*Supporting Information*

# Facile Functional Carbon Nanotube Fiber for In Vivo Monitoring NO in a Rat Brain Followed by Cerebral Ischemia

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1. CVs obtained at CNF/hemin/Nafion microelectrode at different scan rates and the relationship between peaks current and scan rate (Figure S1).

2. TEM characterization of MWCNT in CNF before and after heating treatment (Figure S2).

3. The comparison of DPVs obtained at CF/hemin/Nafion and CNF/hemin/Nafion microelectrodes (Figure S3).

4. Response time of CNF/hemin/Nafion for NO (Figure S4).

5. The comparison of performance characteristics of various NO sensors (Table S1).

6. Stability (Figure S5).

7. DPVs after microinjection of aCSF into rat brain (Figure S6).

**1. CVs obtained at CNF/hemin/Nafion microelectrode at different scan rates and the relationship between peaks current and scan rate.**

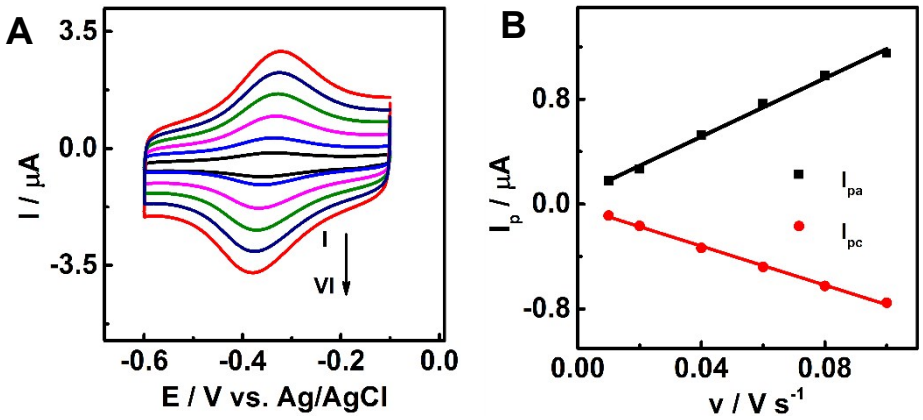


**Fig. S1.** (A) CVs obtained at CNF/hemin/Nafion microelectrode in $N_2$-saturated aCSF (pH 7.4) at different scan rates: (I) 0.05, (II) 0.2, (III) 0.4, (IV) 0.6, (V) 0.8, and (VI) 1.0 V·$s^{-1}$. (B) The linear relationship between peak current of $Fe^{2+/3+}$ in hemin and scan rate.

**2. TEM characterization of MWCNT in CNF before and after heating treatment.**

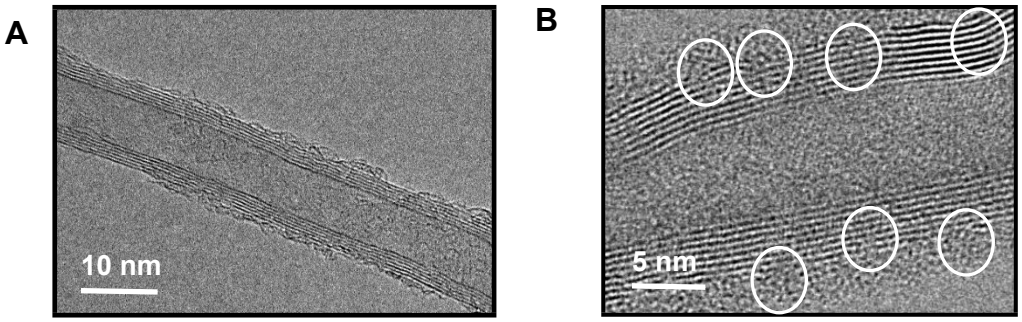


**Figure S2.** TEM images of (A) MWCNT in CNF, and (B) MWCNT in CNF after heating treatment.

**3. The comparison of DPVs obtained at CF/hemin/Nafion and CNF/hemin/Nafion microelectrodes**

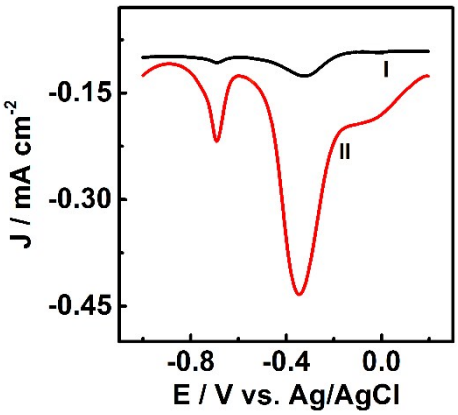


**Fig. S3.** DPVs obtained at CF/hemin/Nafion (I) and CNF/hemin/Nafion (II) in aCSF (pH 7.4) with 400 nM NO.

**4. Response time of CNF/hemin/Nafion for NO**

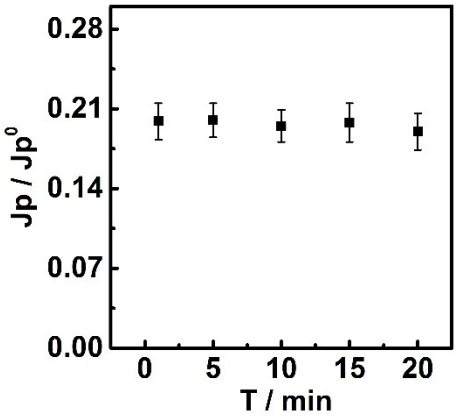


**Fig. S4.** The response time of CNF/hemin/Nafion for aCSF (pH 7.4) containing 500 nM NO.

**5. The comparison of performance characteristics of various NO sensors.**

**Table S1**. The comparison of performance characteristics of various NO sensors.

| Electrode | $E_p$ (vs. Ag/AgCl) | Linear range (μM) | Sensitivity (nA/μM) | Detection limit (nM) | Reference |
|---|---|---|---|---|---|
| CFE | -1.2 | ＜50 | 0.018 | $10^4$ | (S1) |
| CFE/Nafion | -1.35 | 2-10 | - | - | (S2) |
| GCE/Cr(v-tpy) | -0.9 | 10-40 | 50 | 500 | (S3) |
| GCE/LRP/Nafion | -0.48 | 0.8-63.3 | 300 | 15.6 | (S4) |
| GCE/Hb/DDAB | -1.02 | 5-25 | - | - | (S5) |
| PGE/Hb/DNA | -0.73 | 16.3-163 | 6.2 | 2900 | (S6) |
| AuDE/4MP/Cyt C | 0.0 | 1-4 | - | - | (S7) |
| CFM/hemin/CNT/chi | -0.76 | 0.25-1 | 1.72 | 25 | (S8) |
| Hb–CS/GR- CTAB/GCE | -0.70 | 0.0225-2.64 | 615 | 6.75 | (S9) |
| Hb/Au/CPE | -0.86 | 0.9-300 | 38 | 100 | (S10) |
| CAS/SOD/MP/MWCNT-PTTCA/AuNPs | -0.75 | 1.0-40 | 1200 | 4.3 | (S11) |
| Cyt. c /DNA /GCE | -0.65 | 0.6-8 | 104 | 100 | (S12) |
| DDAB/Hb/GCE | -1.0 | 0.80-68 | 600 | 63 | (S13) |
| The present sensor | -0.68 | 0.02-1 | 3600 | 10 | |

All abbreviations in Table S1: CFE: Carbon fiber electrode; GCE: Glassy carbon electrode; v-tpy—4’-vinyl-2, 2’, 6’, 2’’-terpyridyl; LRP: lead-ruthenium pyrochlor; Hb—hemoglobin; DDAB: dimethyldidodecylammonium bromide; PGE: pyrolytic graphite electrode; Au DE: gold disk electrode; 4MP: 4-mercaptopyridine; Cyt. C: cytochrome C; chi: Chitosan; CS: Chitosan; GR: graphene; CTA: hexadecyltrimethylammonium bromide; CPE: carbon paste electrode; CAS: Catalase; SOD: superoxide dismutase; MP: microperoxidase; PTTCA: poly-5, 2’, 5’, 2’’-terthiophene-3’-carboxylic acid; Au NPs: Au nanoparticles. -: not mentioned.

References:

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**6. Stability**

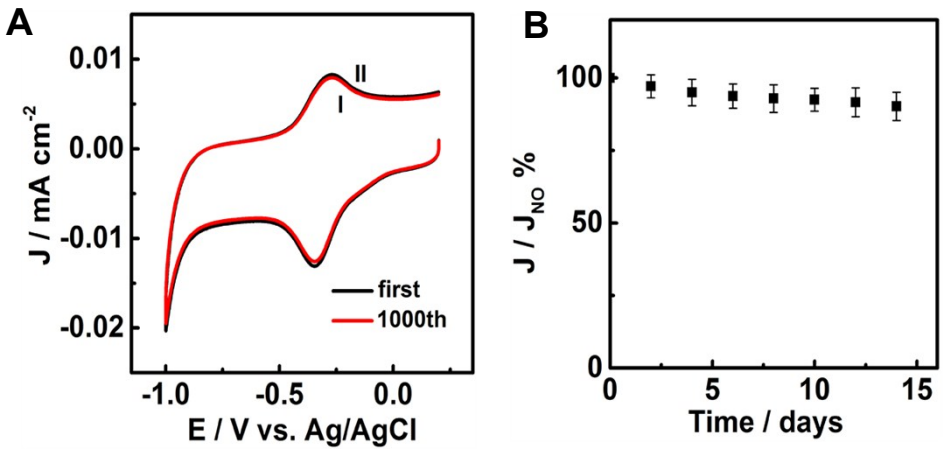


**Fig. S5.** (A) CVs obtained at CNF/hemin/Nafion microelectrode in $N_2$-saturated aCSF (pH 7.4) (I) before the first cycle and (II) after the 1000th cycles. Scan rate: 0.05 V $s^{-1}$. (B) The stability of CNF/hemin/Nafion microelectrode stored in PBS solution at 4 ˚C for two weeks.

**7. DPVs after microinjection of aCSF into rat brain**

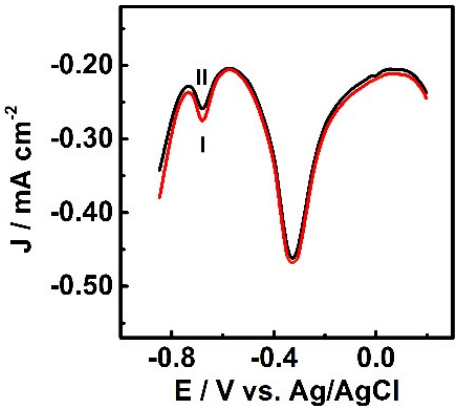


**Fig. S6.** DPV responses recorded at the CNF/hemin/Nafion microelectrode in the hippocampus of the Wister rat brain before (I) and after (II) microinjection of aCSF (pH 7.4) for 20 min.