

## Supplementary Information

### Simultaneous detection of tyrosine and uric acid in sweat by CoWO<sub>4</sub>@CNT with hydrogel modified electrochemical biosensor

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† **equivalent to the same contribution.**

## **Materials and instruments**

### **Instruments**

The morphology and structure of the synthesized materials were analyzed using the FEI Quattro S (ESEM). The composition and chemical states of the materials were determined using the Thermo Fisher Scientific ESCALAB 250Xi multifunctional X-ray photoelectron spectroscopy (XPS). The electrochemical performance was evaluated using the CHI 660E electrochemical workstation (CH Instruments, Shanghai, China) in a three-electrode configuration through cyclic voltammetry (CV), chronoamperometry (i-t), and differential pulse voltammetry (DPV) methods.

### **Materials**

Uric acid (UA), tyrosine (Tyr) and were purchased from Solarbio (Beijing, China). Glucose (Glu), urea, sodium chloride (NaCl, 99%), potassium chloride (KCl, 99%), calcium chloride (CaCl<sub>2</sub>, 99%), methanol, acetone, and carboxylated multi-walled carbon nanotubes (CNT-COOH) were provided by Aladdin. Cobalt nitrate hexahydrate (Co(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O), sodium tungstate dihydrate (Na<sub>2</sub>WO<sub>4</sub>·2H<sub>2</sub>O) were obtained from Thermo Fisher Scientific (China). Phosphate buffered saline (PBS) was purchased from Beijing Dingguo Changsheng Biotechnology Co.

Table S1 Sweat absorption rate of different DA/DM Hydrogels

DA/DM	Time (Min)						Sweat absorption rate at 40 minutes (%)
	Weight (g)	0	10	20	30	40	
8	0.60	0.96	1.11	1.22	1.29	215.47	
4	0.92	1.64	1.87	1.99	2.08	226.04	
2	0.85	1.29	1.42	1.55	1.70	200.57	
0	0.78	1.16	1.33	1.47	1.55	198.47	

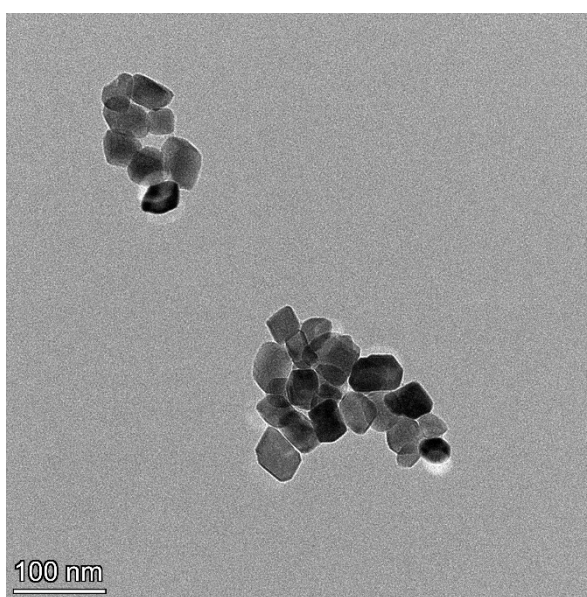


Figure S1 HR-TEM images of  $\text{CoWO}_4$  (bar: 100 nm)

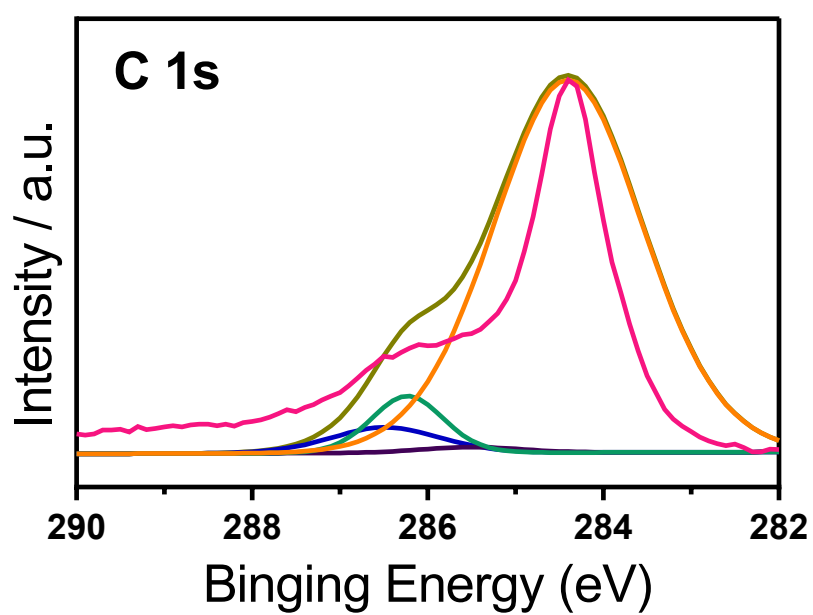


Figure S2 XPS spectra corresponding to C 1S.

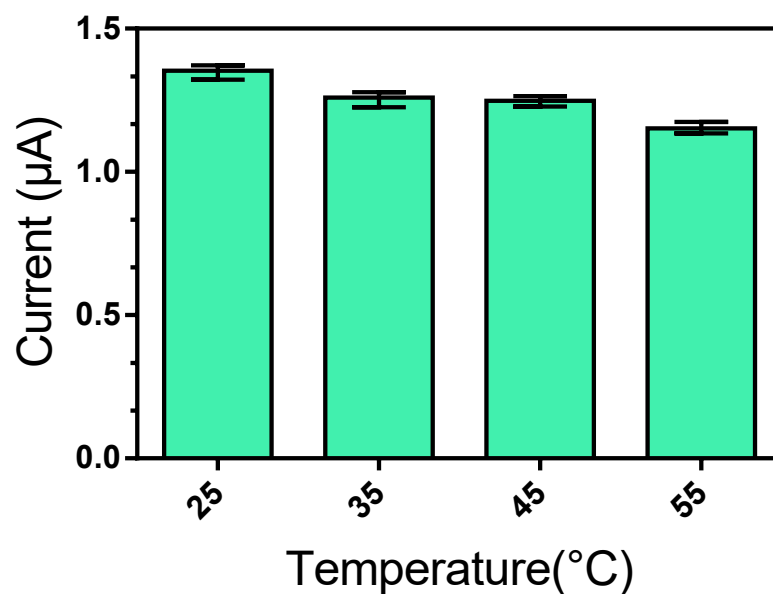


Figure S3 Current at different temperatures accordingly.

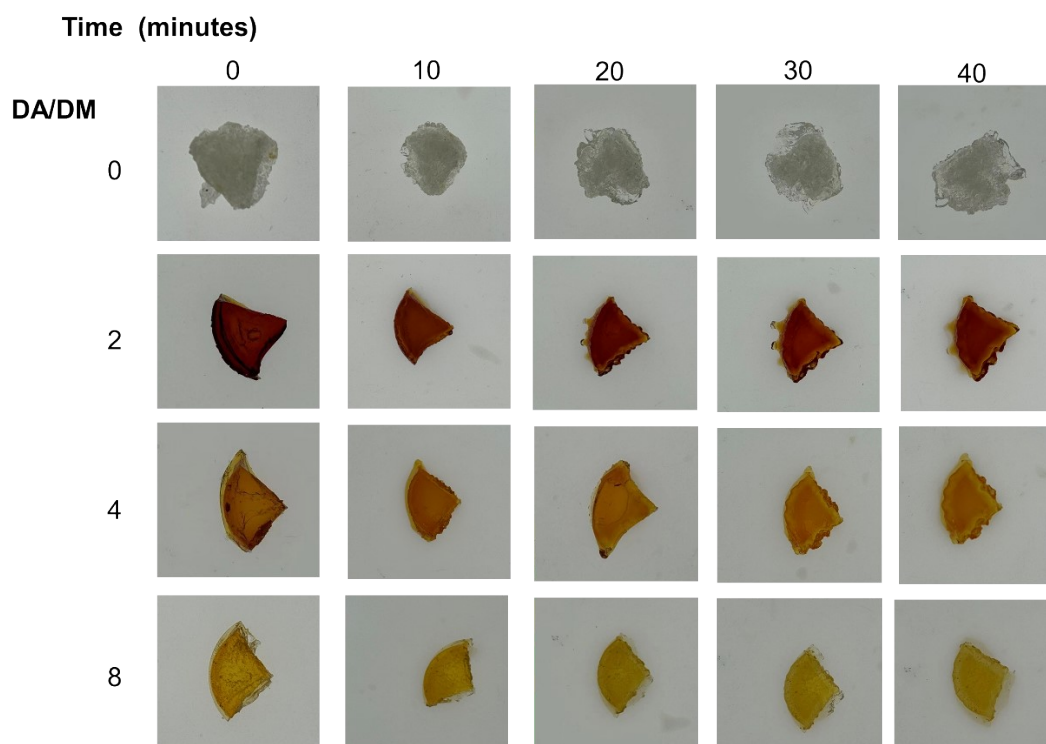


Figure S4 Swelling of different DA/DM hydrogels from 0 to 40 minutes of sweat absorption.