Electronic Supplementary Information

Label-Free Fluorescence Polarization Detection of Pyrophosphate Based on 0D/1D Fast Transformation of CdTe Nanostructures

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Fig. S1 (A) Change tendency of FP signals during the reversible transformation of 0D/1D CdTe nanostructures (green square represented NCs, whose polarization was derived from (B); red circle represented CdTe/Eu complex, whose polarization was derived from (C); blue triangle represented CdTe/Eu/PPi complex, whose polarization was derived from (D)); (B) Fluorescence intensity spectra of CdTe NCs solution; (C) Fluorescence intensity spectra of CdTe NCs solution 30 min after addition of 1.2×10^{-7} M Eu(III); (D) Fluorescence intensity spectra of CdTe/Eu complex 10 min after addition of 2.0×10^{-7} M PPi.

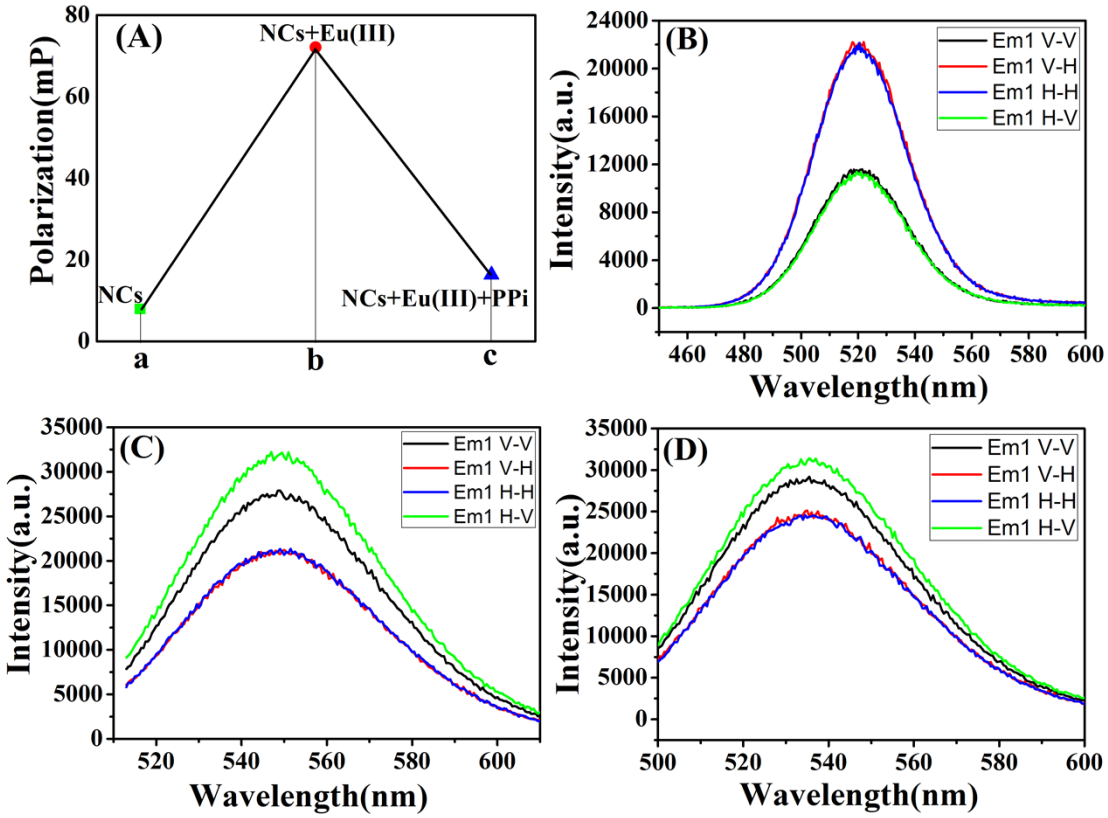

Fig. S2 (A) TEM image of directly synthesized of CdTe NRs. (B) TEM image of (A) 30 min after addition of 2.0×10^{-7} M PPi.

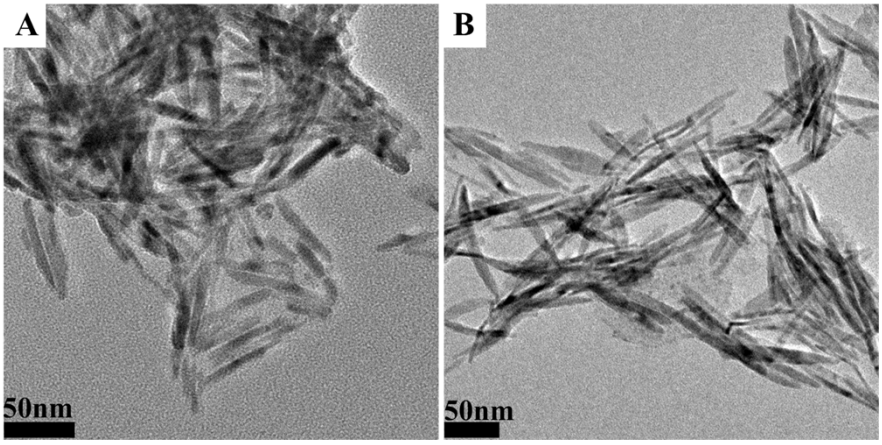

Table S1 Anisotropy decay parameters for CdTe/Eu(III)/PPi complex

Sample	*τ(ns)*	r_0	*θ(ns)*
CdTe	0.483	0.0235	0.261
CdTe/Eu	0.534	0.115	0.557
CdTe/Eu/PPi	0.773	0.0389	0.360

Fig. S3 Changes in the fluorescence emission of CdTe NCs upon addition of 0 – 8.0 × 10^{-8} M Eu(III) in the present of (A) 0 M; (B) 5.0 × 10^{-8} M; (C) 1.0 × 10^{-7} M PPi; (D) Stern-Volmer plot of (A), (B) and (C); (E) Changes in the fluorescence emission of CdTe NCs on addition of 0.2 – 10.0 μM PPi in the presence of 8.0 × 10^{-8} M Eu(III). (F) Stern-Volmer plot of (E).

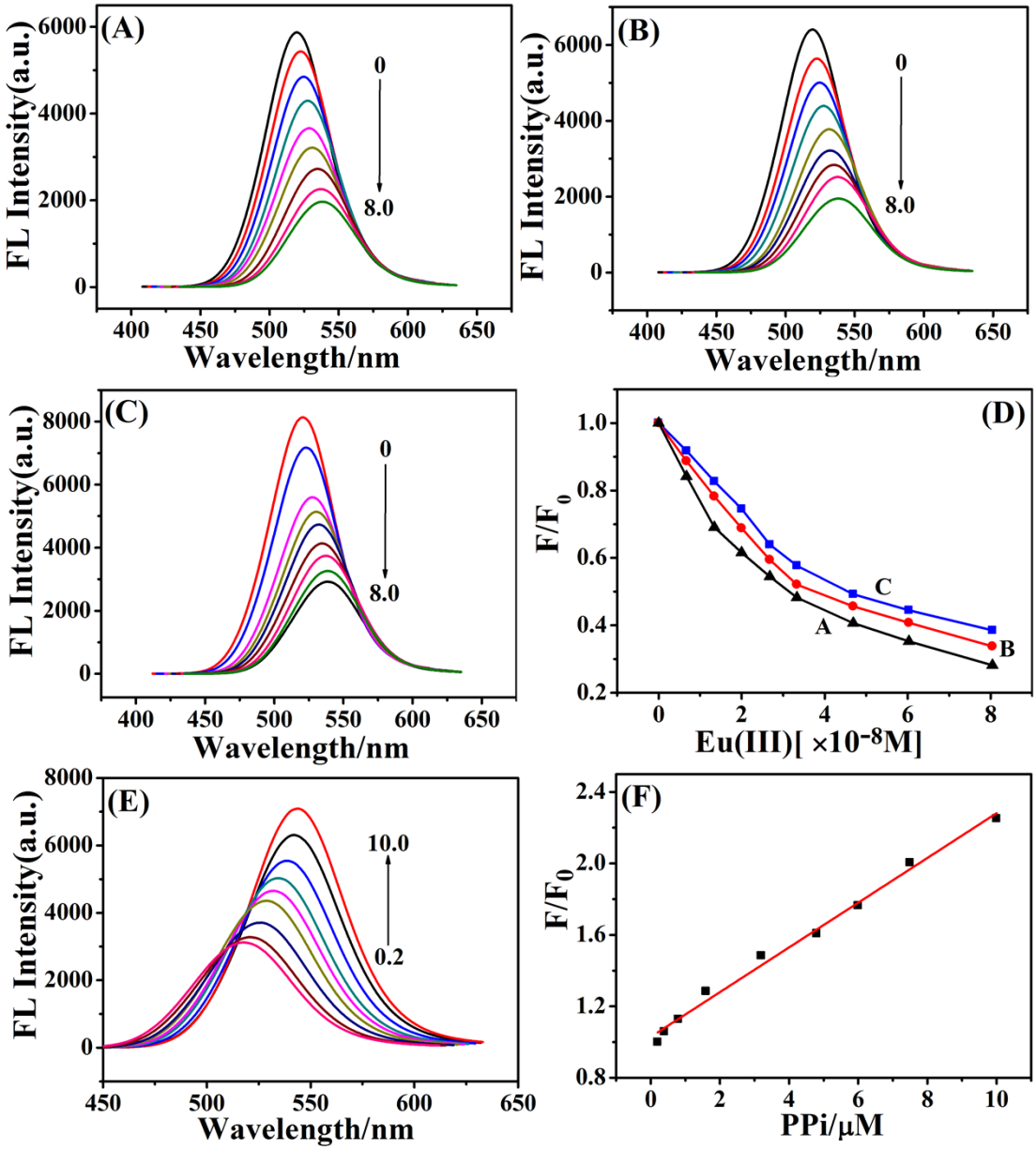

Fig. S4 The FP of CdTe NCs changed as a function of time in the presence of 1.2 ×10^{-7} M Eu(III) ions.

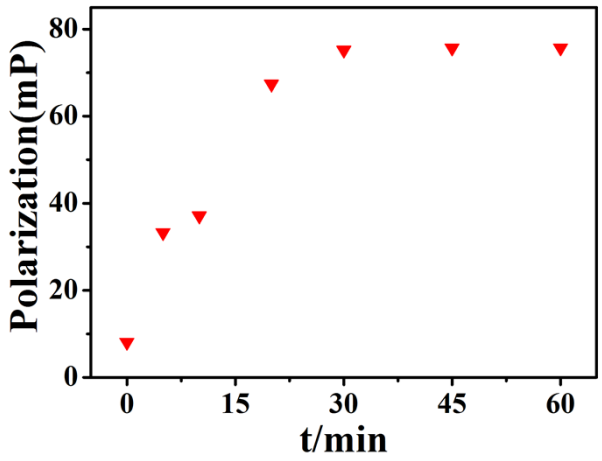

Fig. S5 The FP of CdTe NCs changed as a function of time in the presence of 1.2 ×10^{-7} M Eu(III) ions and 2.0 × 10^{-7} M PPi.

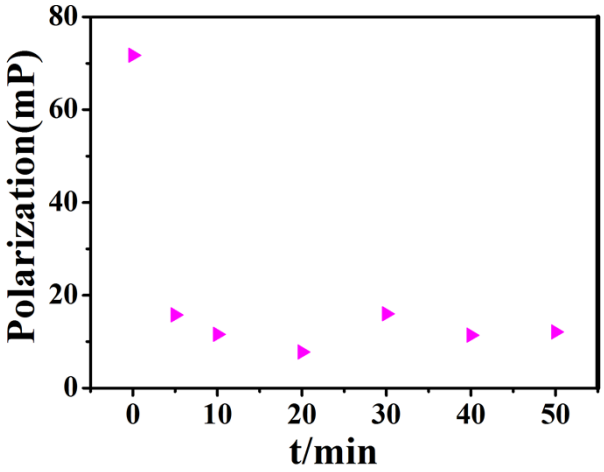

Fig. S6 The FP of CdTe NCs changed as a function of time in the presence of 1.2 ×10^{-7} M Eu(III) ions, 2.0 × 10^{-7} M PPi and PAM.

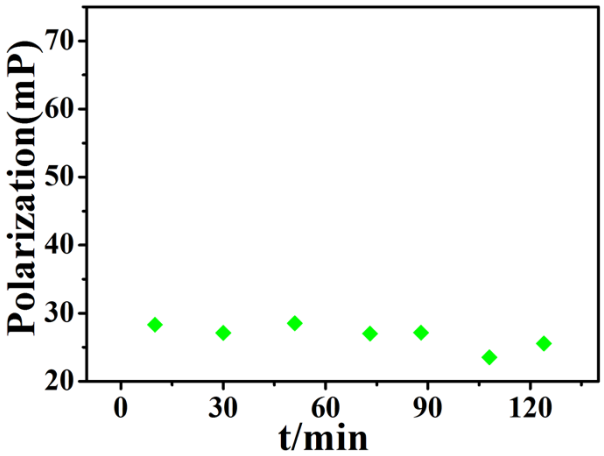

Table S2 Comparison of PPi detection methods

Analytical Methods	*Analytical ranges and LOD*	*Ref.*
FP method	2.0×10^{-5} M -1.0×10^{-9} M/0.8nM	This work
colorimetric method	20-180nM/0.8nM	1
fluorescence method	1.0×10^{-6} -5.0×10^{-4} M/ 4.0×10^{-7} M	2
ensemble analytical method	112-278ppb/112ppb	3
electrogenerated chemiluminescence method	6.6-13.3μM/ 4.0 μM	4

References:

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