Supporting Information for

SiQDs-based hydrogel fiber sensor for portable, on-site β-galactosidase detection in serum

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Figure Captions

Fig. S1 Fabrication process of fluorescent fiber probe.

Fig. S2 FT-IR and XPS spectra of SiQDs. (a) FT-IR spectrum High resolution XPS spectra of SiQDs: (b) full range, (c) C1s, (d) N 1s, (e) O 1s, and (f) Si 2p.

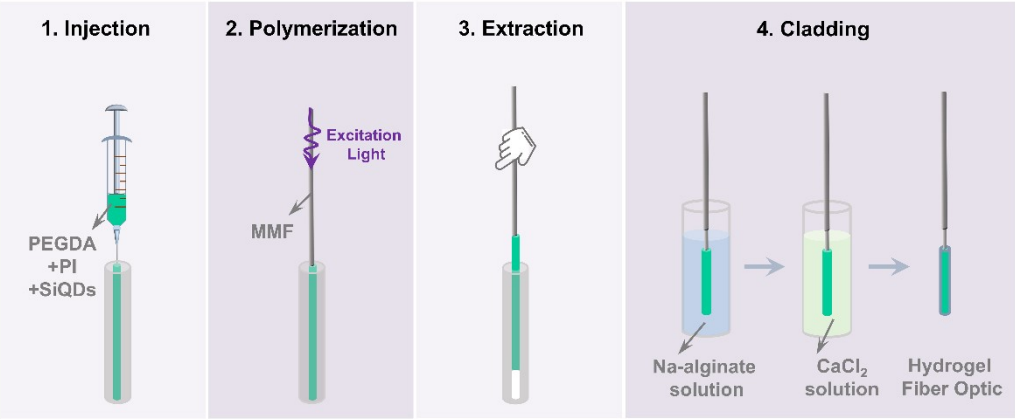
Fig. S3 Stability assessment of SiQDs under various environmental conditions: (a) irradiation time (360 nm); (b) ionic strength (NaCl concentration); (c) temperature; (d) pH value.

Fig. S4 Performance comparison of hydrogel fluorescent fiber-optic sensors prepared by repeated in situ polymerization using an identical fiber structure. (a) Fluorescence spectra; (b) fluorescence intensity.

Fig. S5 Absorbance response of the commercial β-Gal assay kit toward various β-Gal activities: (a) UV-Vis absorption spectra; (b) calibration curve of absorbance versus β-Gal activity.

Table S1 Detection β-Gal in donkey serum samples by standard recovery assay.

Table S2 Detection β-Gal in real human urine samples by standard recovery assay.



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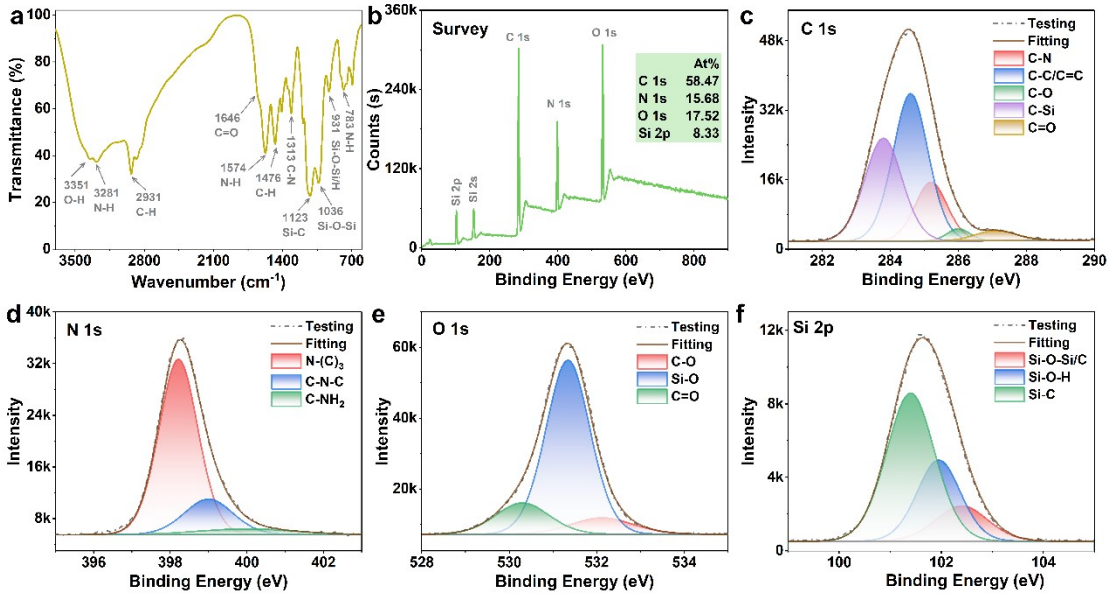

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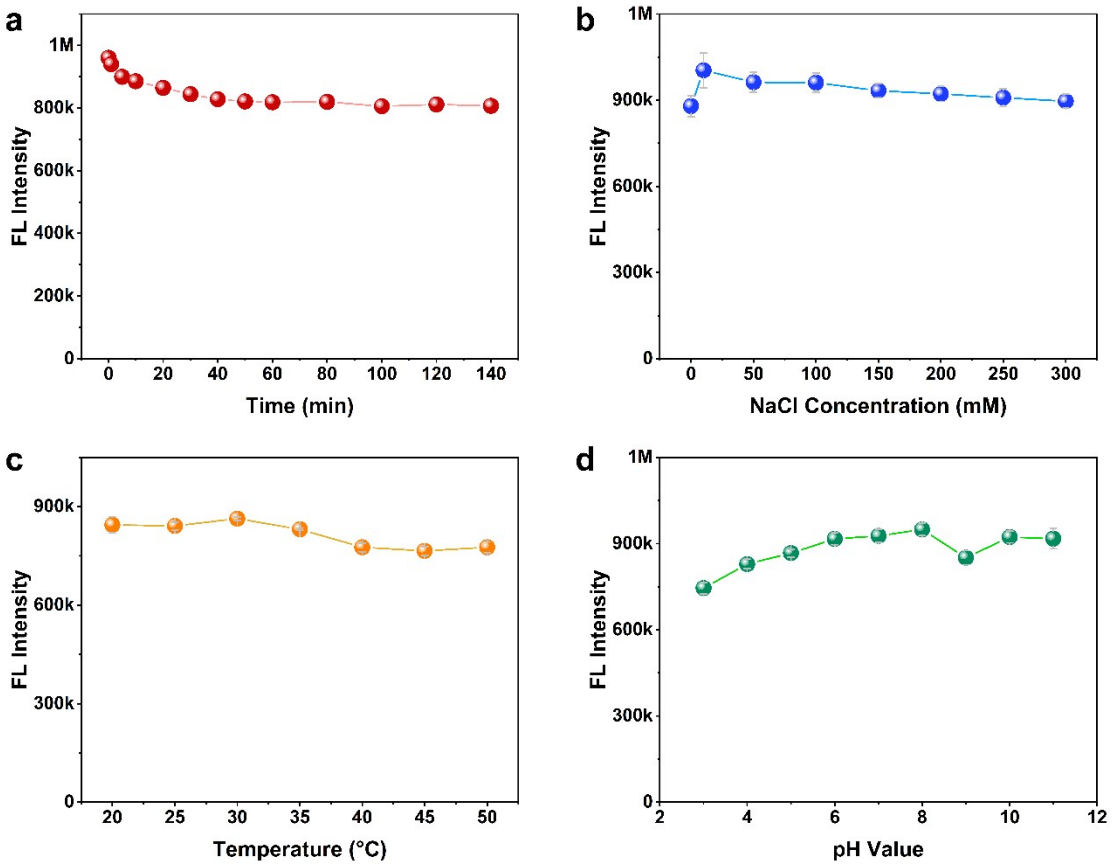

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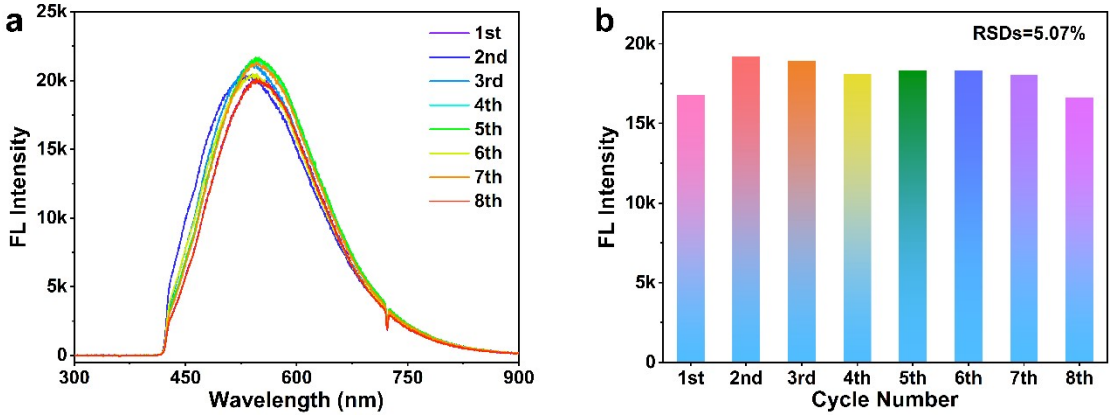

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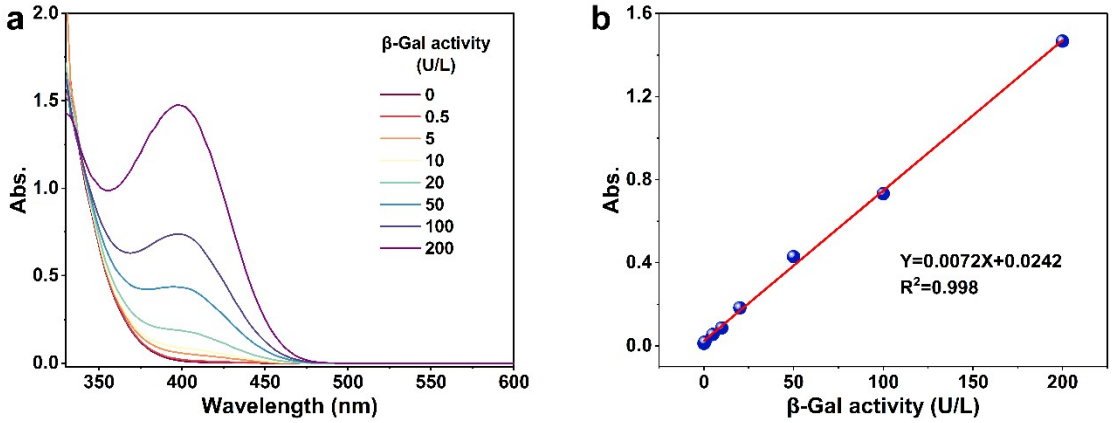

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Table S1 Detection β-Gal in donkey serum samples by standard recovery assay.

Sample	Spiked ($U \cdot L^{-1}$)	Found ($U \cdot L^{-1}$)	RSD (%)	Recovery (%)
Serum 1	0	37.36	2.11	-
	10	47.77	1.77	104.1
	20	58.74	3.50	106.9
	50	90.03	2.81	105.3
Serum 2	0	27.77	1.24	-
	10	36.038	1.09	82.6
	20	47.78	0.36	100
	50	76.37	0.24	97.2
Serum 3	0	18.32	0.19	-
	10	26.63	0.28	83.2
	20	36.52	0.38	91.0
	50	63.41	0.66	90.2

Table S2 Detection β-Gal in real human urine samples by standard recovery assay.

Sample	Spiked ($U \cdot L^{-1}$)	Found ($U \cdot L^{-1}$)	RSD (%)	Recovery (%)
	0	4.07	15.6	-
Urine 1	5	9.16	17.0	101.7
	10	12.68	11.1	86.1
	0	7.54	10.3	-
Urine 2	5	13.07	0.1	110.6
	10	17.69	0.9	101.5