Electronic Supplementary

An electrochemical impedimetric platform formed by a CNT@UiO-66 nanocomposite for quantitative analysis of oxytetracycline

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1. Materials and methods

Reagents and Chemicals used in this work were obtained from commercial companies. The aptamer was purchased from Shanghai Sangon Biotechnology Co., Ltd. with 5′-GGA ATT CGC TAG CAC GTT GAC GCT GGT GCC CGG TTG TGG TGC GAG TGT TGT GTG GAT CCG AGC TCC ACG TG-3′. Bruker ALPHA-T FT-IR spectrometer was used to collect Fourier transform infrared (FT-IR) spectra (FT-IR instrument, Bruker, Bruker ALPHA-T, Germany). Rigaku SmartLab was performed to acquire powder X-ray diffraction (PXRD) data (PXRD instrument, Rigaku, Rigaku SmartLab, Japan). Transmission electron microscope (TEM) images were measured using Tecnai G^2 F20 S-TWIN (TEM instrument, FEI, Tecnai G^2 F20 S-TWIN, United States of America). N_2 isotherm was carried out on Micromeritics ASAP 2020 (N_2 isotherm instrument, Micromeritics, Micromeritics ASAP 2020, United States of America).

2. Electrochemical measurements

Electrochemical impedance spectroscopy (EIS) data were collected on CHI440C workstation (Shanghai Chenhua). There are three electrodes in the electrochemical sensing system, including gold electrode as a working electrode, Ag/AgCl with saturated KCl as a reference electrode, and Pt slide as a counter electrode. KCl (100 mM) and $[Fe(CN)_6]^{3-/4-}$ (0.5 mM) were mixed together as an electrolyte.

3. Different OTC concentrations in real samples

The Songhua river was collected from Jilin Province, China. The sample was firstly filtered to obtain the pretreated water, which was further centrifugated at 10,000 rpm for 15 min to obtain the upper supernatant. Then it was treated by passing through a 0.2 μm membrane to

acquire the test sample. The final test samples were diluted 500 times by ultrapure water. Different OTC amounts were used to obtain the test samples.

4. Figures and Tables

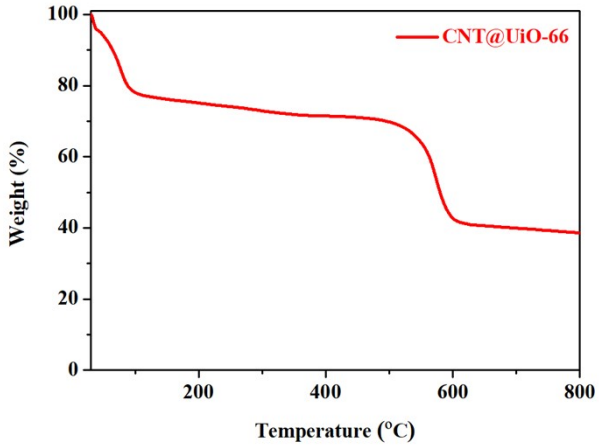

Fig. S1. The TGA curve of CNT@UiO-66.

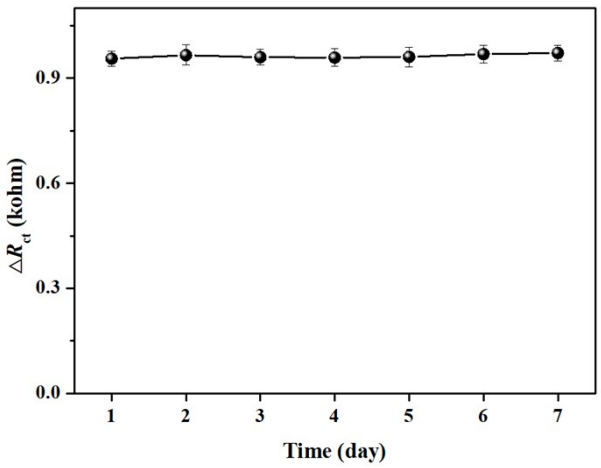

Fig. S2. The stability of the CNT@UiO-66-based electrochemical aptasensor for 7 days.

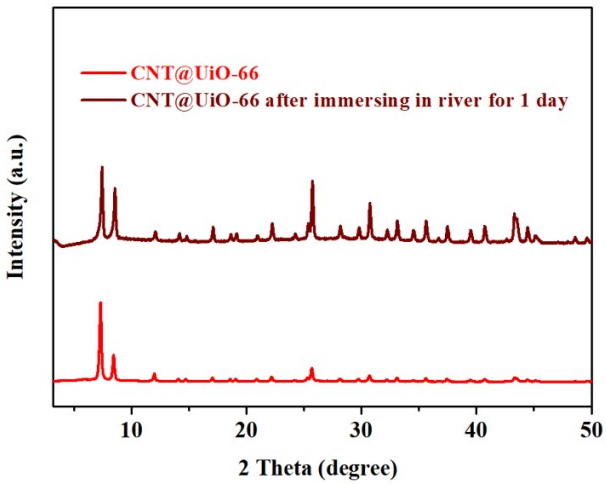

Fig. S3. The PXRD patterns of CNT@UiO-66 before and after immersing in river for 1 day.

Table S1. Detecting OTC using different materials and methods.

Material	Detection method	LOD (nM)	Ref.
GO-adenosine hydrogel	Fluorescent assay	54.3	[1]
CD@AMP/Eu NCPs	Fluorescence	25	[2]
GQDs/CdTe@MIPs	Fluorescence	3.5	[3]
DNA-functionalized Cu(HBTC)	Fluorescence	0.869	[4]
ITO/TiO_2/H-DNA@QD	Photoelectrochemical spectroscopy	0.19	[5]
Au/$BaTiO_3$/$Cu_3Mo_2O_9$	Photoelectrochemical	46 pM	[6]
Aptamer probe	Microchip electrophoresis	1.95 pM	[7]
AuNPs/cMWCNTs/cDNA@thionine	Differential pulse voltammetry	67.30 fM	[8]
Fe_3O_4@mesoporous carbon	EIS	58.6 fM	[9]
Ce-MOF@MCA500	EIS	37.79 fM	[10]
Au@POF	EIS	6.93 fM	[11]
CNT@UiO-66	EIS	3.21 fM	This work

5. References

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