

# SUPPLEMENTARY MATERIAL

## **Facile synthesis of Fe-doped algae residue-derived carbon aerogels for electrochemical dopamine biosensors**

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**Table S1.** The oxidation and reduction peak current of various electrodes in CV testing in 0.1 M KCl solution containing 1.0 mM of  $[\text{Fe}(\text{CN})_6]^{3-/4-}$ .

Electrode	Bare GCE	CAs/GCE	CAs/GCE-Fe-700	CAs/GCE-Fe-1000
Current- $I_{\text{pc}}$ ( $\mu\text{A}$ )	0.681	23.03	27.04	56.78
Current- $I_{\text{pa}}$ ( $\mu\text{A}$ )	-1.07	-22.92	-25.24	-64.12

**Table S2.** The oxidation and reduction peak current of various electrodes in CV testing in the presence of 30  $\mu\text{M}$  DA in PBS (pH = 7.0).

Electrode	Bare GCE	CAs/GCE	CAs/GCE-Fe-700	CAs/GCE-Fe-1000
Current- $I_{\text{pc}}$ ( $\mu\text{A}$ )	1.5	12.1	83.7	108.6
Current- $I_{\text{pa}}$ ( $\mu\text{A}$ )	-1.1	-13.6	-94.5	-114

**Table S3.** The RSD value of oxidation and reduction peak current under different scan rate ( $\text{V}^{1/2}$ ) for CAs/GCE-Fe-1000.

Scan Rate ( $\text{V}^{1/2}$ )	RSD ( $I_{\text{pc}}$ ) %	RSD ( $I_{\text{pa}}$ ) %
4.47	2.408	1.620
6.32	1.291	1.704
7.75	3.012	1.342
8.94	2.003	2.079
10	3.911	2.082
10.95	3.921	2.030
11.83	4.726	2.707
12.65	4.509	2.525
13.42	2.203	3.717
14.14	2.563	3.403

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**Table S4.** The RSD value of oxidation and reduction peak current under different DA concentration.

DA concentration ( $\mu\text{M}$ )	RSD of CAs (%)	RSD of CAs/GCE-Fe- 700 (%)	RSD of CAs/GCE- Fe-1000 (%)
0.01	$1.270 \times 10^{-3}$	$1.528 \times 10^{-2}$	$5.033 \times 10^{-2}$
0.1	$4.160 \times 10^{-3}$	$1.335 \times 10^{-1}$	$2.517 \times 10^{-2}$
0.5	$6.030 \times 10^{-3}$	$1.307 \times 10^{-1}$	$1.231 \times 10^{-2}$
1	$1.234 \times 10^{-2}$	$1.275 \times 10^{-1}$	$1.528 \times 10^{-2}$
5	$1.015 \times 10^{-2}$	$4.163 \times 10^{-2}$	$1.513 \times 10^{-1}$
10	$2.101 \times 10^{-2}$	$2.082 \times 10^{-2}$	$4.041 \times 10^{-2}$
20	$3.372 \times 10^{-2}$	$2.517 \times 10^{-2}$	$4.041 \times 10^{-2}$
30	$5.132 \times 10^{-2}$	$3.055 \times 10^{-2}$	$4.940 \times 10^{-1}$
50	$4.715 \times 10^{-2}$	$3.753 \times 10^{-1}$	$2.751 \times 10^{-1}$
75	$2.347 \times 10^{-1}$	$2.307 \times 10^{-1}$	$2.843 \times 10^{-1}$
100	$2.917 \times 10^{-1}$	$2.646 \times 10^{-1}$	$6.265 \times 10^{-1}$
125	$4.258 \times 10^{-1}$	$4.163 \times 10^{-1}$	$5.346 \times 10^{-1}$
150	$4.979 \times 10^{-1}$	$8.008 \times 10^{-1}$	$4.537 \times 10^{-1}$
200	$8.737 \times 10^{-2}$	$7.638 \times 10^{-1}$	$6.331 \times 10^{-1}$

**Table S5.** The RSD value of peak current in each day for CAs/GCE-Fe-1000.

Day	RSD (%)
1	$1.589 \times 10^{-1}$
2	$3.129 \times 10^{-1}$
3	$1.213 \times 10^{-1}$
4	$1.993 \times 10^{-1}$
5	$1.836 \times 10^{-1}$
6	$1.520 \times 10^{-1}$
7	$9.445 \times 10^{-2}$