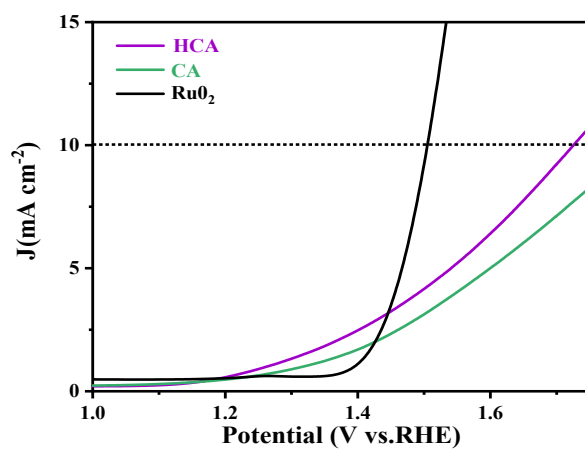**Figure S8.** The peroxide yield and the electron transfer number of CA and HCA.

Figure S9. LSV curves for OER, compared with commercial RuO$_2$.
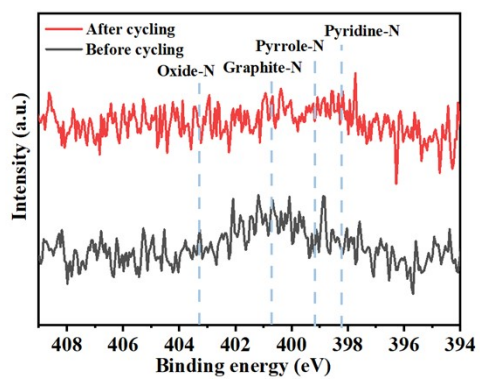
Figure S10. N1s spectra before and after long-duration ZAB test.

Table S1. The specific surface area and element content of different samples.

Samples	BET surface area ($m^2\,g^{-1}$)	Element content (atom%)		
		N	C	O
HNCA	785.4	3.28	90.07	6.65
NCA	493.3	3.39	88.97	7.64
HCA	206.3	0.97	89.44	9.59
CA	103.6	0.63	90.75	8.62