Supplementary Information (SI) for Analytical Methods.

Fabrication and properties of temperature-responsive imprinted sensor based on fluorescently-labeled yeast cells via MVL ATRP

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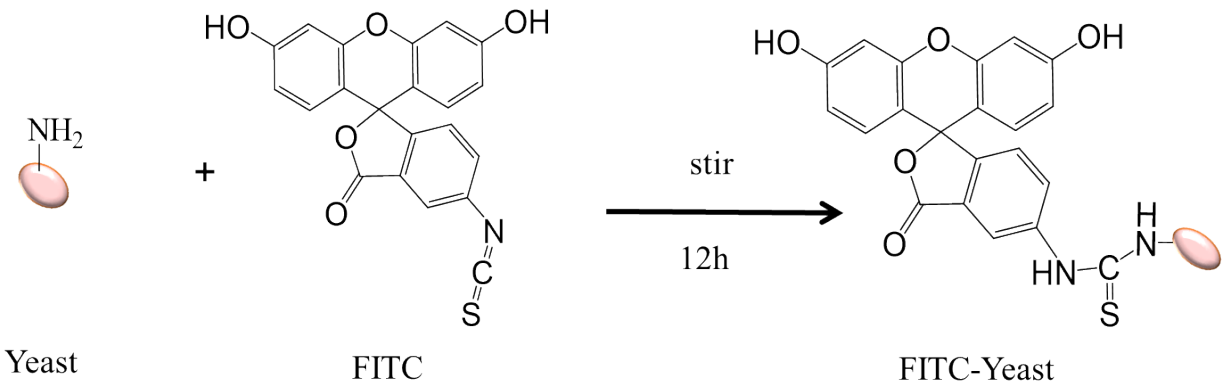

Fig. S1 Schematic of FITC-Yeast synthesis

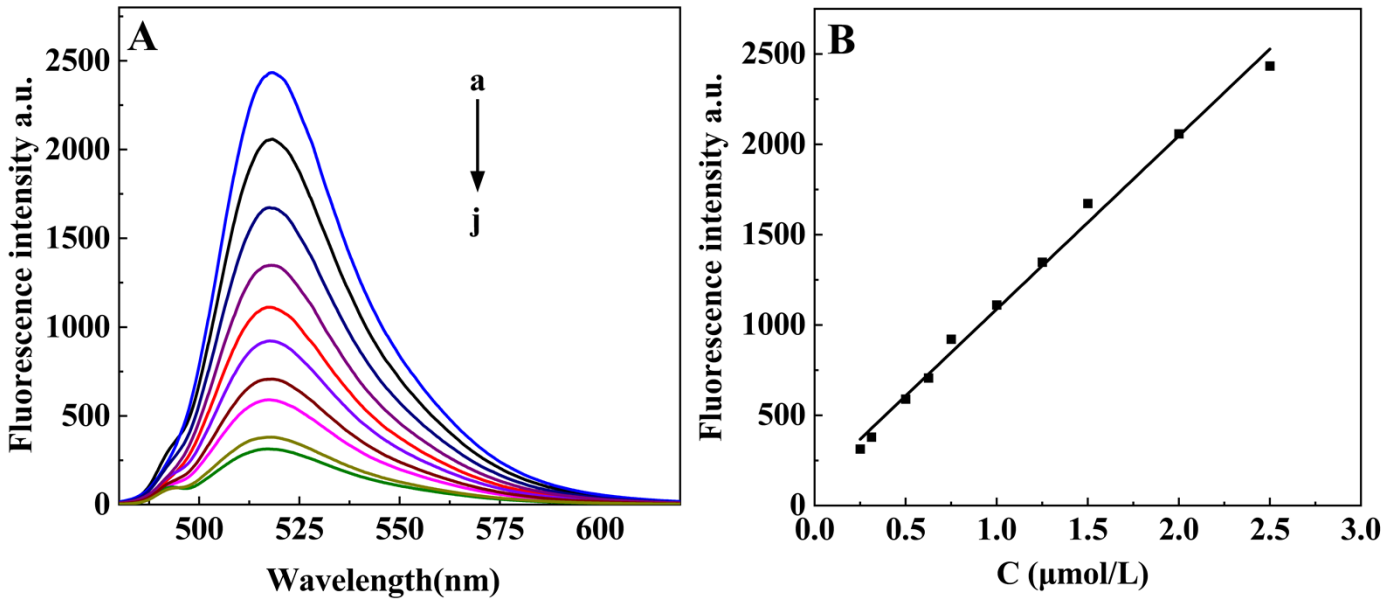

Fig. S2 Fluorescence spectra of FITC solutions with different concentrations (concentration of FITC solutions from Curve a to Curve j were 2.50, 2.00, 1.50, 1.25, 1.00, 0.75, 0.625, 0.50, 0.3125, 0.25 μmol L^{-1}) (A). Equation of linear regression (B)

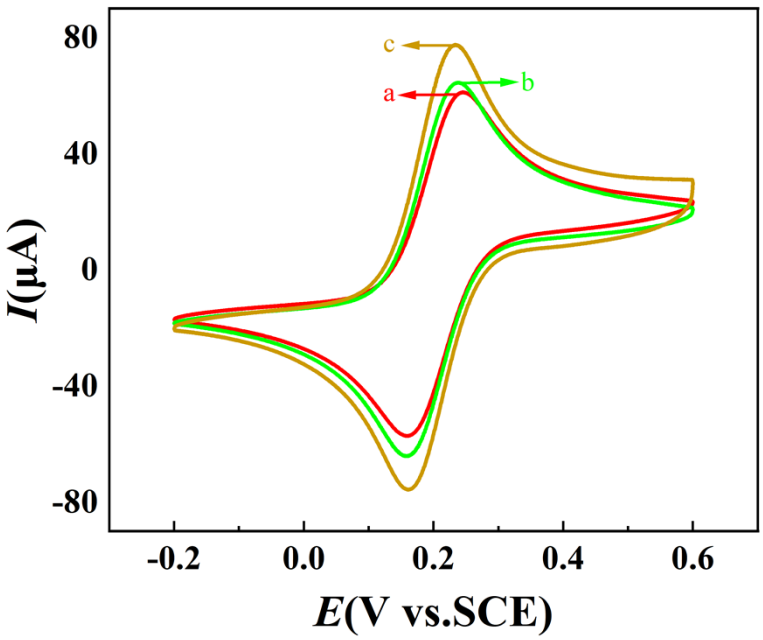

Fig. S3 CV curves of different modified electrode (a-AuNPs/Au, b-$Ti_3C_2T_x$/AuNPs/Au, c-AuNPs/$Ti_3C_2T_x$/AuNPs/Au, the electrolyte solution was 0.1 mol L^{-1} KCl+5 mmol L^{-1} $[Fe(CN)_6]^{3-/4-}$in PBS)

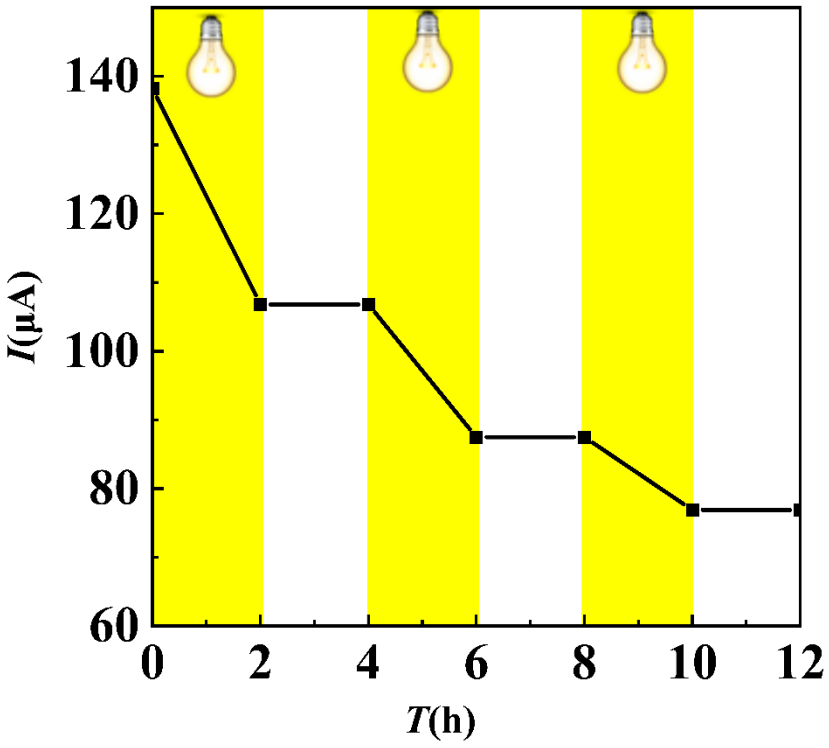

Fig. S4 The "on-off" experiment

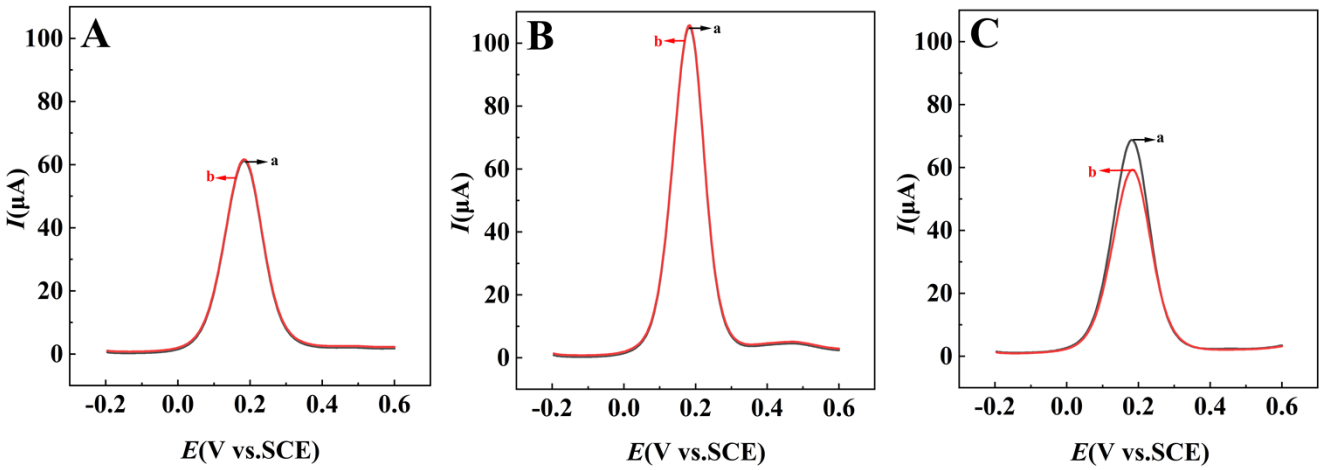

Fig. S5 The DPV signal response of different modified electrodes: (A) AuNPs/Au, (B) AuNPs/$Ti_3C_2T_x$/AuNPs/Au, (C) CIPs/AuNPs/$Ti_3C_2T_x$/AuNPs/Au:a-blank, b-after combining with yeast cell solution (1.0×10^6 cells mL^{-1})

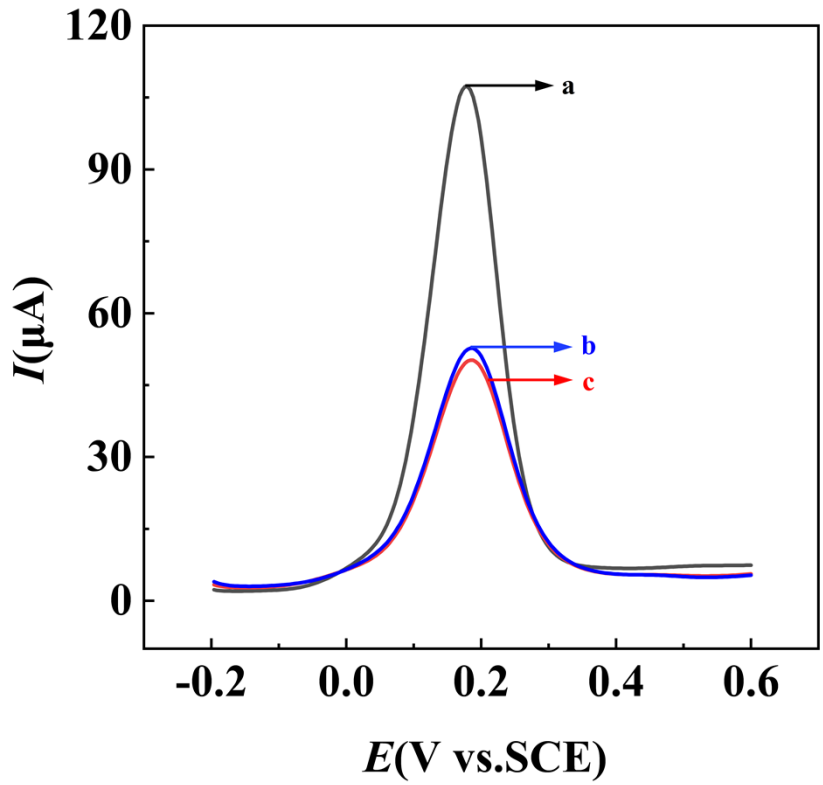

Fig. S6 DPV curves of imprinted polymer modified electrode: blank (a), mixed solution (b) and yeast cell (c) detection by CIPs/AuNPs/$Ti_3C_2T_x$/AuNPs/Au

Table S1 Comparison of the linear response range of CIPs/AuNPs/$Ti_3C_2T_x$/AuNPs/Au and other materials for the determination of yeast cell[a]

Sensor	Analyte	Detection Method	Linear Response Range (cells mL^{-1})	Detection Limit (cells mL^{-1})	Reference
Imprinted polymer-modified screen-printed carbon electrode	Yeast cells	Thermal resistance method	1×10^2 - 1×10^7	22	1
Polyurethane imprinted polymer		Impedance spectroscopy	3×10^1 - 1×10^5	30	2
Polydopamine imprinted polymer		Chronopotentiometry	1×10^2 - 1.5×10^2	50	3
CIPs/AuNPs/$Ti_3C_2T_x$/AuNPs/Au		DPV	1×10^2 - 1×10^9	11	**This Work**

[a]The data units are unified for ease of comparison

Table S2 Determination in real samples (n=3)

Analyte	Original Concentration (cells mL^{-1})	Added Yeast Cell Concentration (cells mL^{-1})	Detected Concentration (cells mL^{-1})	Recovery Rate (%)	RSD (%)
Yeast Cells	1.0×10^4	1.0×10^4	2.08×10^4	108.0	2.03
		2.0×10^4	2.97×10^4	98.5	3.25
		3.0×10^4	4.05×10^4	101.7	2.67

References

1 O. Jamieson, K. Betlem, N. Mansouri, R. D. Crapnell, F. S. Vieira, A. Hudson, et al, Electropolymerised molecularly imprinted polymers for the heat-transfer based detection of microorganisms: A proof-of-concept study using yeast, *Therm. Sci. Eng. Prog.*, 2021, **24**, 100956.

2 W. Stilman, D. Yongabi, S. B. Sichani, F. Thesseling, O. Deschaume, T. Putzeys, et al, Detection of yeast strains by combining surface-imprinted polymers with impedance-based readout, *Sens. Actuators, B*, 2021, **340**, 129917.

3 R. Liang, J. Ding, S. Gao, W. Qin, Mussel-inspired surface-imprinted sensors for potentiometric label-free detection of biological species, *Angew. Chem., Int. Ed.*, 2017, **56**(24), 6833-6837.