Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting Information

Diatomite waste derived N-doped porous carbon for oxygen reduction reaction and supercapacitor

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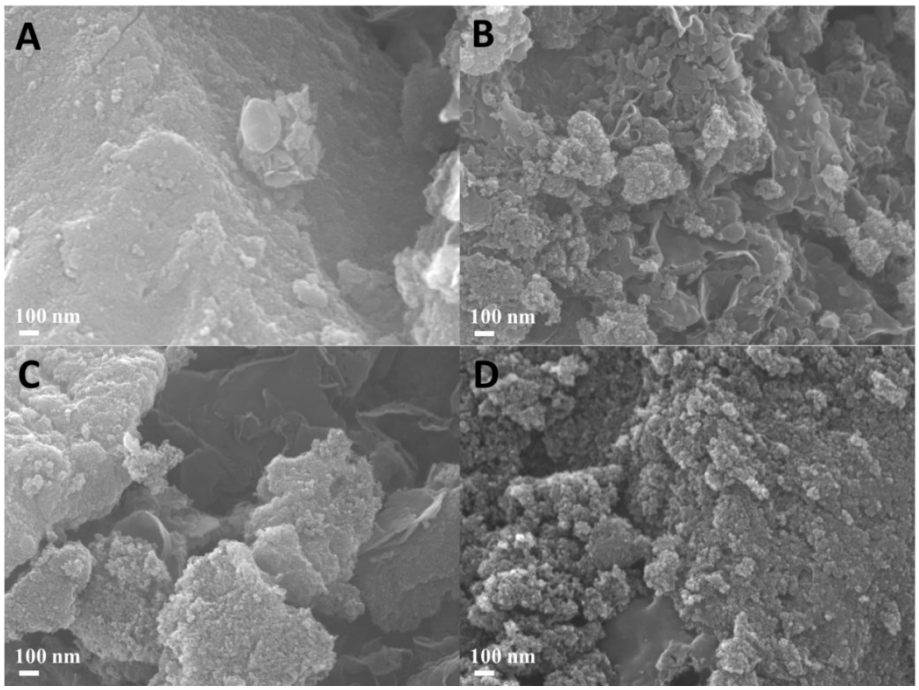

Fig. S1 SEM images of PC (A), NPC-1 (B), NPC-2 (C), and NPC-3 (D).

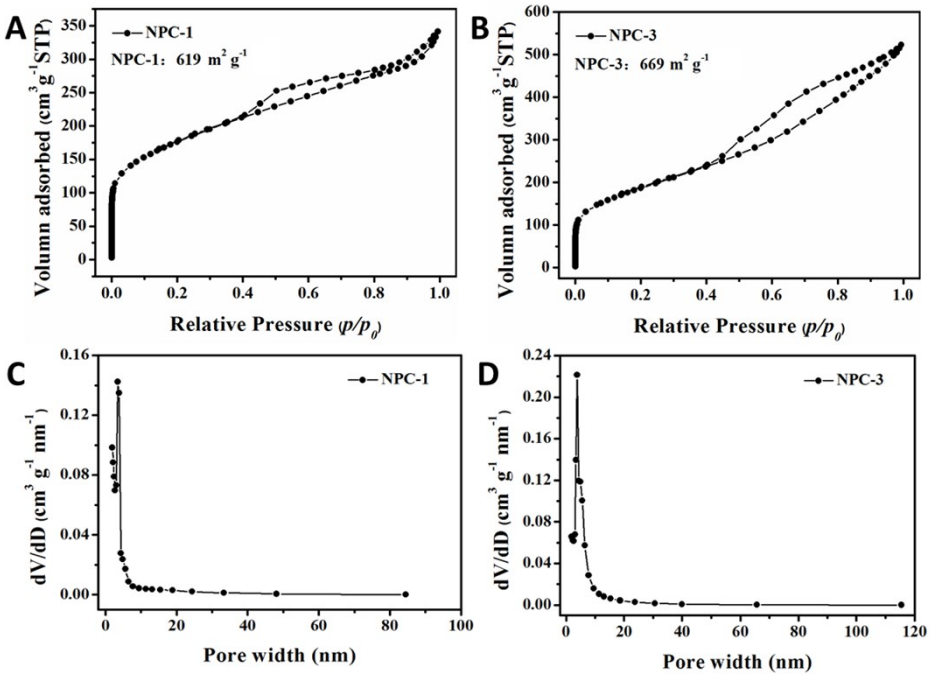

Fig. S2 The nitrogen adsorption-desorption isotherms (A, B) and pore size distribution curves (C, D) of NPC-1 and NPC-3 catalysts.

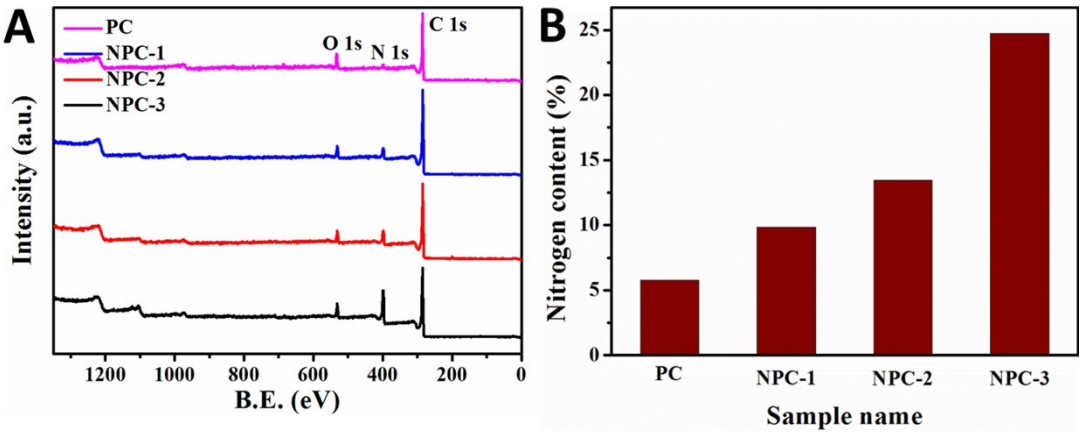

Fig. S3 XPS survey spectra (A), and their nitrogen content (B) of PC, NPC-1, NPC-2 and NPC-3.

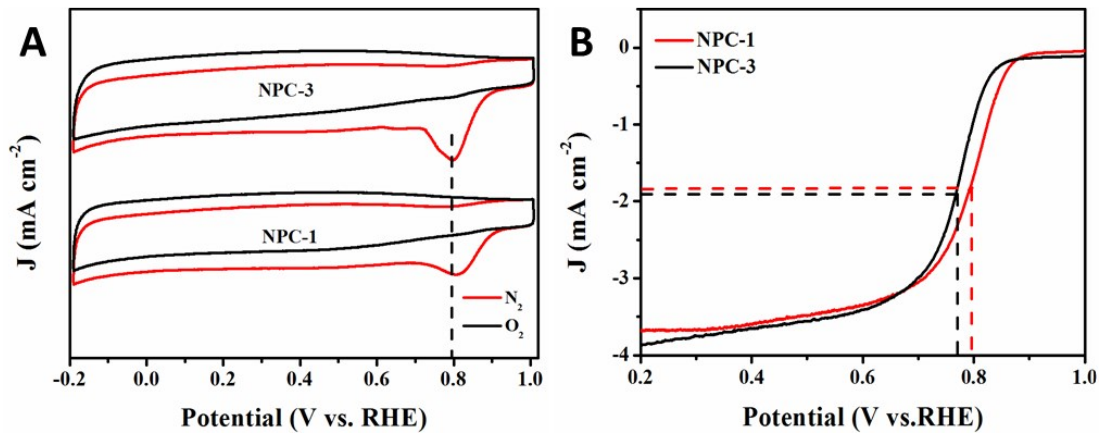

Fig. S4 CV curves (A) and LSV (B) curves of NPC-1 and NPC-3

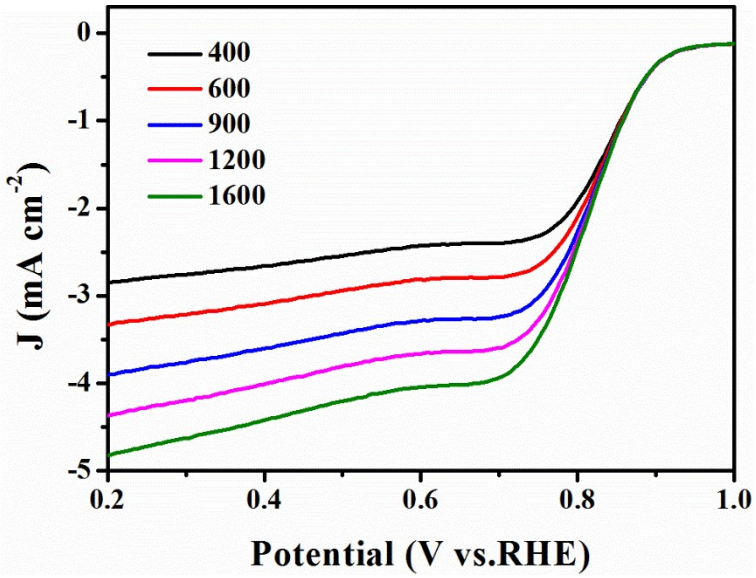

Fig. S5 LSV curves of NPC-2 recorded at different speed rates.

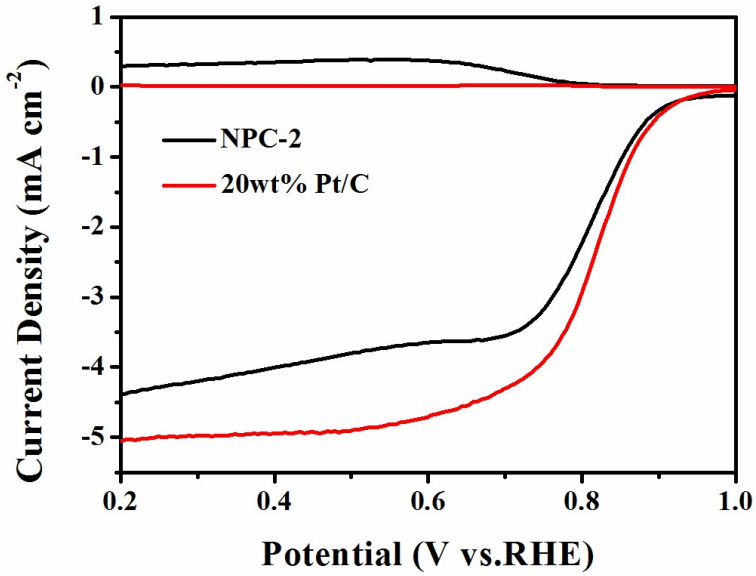

Fig. S6 RRDE curves of NPC-2 and 20 wt% Pt/C at a scan rate of 10 mV s^{-1}.

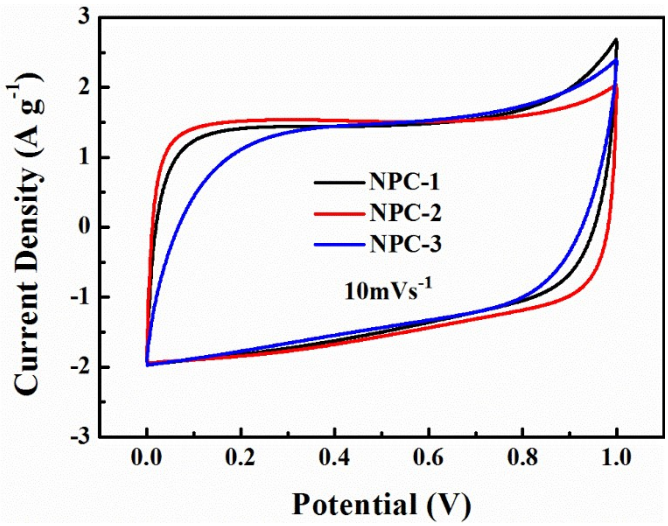

Fig. S7 CV curves of SCs based on NPC-1, NPC-2, and NPC-3.

Table S1 Surface compositions of NPC-1, NPC-2, and NPC-3.

Samples	C % (atomic ratio)	N (atomic ratio)
NPC-1	90.17	9.83
NPC-2	86.55	13.45
NPC-3	75.27	24.73

Table S2 Summary of electrochemical parameters of biomass/biowaste-derived carbon as supercapacitor electrodes compared with NPC.

Carbon Precursor	SSA (m^2 g^{-1})	Electrolyte	Current density (A g^{-1})	Specific capacitance (F g^{-1})	Ref
diatomite	754	6 M KOH	1	151.5	This study
Taro stems	1012	6 M KOH	0.1	236.4	1
Soybean	1749	6 M KOH	0.5	243.2	2
Mulberry leaves	1689	6 M KOH	0.1	243.4	3
Wheat flour	995	6 M KOH	0.5	133.3	4
Pomelo peel	2091	6 M KOH	1	325	5
wood	1438	6 M KOH	0.2	704	6
Medulla tetrapanacis	816	4 M KOH	1	251	7
hydroxyapatite in pig bones	785.70	6 M KOH	1	448.01	8
corncobs	1182.7	6 M KOH	0.5	247	9
Tobacco Waste	1875.5	6 M KOH	1	49.1	10
cotton stalks	1634	6 M KOH	1	318	11
Foxtail grass seeds	819	6 M KOH	0.5	358.0	12
beet pulp and industrial waste fly ash	3221	6 M KOH	1	512.1	13

References

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