Supplementary Material

Bismuth Decorated Honeycomb-like Carbon Nanofibers: An Active Electrocatalyst for Construction of Sensitive Nitrite Sensor

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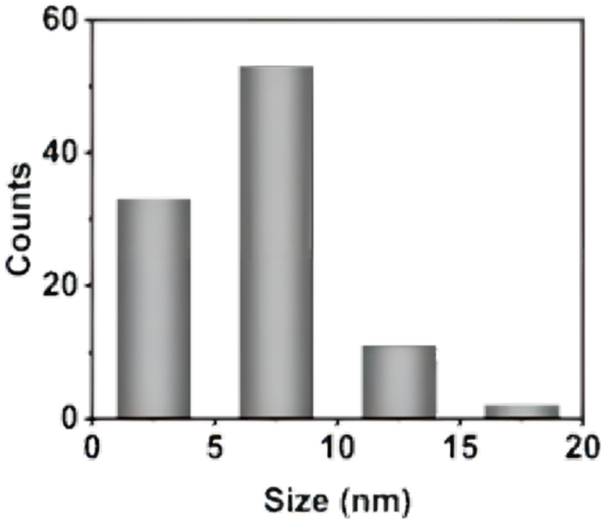

Figure S1. particle size distribution histograms of Bi NPs on the surface of HCNFs.

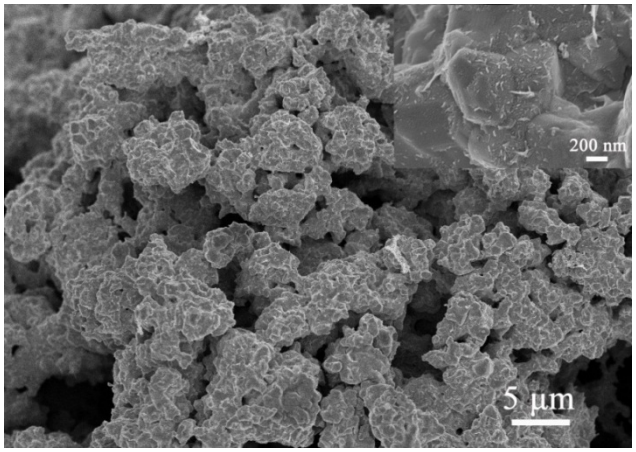

Figure S2. The SEM image of Bi NPs (inset of Figure S2 high magnification SEM image).

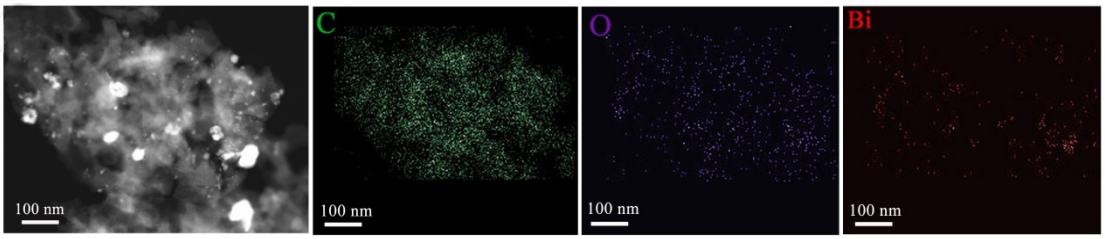

Figure S3. STEM image and corresponding elemental mapping images of Bi, C, O for Bi/HCNFs, respectively.

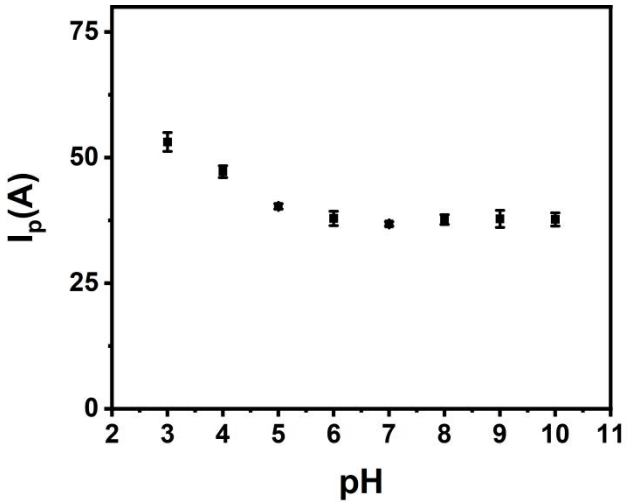

Figure S4. The diagram of CV peak current and pH in the presence of 1 mM NO_2^- ranging from 3.0 to 10.0.

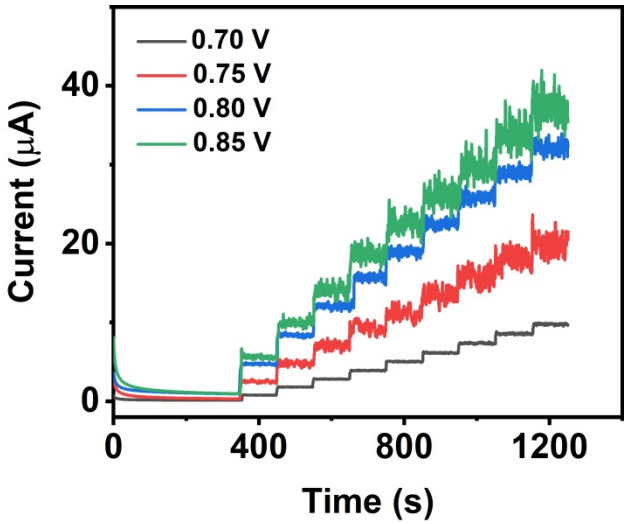

Figure S5. The amperometric responses of Bi/HCNFs at different potentials of 0.70-0.85 V vs. Ag/AgCl with successive additions of 0.2 mM nitrite.

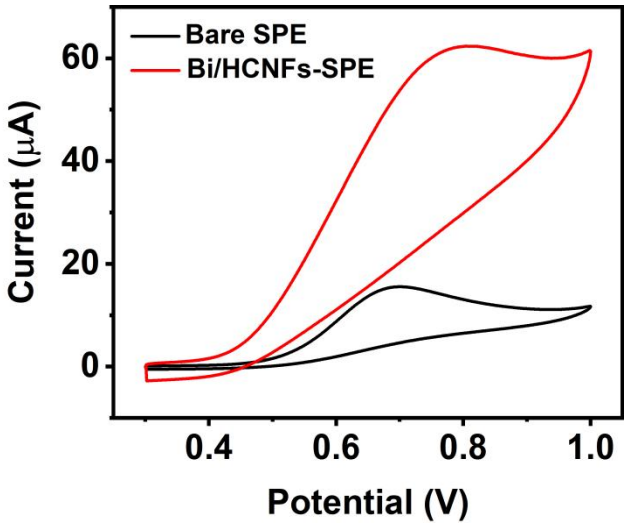

Figure S6. CV responses of disposable bare SPE and Bi/HCNFs modified SPE in 0.1 M PBS (pH 7.0) with the presence of 1 mM NO_2^-.

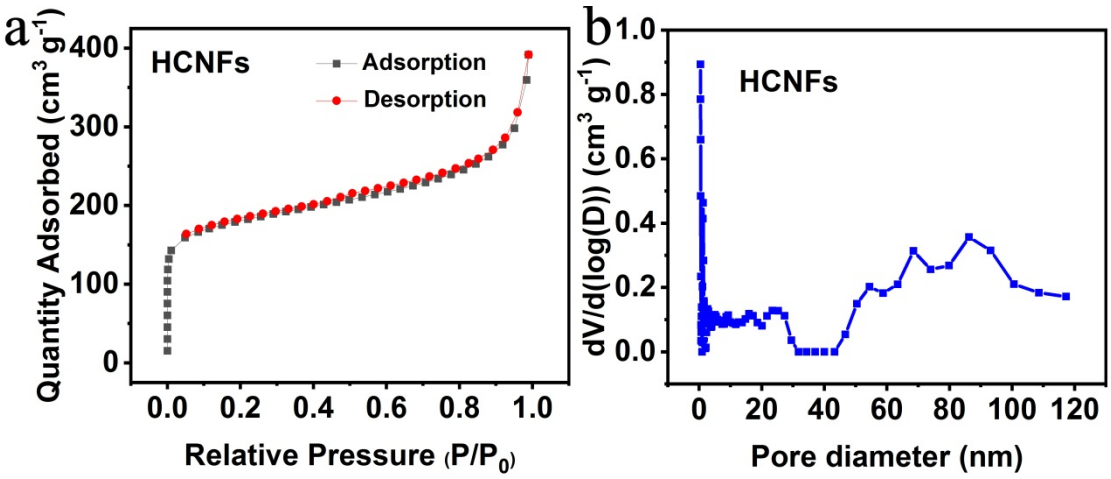

Figure S7. (**a**) Nitrogen adsorption-desorption isotherms of HCNFs and (**b**) its corresponding pore size distribution.

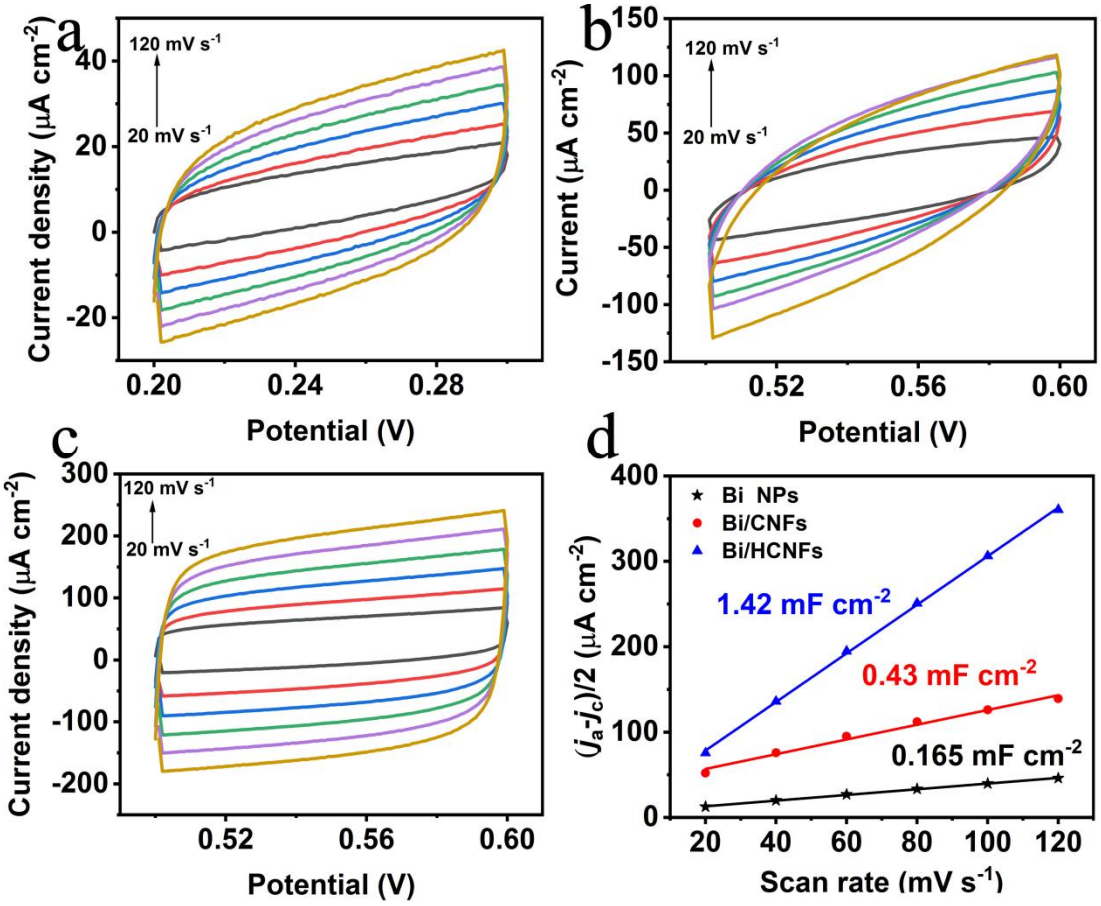

Figure S8. CV curves of Bi NPs (**a**), Bi/CNFs (**b**) and Bi/HCNFs (**c**) at different scan rates from 20 to 120 mV s^{-1} in the region without faradaic current. (**d**) Plot of corresponding capacitive current densities of Bi NPs, Bi/CNFs and Bi/HCNFs with scan rates, j_a and j_c are the current densities of the anodic and cathodic branch of CV at a defined potential, respectively.

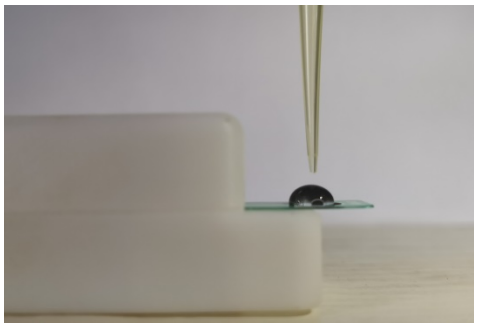

Figure S9. The photo of commercial screen-printed microelectrode with a drop of solution containing nitrite (200 μL).

Table S1. Comparison of electrocatalytic performance toward nitrite with previous electrochemical sensors.

Electrode materials	LOD (μM)	Sensitivity ($\mu A\ mM^{-1}\ cm^{-2}$)	Reference
$NiFe_2O_4$ NPs	0.1236	7961.7	[1]
NiFe-LDH NSAs/CC	0.02	803.6	[2]
Cu-MOF/Au	0.082	252	[3]
Ag/HNTs/MoS_2	0.7	89.9 μA/mM	[4]
SnO_2/Pt/Ti/SiO_2	1.7	22.56 μA/mM	[5]
α-Fe_2O_3/CNTs hybrids	0.15	334	[6]
Fe_3O_4/rGO	0.3	226	[7]
Cu/MWNTs	1.8	455.84	[8]
TMPyPcCo/aCNTs	0.071	8 μA/mM	[9]
Bi/HCNFs	0.019	1269.9	This work

Table S2. Analysis results of trace nitrite in real samples on Bi/HCNFs-SPE through dropping tests (200 μL).

Samples	Added (μM)	Found (μM)	Recovery (%)	[a]RSD(%)
Tap water	500	526.8	105.4	0.89
	1000	1038	103.8	1.62
Pickles	500	514.7	102.9	0.34
	1000	1059	105.9	0.78
Sausage	500	515.3	103.0	1.71
	1000	1053	105.3	0.76

[a]RSD: Relative standard deviation.

References

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