

Supplementary Information

One-step rapid synthesis of fluorescent silicon nanodots for hydrogen peroxide-related sensitive and versatile assay based on inner filter effect

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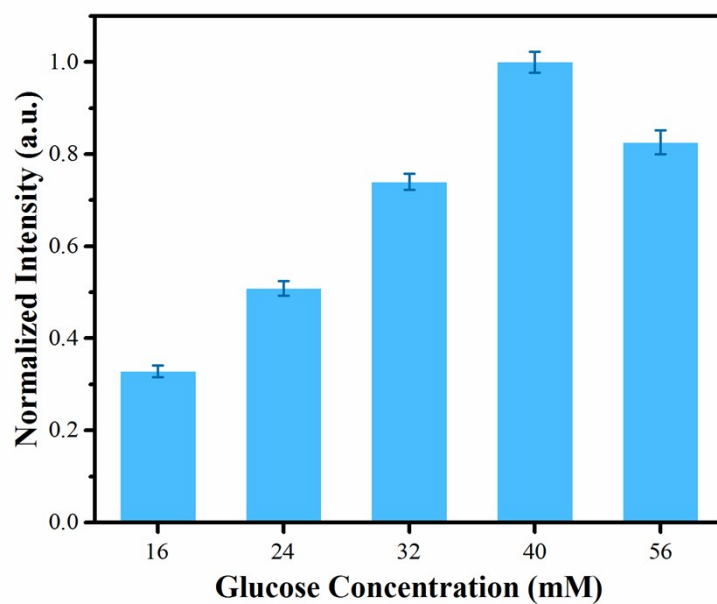


Fig. S1. Fluorescence intensity of SiNDs prepared using glucose with different concentrations.

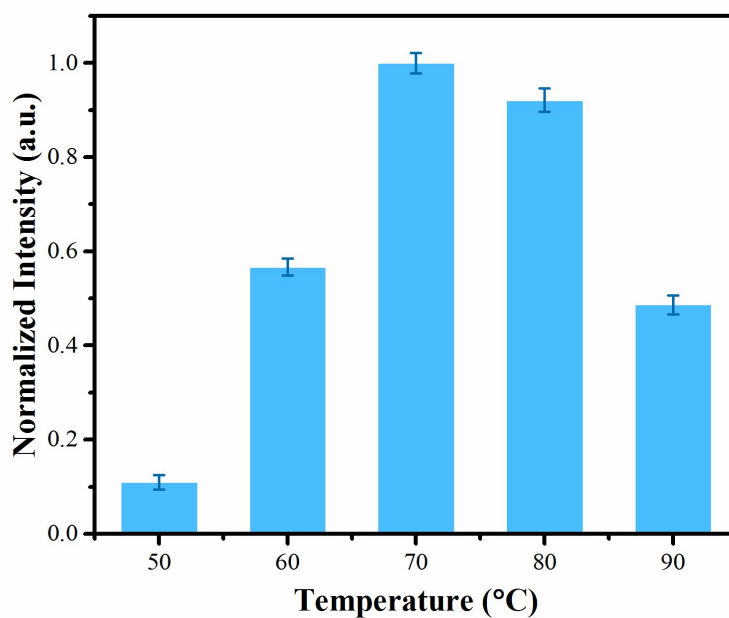


Fig. S2. Fluorescence intensity of SiNDs prepared at different temperatures.

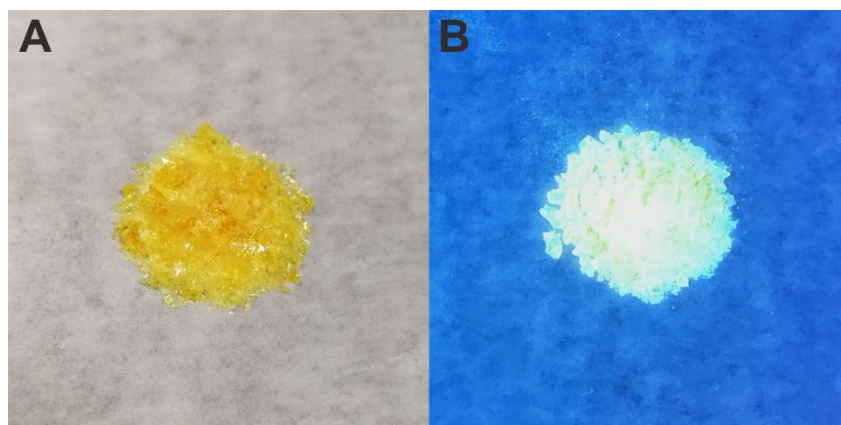


Fig. S3. Photographs of purified solid particles of SiNDs under irradiation with daylight (left) and UV light (right), respectively.

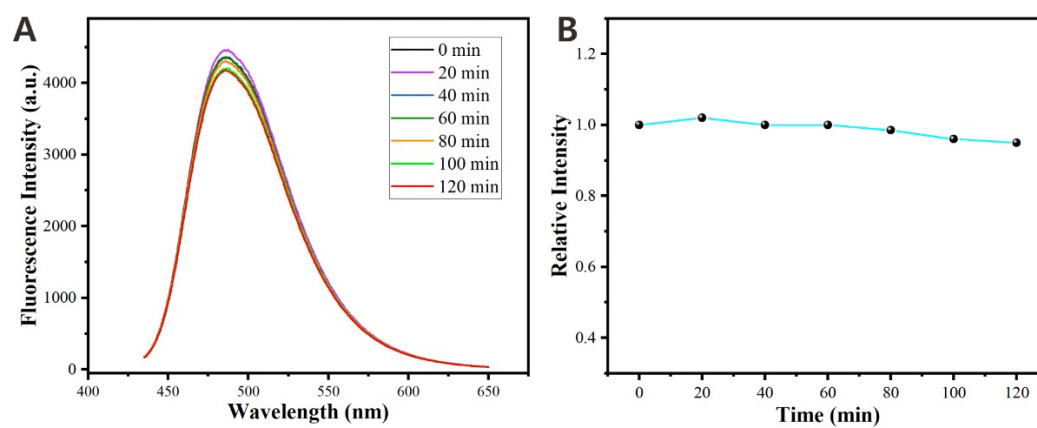


Fig. S4. (A) Fluorescence spectra of the SiNDs solution radiated by UV-light for different time. (B) Relative intensity of the SiNDs solution radiated by UV-light for different time.

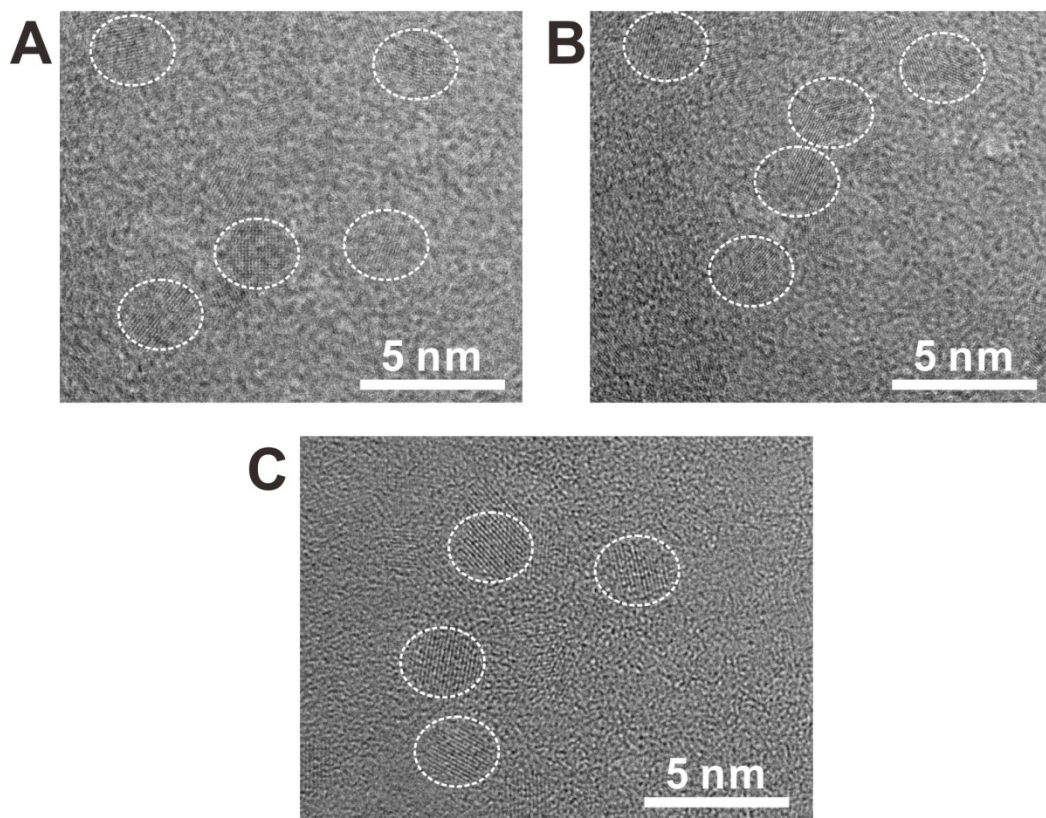


Fig. S5. HRTEM images of SiNDs mixed with MnO_4^- (A), SiNDs mixed with $\text{MnO}_4^- + \text{H}_2\text{O}_2$ (B), SiNDs mixed with $\text{MnO}_4^- + \text{glucose}$ (C).

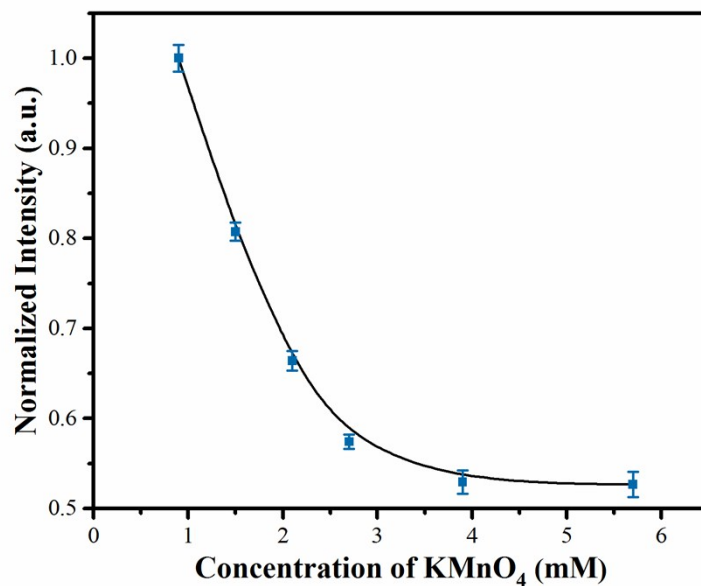


Fig. S6. Fluorescence intensity of SiNDs solution mixed with different concentrations of potassium permanganate.

Table S1 The lifetime and fluorescence intensity of SiNDs solution mixed with different concentrations of potassium permanganate: (a) SiNDs, (b) SiNDs + 80 μ M potassium permanganate, (c) SiNDs + 110 μ M potassium permanganate, (d) SiNDs + 150 μ M potassium permanganate.

Sample	Fluorescence lifetime	Fluorescence intensity	τ/τ_0	F/F_0
a	5.559	3269.39	—	—
b	4.721	2568.35	0.8493	0.7856
c	4.176	2000.37	0.7512	0.6118
d	3.913	1356.87	0.7039	0.4150

Table S2 Comparison of the method for H₂O₂ and glucose detection in this work with some previously reported strategies.

Target	Main material	LOD	Reference
H ₂ O ₂	MIL-53(Fe) nanozyme	7.5 nM	[1]
H ₂ O ₂	Maleimide-functionalized tetraphenylethene	10 nM	[2]
H ₂ O ₂	CeO ₂ nanoparticle	0.13 μM	[3]
H ₂ O ₂	Phthalic acid-Tb-Cu-MOF	0.2 μM	[4]
H ₂ O ₂	Gold nanocluster	0.8 μM	[5]
H ₂ O ₂	Upconversion nanoparticles	0.9 μM	[6]
H ₂ O ₂	Copper nanoparticle	2.6 μM	[7]
H₂O₂	Silicon nanodots	2.8 nM	This work
Glucose	Maleimide-functionalized tetraphenylethene	0.05 μM	[2]
Glucose	Graphitic C ₃ N ₄ nanosheets	0.4 μM	[8]
Glucose	Carbon nanodots	1.39 μM	[9]
Glucose	Silver nanoparticles	2.5 μM	[10]
Glucose	Upconversion nanoparticles	3.7 μM	[6]
Glucose	Copper nanoparticle	8.5 μM	[7]
Glucose	CeO ₂ nanoparticle	8.9 μM	[3]
Glucose	Silicon nanodots	0.11 μM	This work

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