Electronic Supplementary Material (ESI) for RSC Advances.

Lysozyme-stabilized Ag nanoclusters: synthesis to different composition and fluorescent responses to sulfide ion with distinct mode

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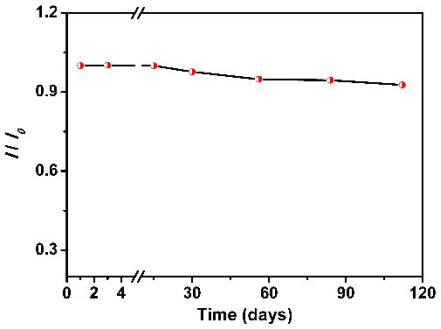

Fig. S1. Time stability of the as-prepared dLys-AgNCs **1**. (I_0 was the photoluminescence intensity of dLys-AgNCs **1** at 640 nm in the first day, and I was the photoluminescence intensity of dLys-AgNCs **1** at 640 nm in the days after. The excitation wavelength was 490 nm.)

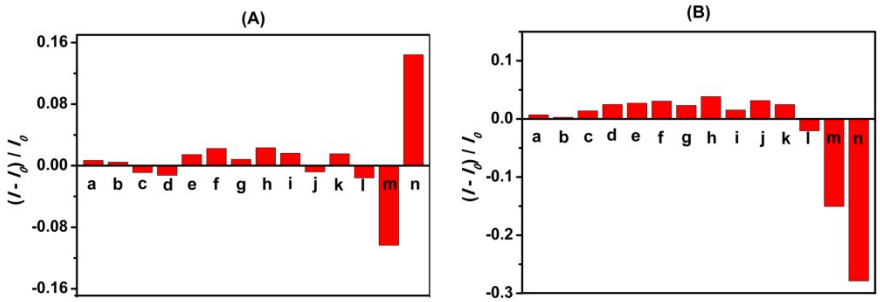

Fig. S2. Responses of dLys-AgNCs **2** to different anions of 5 μmol/L (A) and 15 μmol/L (B) (a: NO_3^-, b: NO_2^-, c: PO_4^{3-}, d: HPO_4^{2-}, e: $H_2PO_4^-$, f: CO_3^{2-}, g: HCO_3^-, h: SO_4^{2-}, i: SO_3^{2-}, j: F^-, k: Cl^-, l: Br^-, m: I^-, n: S^{2-}). I_0 and I were the photoluminescence intensity of dLys-AgNCs at 640 nm in the absence and presence of anions, respectively. The excitation wavelength was 490 nm.

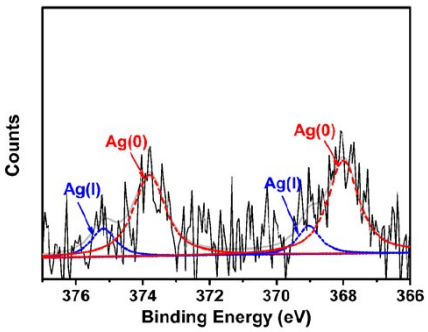

Fig. S3. XPS results of Ag 3d of the as-prepared dLys-AgNCs **1** in the presence of S^{2-}. The original spectra are in black, the Ag (I) 3d spectra are in blue and the Ag (0) 3d spectra are in red.

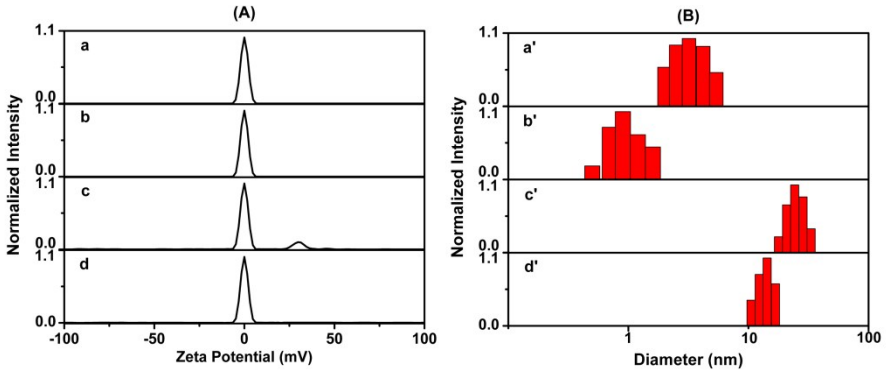

Fig. S4. Zeta potential (A) and DLS measurement (B) of dLys-AgNCs **1** and dLys-AgNCs **3** in the absence and presence of I^- (a and a': dLys-AgNCs **1**, b and b': dLys-AgNCs**1** + 10 μmol/L I^-, c and c': dLys-AgNCs **3**, d and d': dLys-AgNCs**3** + 10 μmol/L I^-).

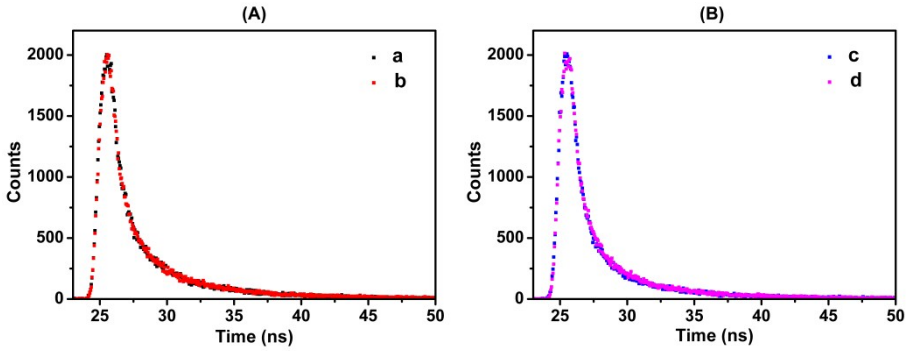

Fig. S5. Lifetime spectra of dLys-AgNCs **1** (A) and dLys-AgNCs **3** (B) in the absence and presence of S^{2-} (a: dLys-AgNCs **1**, b: dLys-AgNCs **1** + 10 μmol/L S^{2-}, c: dLys-AgNCs **3**, d: dLys-AgNCs **3** + 10 μmol/L S^{2-})

Table S1. Lifetime of dLys-AgNCs **1** and dLys-AgNCs **3** in the absence and presence of I^-.

	τ1 (ns)	τ2 (ns)	τ3 (ns)
dLys-AgNCs **1**	1.81	0.34	6.40
dLys-AgNCs **1** + 10 μmol/L I^-	1.29	0.27	4.34
dLys-AgNCs **3**	1.43	0.28	5.26
dLys-AgNCs **3** + 10 μmol/L I^-	1.42	0.26	4.93