

Supporting information

Highly selective uricase-based biosensing of uric acid using hydrogen peroxide sensitive poly-(vinylpyrrolidone) templated copper nanoclusters as a fluorescence probe

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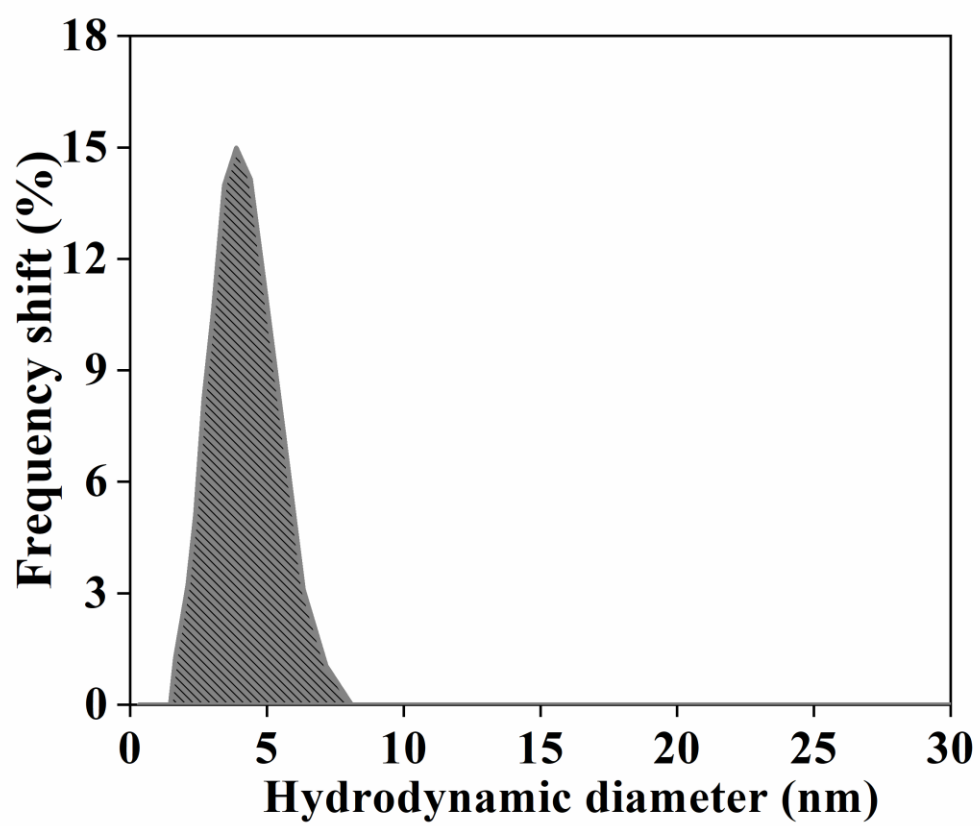


Figure S1. The DLS results for the PVP-CuNCs.

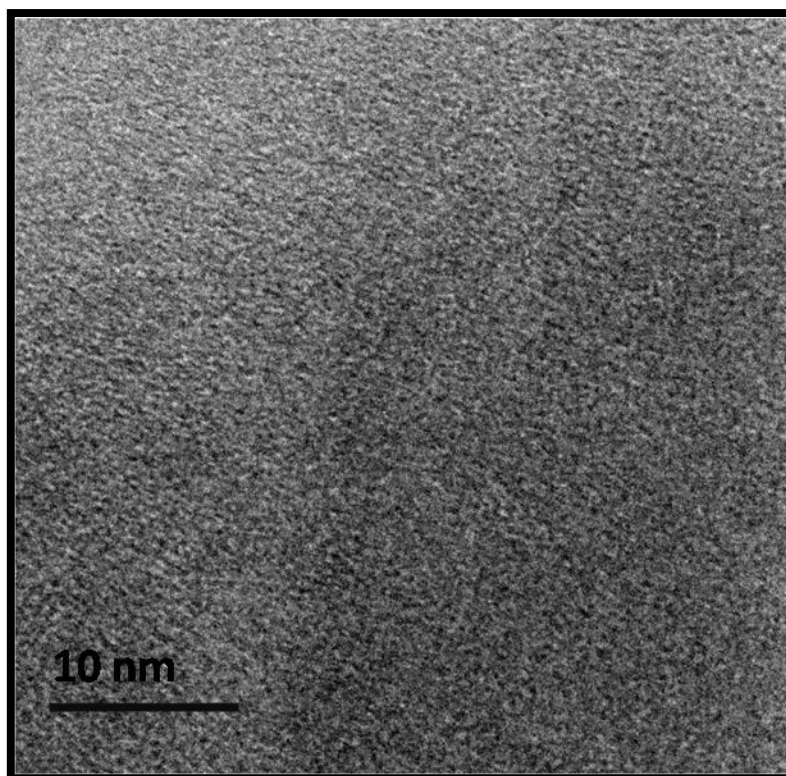


Figure S2. A HR-TEM image of PVP-CuNCs in the presence of H_2O_2 of $7.5\ \mu\text{M}$.

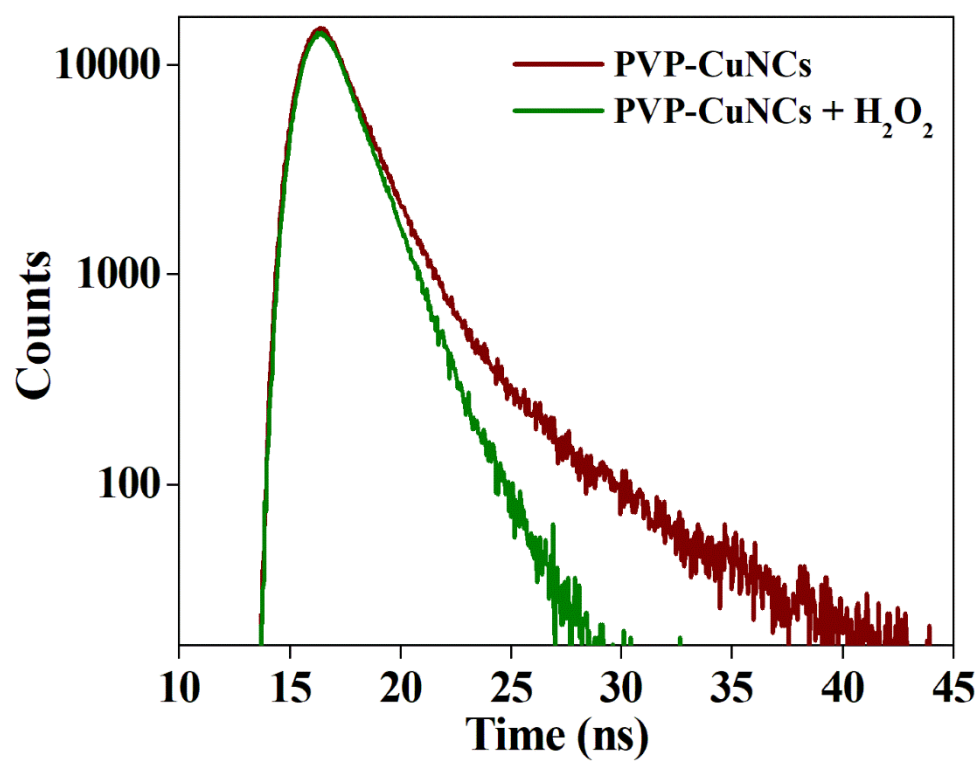


Figure S3. The temporal decay profile of the PVP-CuNCs fluorescence in the presence of H₂O₂ of 7.5 μ M.

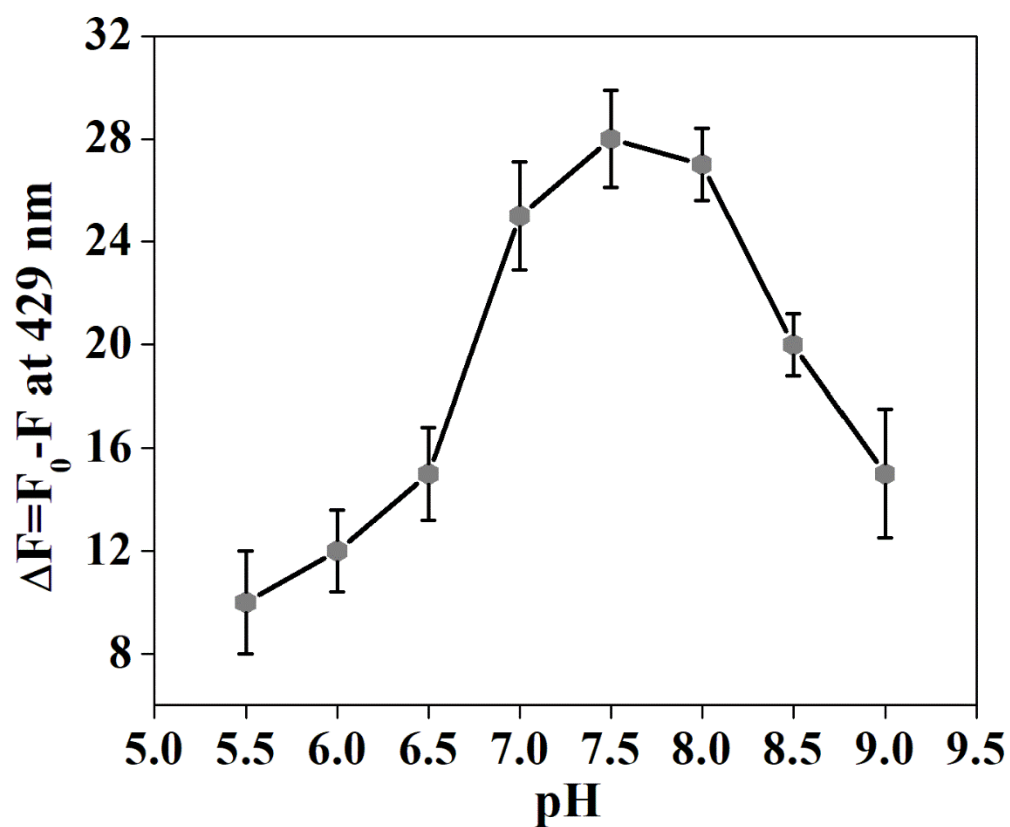


Figure S4. Effects of the pH on UA-induced fluorescence quenching. The F_0 and the F are the fluorescence intensities at the peak wavelength of 429 nm without and with UA ($1.0\mu\text{M}$), respectively. Error bars were estimated from three replicate measurements.

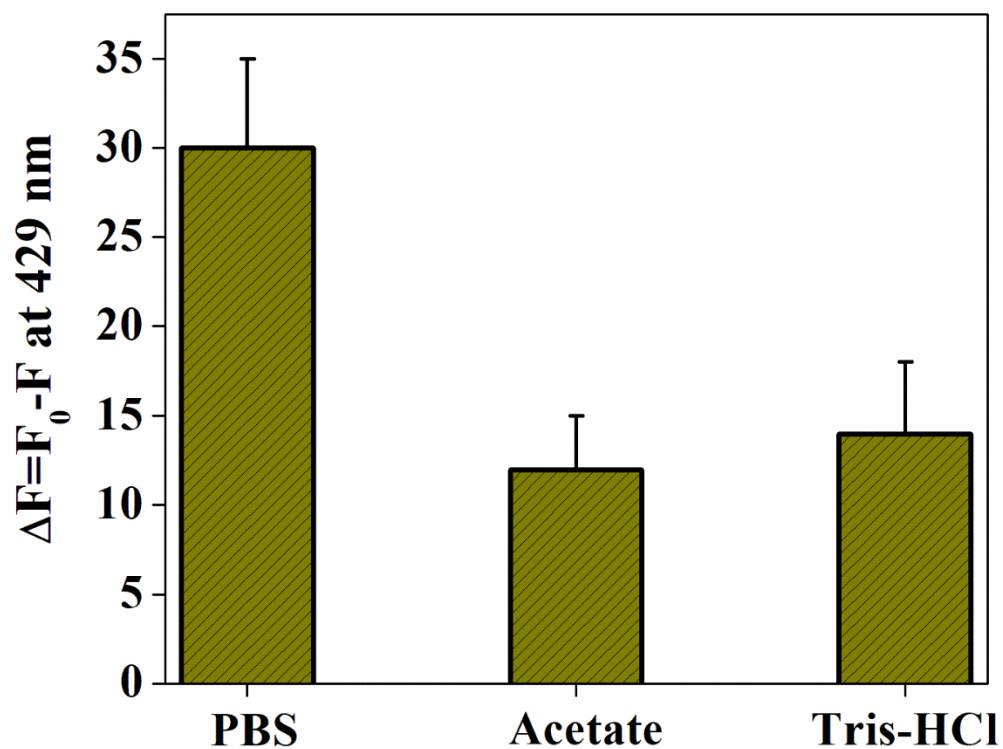


Figure S5. Effects of the buffer kind on UA-induced fluorescence quenching. The F_0 and F are the fluorescence intensities at the peak wavelength of 429 nm without and with UA (1.0 μ M), respectively. Error bars were estimated from three replicate measurements.

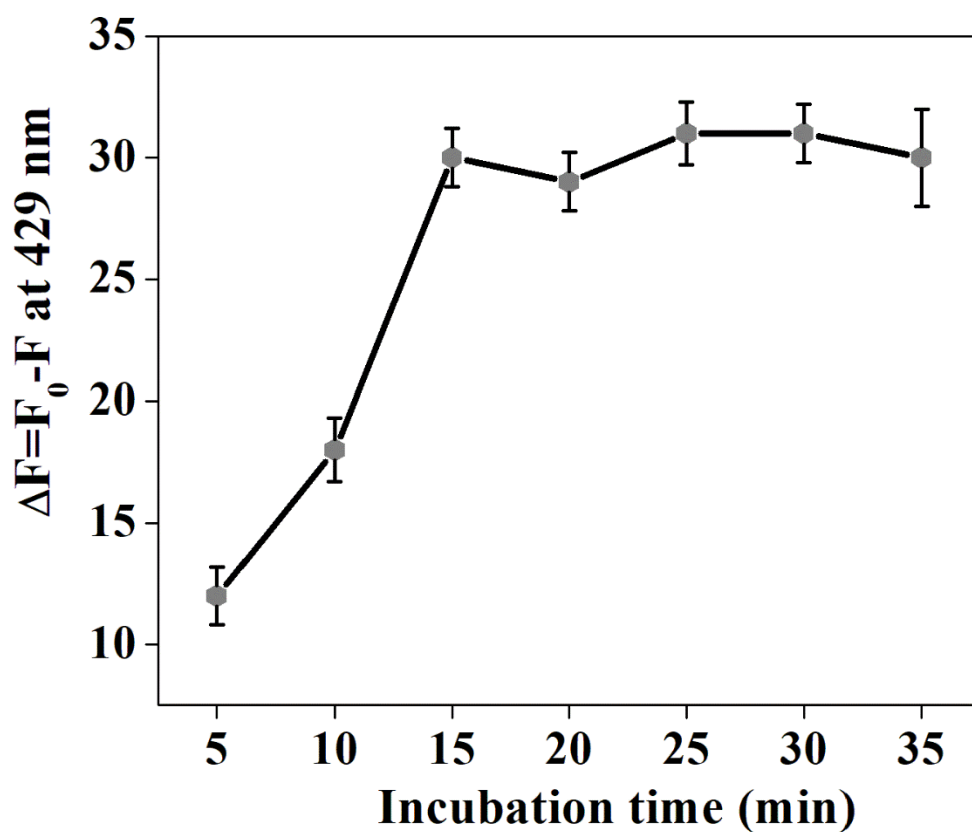


Figure S6. Effects of the incubation time on the UA-induced fluorescence quenching. The F_0 and F are the fluorescence intensities at the peak wavelength of 429 nm without and with UA (1.0 μ M), respectively. Error bars were estimated from three replicate measurements.

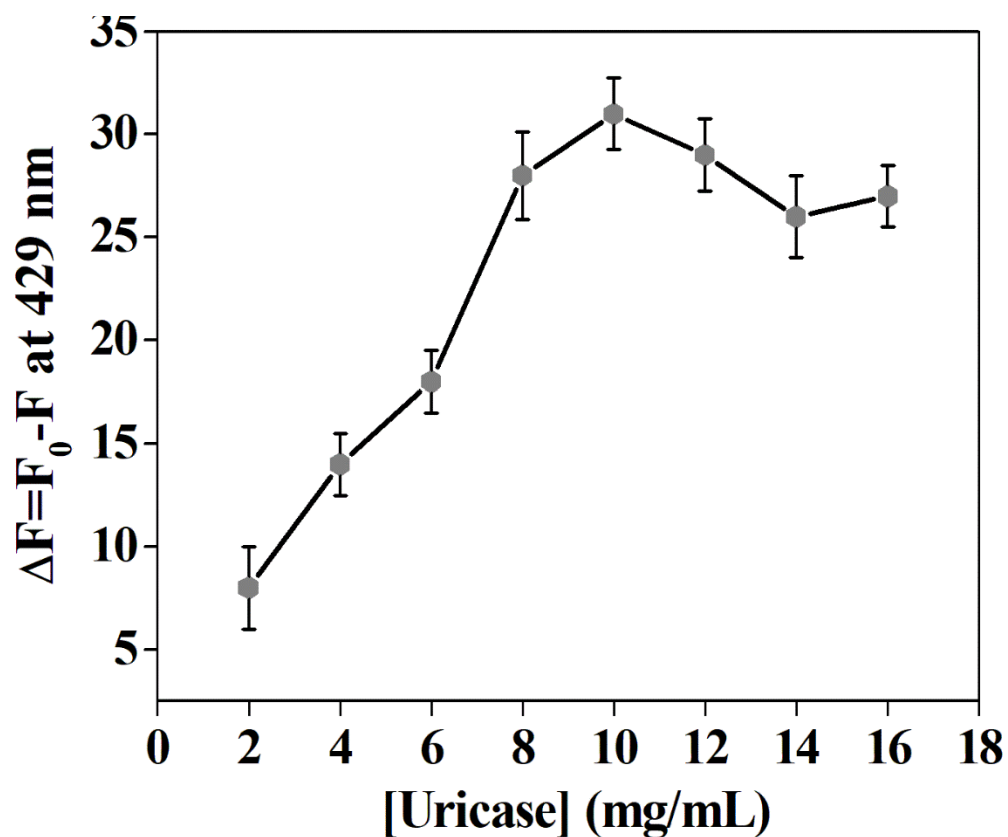


Figure S7. Effects of the UA-induced fluorescence quenching on uricase concentration. The F_0 and F are the fluorescence intensities at the peak wavelength of 429 nm without and with UA ($10\mu\text{M}$), respectively. Error bars were estimated from three replicate measurements.

Table S1. Analytical performance of various fluorescence methods involving nanostructured materials for UA detection.

Method	Materials	Linear range	Detection limit	Ref
Fluorescence	BSA-Ag/AuNCs	5–50 μM	5.1 μM	16
Fluorescence	BSA-AuNCs	10–800 μM	6.6 μM	47
Fluorescence	Graphene QDs-Ag nanocomposite	5–500 μM	2 μM	49
Fluorescence	S, N-co doped carbon dots	0.08–10 μM	0.07 μM	50
Fluorescence	Ti ₃ C ₂ Mxene QDs	1.2–75 μM	125 nM	51
Fluorescence	N doped carbon dots	0.5–150 μM	60 nM	52
Fluorescence	Cadmium sulfide QDs	125–1000 μM	125 μM	53
Fluorescence	Chondroitin sulfate-AuNCs	5–100 μM	1.7 μM	54
Fluorescence	Cadmium sulfide QDs	60–2000 μM	50 μM	55
Fluorescence	Cadmium tellurium QDs	0.2–6 μM	0.1 μM	56
Fluorescence	Carbon dots@ZIP-CuNCs	1–100 μM	0.3 μM	57
Fluorescence	PVP-CuNCs	0.5–10 μM	113 nM	This work
BSA-Bovine serum albumin				
QDs-Quantum dots				
N-Nitrogen				
S-Sulfur				