Supporting Information For

Point-of-care Testing (POCT) of Patients with High Concentration of Uric Acid by Using Alginate Hydrogel Microspheres Embedded with CdZnTeS QDs and Urate Oxidase (Alg@QDs-UOx MSs)

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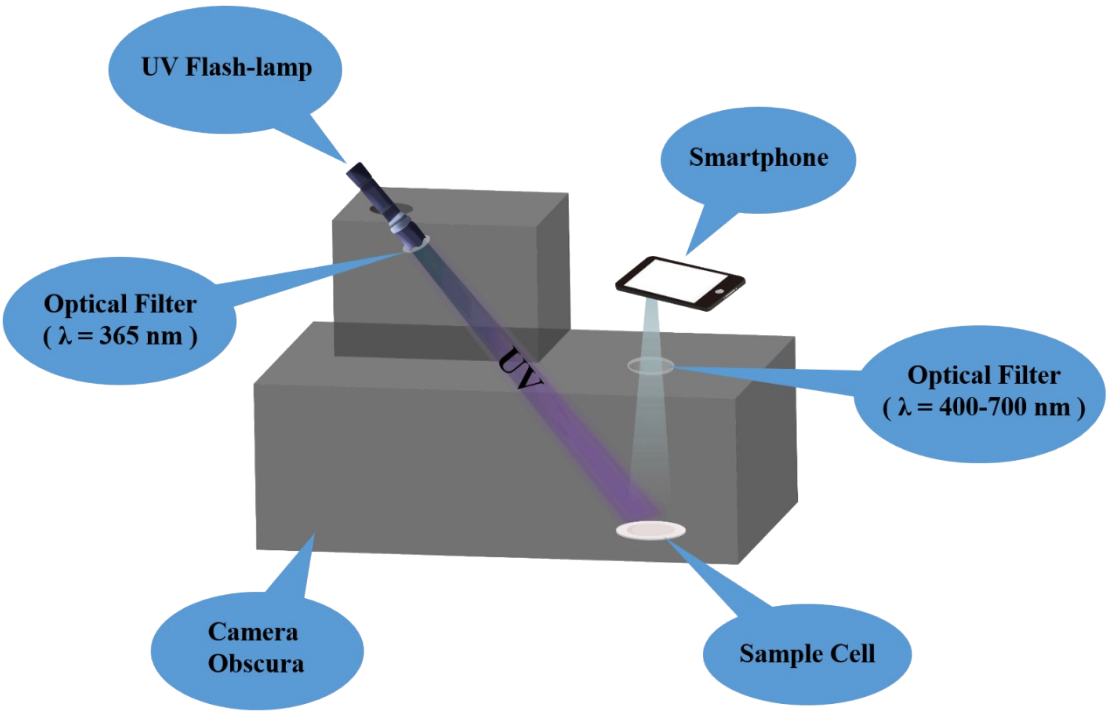

Figure S1. The details of the self-made device. The self-made device including a camera obscura, a light source (UV Flash-lamp), two wavelength selection device (optical Filter), a sample cell, and a detector (smartphone). The Camera Obscura were made of black cardboards and glue, and it provided a dark environment.

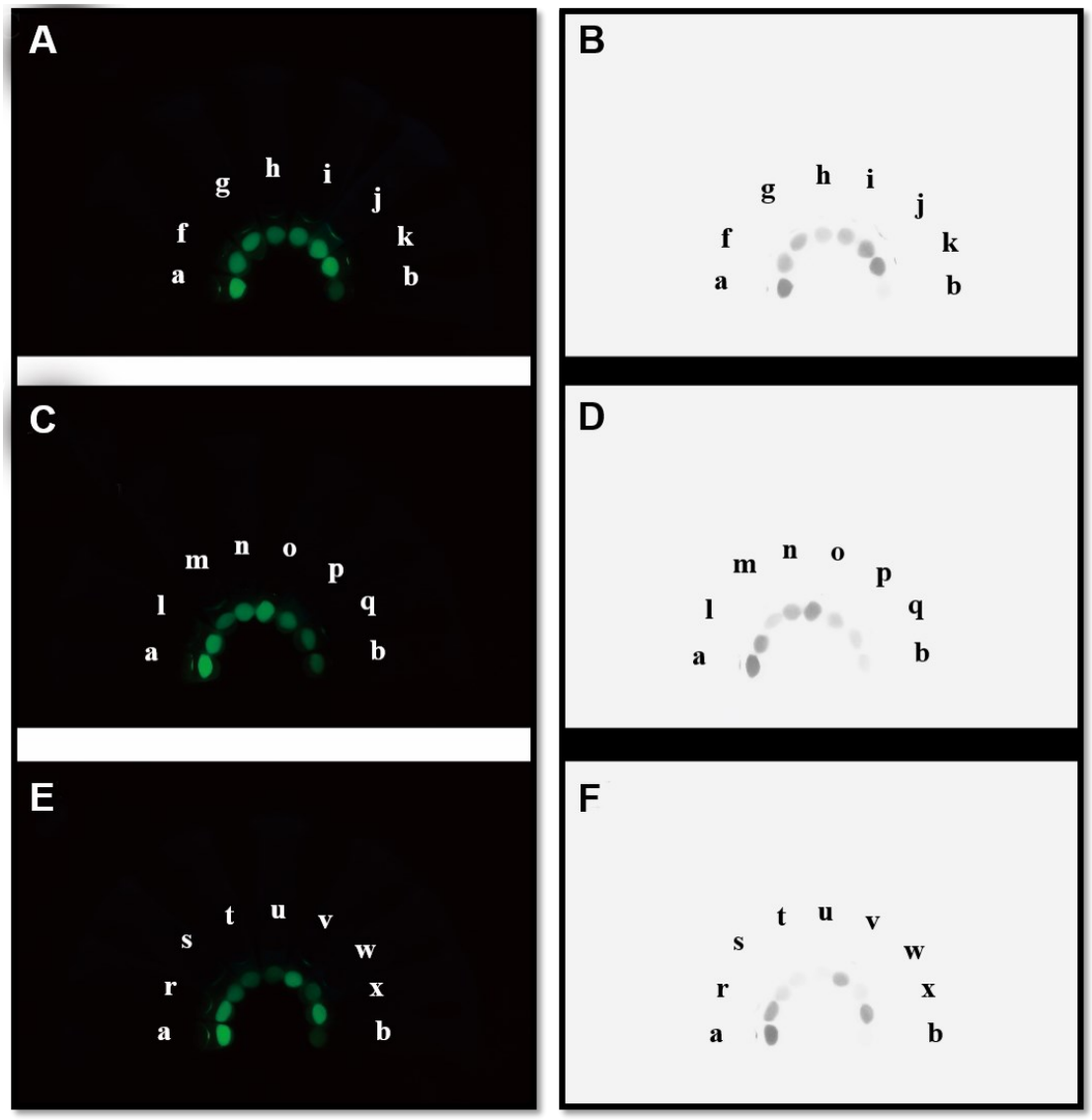

Figure S2. (A) (C) (E) Photo of the Alg@QDs-UOx MSs in (a) ultrapure water, (b) 446 μM uric acid, (f)-(x) 10-fold-diluted human urine samples. (B) (D) (F) Grayscale image of the photo (A) (C) (E).

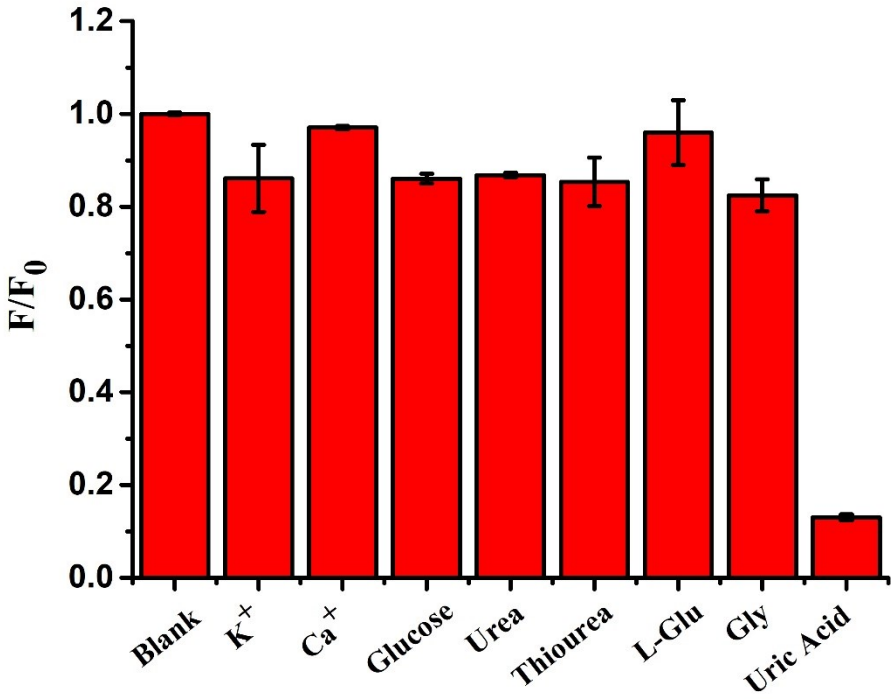

Figure S3. Fluorescence response in the presence of different ions and small molecules (500 μM each). The error bars represent the standard deviations of three repetitive experiments.

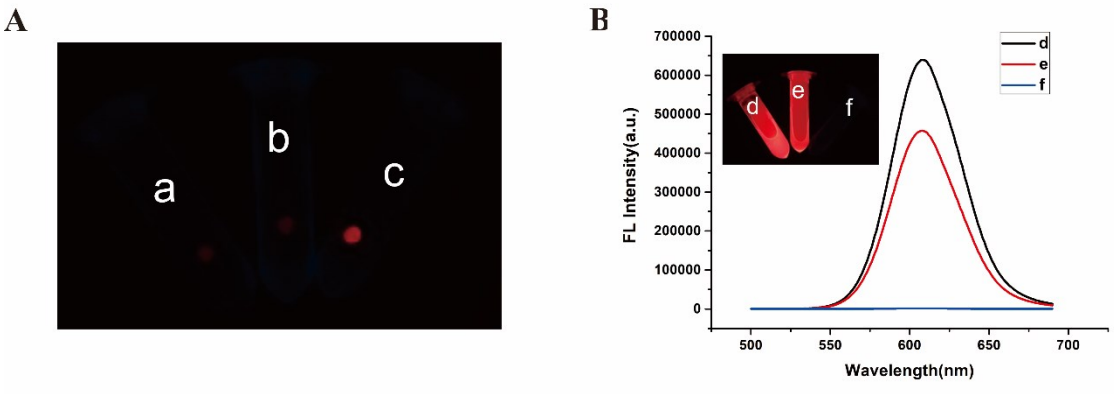

Figure S4. (A) Photo of the alginate hydrogel microspheres Embedded with CdZnTeS QDs (Alg@QDs MSs) crosslinking by (a) Ca^{2+}, (b) Zn^{2+}, (c) Ba^{2+}. (B) Fluorescence spectra and photo of the filtrate of the Alg@QDs MSs crosslinking by (d) Ca^{2+}, (e) Zn^{2+}, (f) Ba^{2+}. Excitation wavelength: 340 nm.

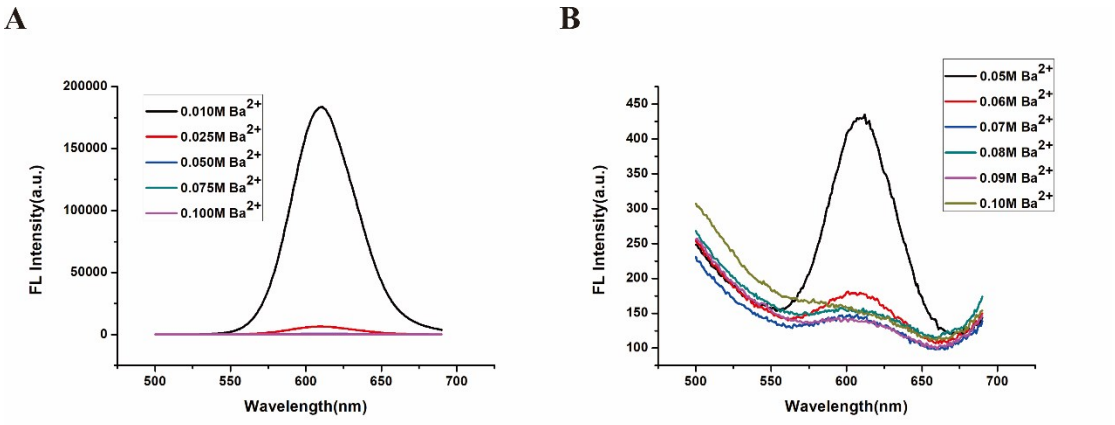

Figure S5. (A) Fluorescence spectra of the filtrate of the Alg@QDs MSs crosslinking by different concentrations of Ba^{2+} (0.010-0.100 M). (B) Fluorescence spectra of the filtrate of the Alg@QDs MSs crosslinking by different concentrations of Ba^{2+} (0.050-0.100 M). Excitation wavelength: 340 nm.

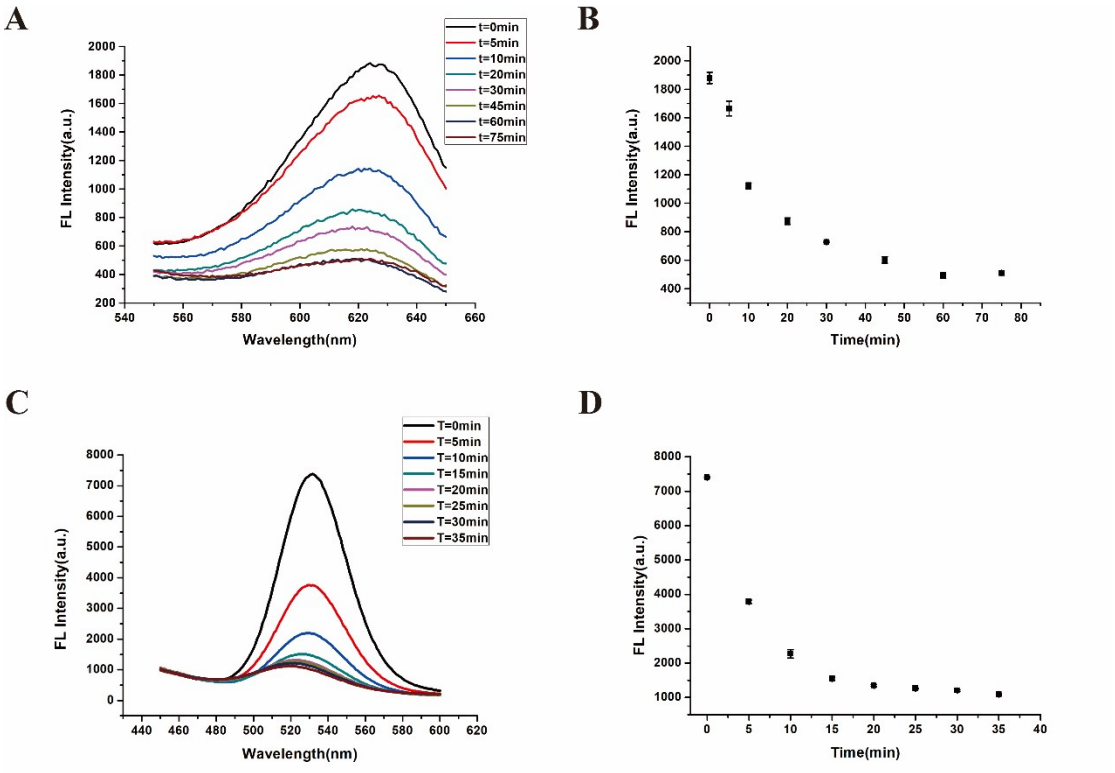

Figure S6. (A) Fluorescence spectra of the 625 nm emission of CdZnTeS QDs (15 nM) for the detection of uric acid within 0-75 min. (B) The fluorescence intensity corresponding to the 625 nm emission of CdZnTeS QDs (15 nM) for the detection of uric acid within 0−75 min. (C) Fluorescence spectra of the 530 nm emission of CdZnTeS QDs (15 nM) for the detection of uric acid within 0-35 min. (D) The fluorescence intensity corresponding to the 530 nm emission of CdZnTeS QDs (15 nM) for the detection of uric acid within 0−35min. The error bars were obtained based on three repetitive experiments. Uric acid: 500μM. Urate oxidase: 0.25 u/ml. Excitation wavelength: 340 nm.

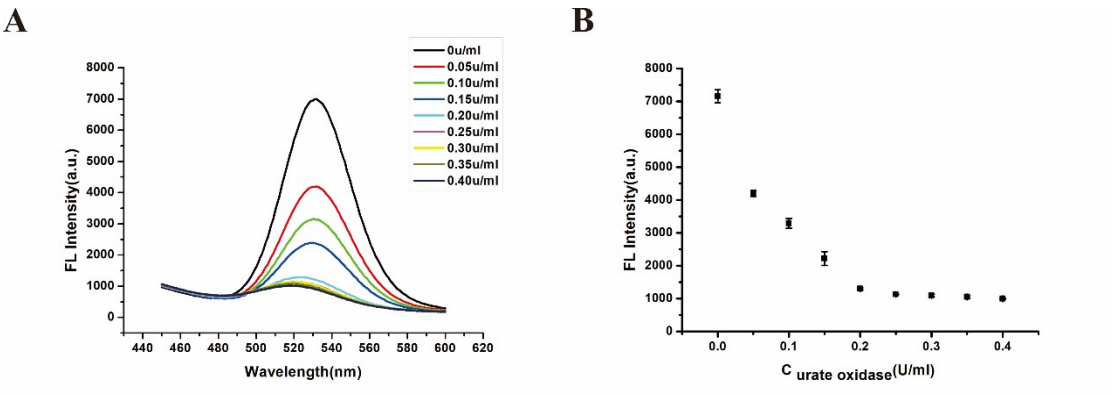

Figure S7. (A) Fluorescence spectra of the mixed solution of CdZnTeS QDs and uric acid upon the addition of different concentrations of urate oxidase (0-0.40 u/ml). (B) The fluorescence intensity corresponding to the mixed solution of CdZnTeS QDs and uric acid upon the addition of different concentrations of urate oxidase (0-0.40 u/ml). The error bars were obtained based on three repetitive experiments. CdZnTeS QDs: 15 nM. Uric acid: 500 μM. Excitation wavelength: 340 nm.

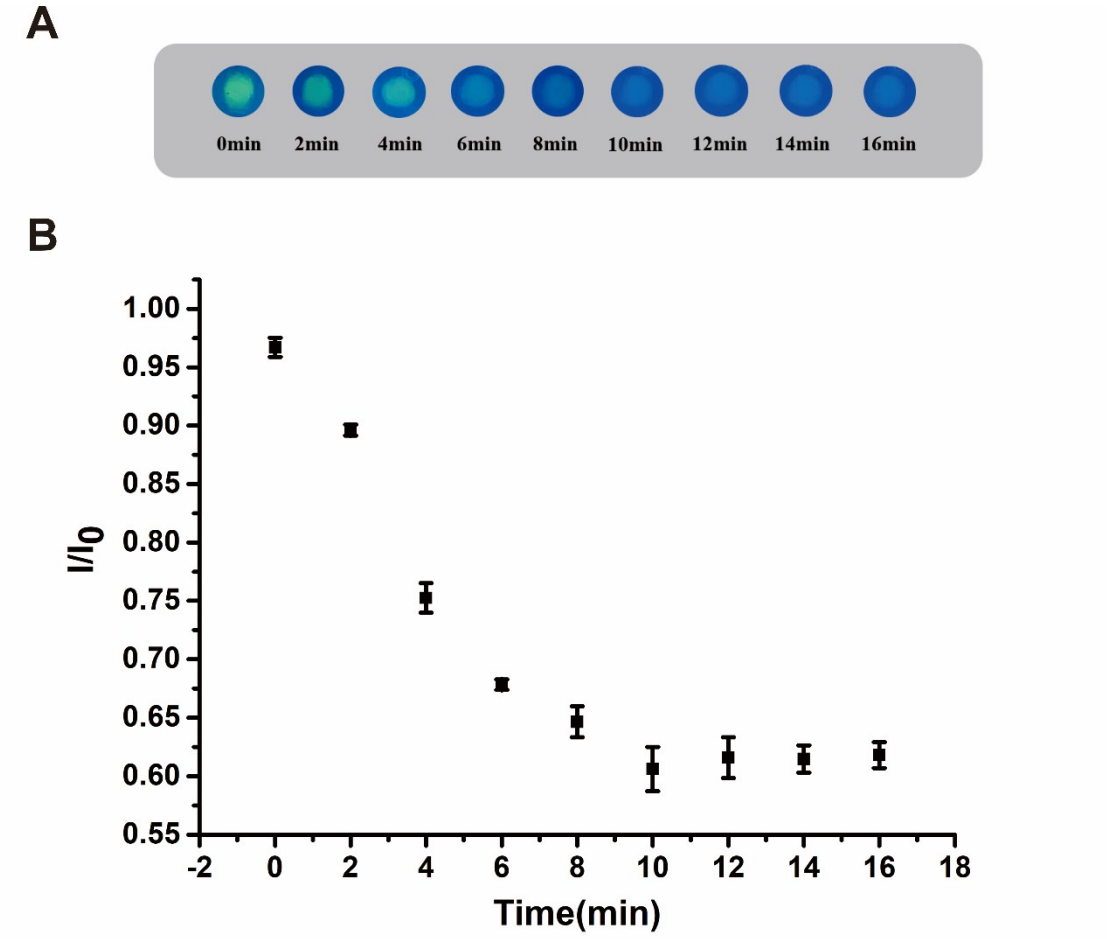

Figure S8. (A) photo of the Alg@QDs-UOx MSs for the detection of uric acid within 0-16 min. (B) Grayscale response of the Alg@QDs-UOx MSs for the detection of uric acid within 0-16 min. The error bars were obtained based on three repetitive experiments. Uric acid: 500 μM. Excitation wavelength: 340 nm.

Table S1. Comparison of the method for POCT of patients with high concentration of uric acid in this work with clinic inspection results of the Zhongnan Hospital.

Clinic samples (urine)	This method	Clinic results	Clinic samples (urine)	This method	Clinic results
c	*	*	d	*	*
e	+	+	f	*	*
g	*	*	h	*	*
i	*	*	j	*	*
k	*	*	l	*	*
m	*	*	n	*	*
o	*	*	p	*	*
q	+	+	r	*	*
s	*	*	t	*	*
u	+	+	v	*	*
w	+	+	x	*	*

"*" indicates a healthy person and "+" indicates a patient with high concentration of uric acid.