Supplementary Information (SI) for Analytical Methods. This journal is © The Royal Society of Chemistry 2025

# **Supplementary Material**

Title:

#### Triazine-based COF/CNTs electrochemical sensor for simultaneous detection of

#### sunset yellow and tartrazine in food samples

Chih-Ling Yeh, Yu-Jun Ceng, Mu-Xiang Huang, Antonia Trisha Zac R, Bing-Chen Wu, Hui-Ling Lee\*

\*Corresponding authors: Hui-Ling Lee, Ph.D.

Department of Chemistry, Fu Jen Catholic University, Xinzhuang District, New Taipei City 24205 Taiwan.

Tel: 886-2-29053573; Fax: 886-2-29023209; e-mail: 076308@mail.fju.edu.tw

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#### I. Figure Section



Fig. S1 Morphology of COF/CNTs. (a) SEM and (b) TEM image.



Fig. S2 Different amounts of COF were added to 1 mg·mL<sup>-1</sup> CNTs. The amounts of COF added from left to right were 0, 0.5, 1.0, 1.5, 2.0 and 2.5 mg·mL<sup>-1</sup>.



Fig. S3 Different amounts of CNTs were added to 1 mg·mL<sup>-1</sup> COF. The amounts of CNTs added from left to right were 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, and 1.5 mg·mL<sup>-1</sup>.



**Fig. S4** Corresponding relationships between peak current and (a) COF dosage (b) CNTs dosage (c) adsorption time (d) potentials.



**Fig. S5** The proposed reaction mechanisms for oxidation of SY and Tz on COF/CNTs/SPCE.



**Fig. S6** (a–b) CV of COF/CNTs/SPCE in 0.1 M PBS (pH = 6.0) containing SY and Tz at different scan rates, respectively. Linear relationship between peak oxidation current and scan rate of (c) SY and (d) Tz.



**Fig. S7** Linear relationships between peak oxidation current versus  $v^{0.5}$  for (a) SY and (b) Tz. Linear relationships between peak oxidation current versus log (*v*). for (c) SY and (d) Tz.



**Fig. S8** Histogram of reproducibility test. (n = 3 for each electrode)



**Fig. S9** Histogram of stability test. (n = 3 for each day)



**Fig. S10** DPV peak currents of the COF/CNTs/SPCE for 100  $\mu$ M sodium chloride (NaCl), potassium chloride (KCl), zinc chloride (ZnCl<sub>2</sub>), calcium chloride (CaCl<sub>2</sub>), iron(III) chloride (FeCl<sub>3</sub>), magnesium chloride (MgCl<sub>2</sub>), nitrate (NO<sub>3</sub><sup>-</sup>), sulfate (SO<sub>4</sub><sup>2-</sup>), citric acid (CA), ascorbic acid (AA), benzoic acid (BA), glycine (Gly), glucose (Glu) and saccharose (Sac).

## **II.** Table Section

Materials	Electrochemical surface area (cm <sup>2</sup> )	$R_{ct}(k\Omega)$
SPCE	0.088	21.76
COF	0.076	21.50
CNTs	0.080	15.36
COF/CNTs	0.120	10.50

 $\label{eq:table_state} \textbf{Table S1} \ R_{ct} \ \text{and electrochemical surface areas of different materials}.$