Electronic Supplementary Material (ESI) for Analyst

Supporting Information

Fluorescent silver nanoclusters for user-friendly detection of Cu^{2+} on paper platform

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Table S1 The assignments of main Raman bands of azobenzene [S1, S2].

Raman shift (cm^{-1})	band assignments
1146	δC-H
1190	ν_{sym}C-N, δC-H
1418	νN=N, δC-H
1440	νN=N, νC=C

Note: ν: stretching , deformation, δ: in plane bending

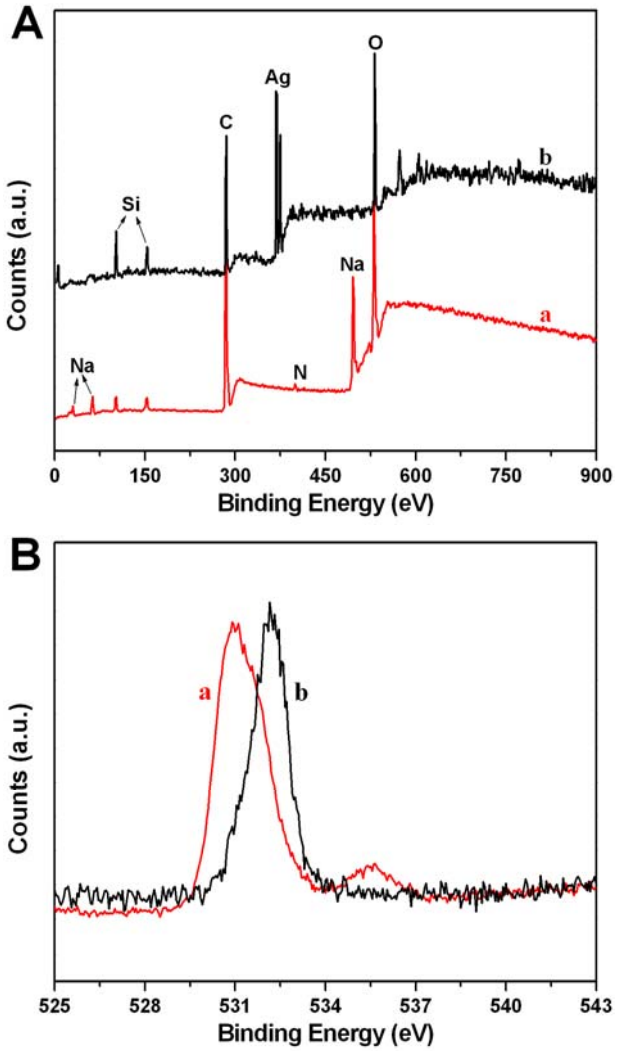

Fig. S1 (A) XPS survey spectra of (a) the synthesized MPAA and (b) the suspension produced in the presence of high concentration of Ag^{+}; (B) high resolution XPS for the O 1s signals: (a) MPAA and (b) the suspension.

The XPS spectrum of MPAA reveals that MPAA consists of C, O, and Na elements (curve a). Compared with MPAA, the suspension produced in the high concentration of Ag^{+} contains large amount of Ag element instead of Na element. Moreover, the high resolution XPS spectra of the O 1s region show that the observed binding energy for O is different, suggesting that the O atoms present in MPAA and the suspension are essentially in different electronic environment. Thus, it is reasonable to speculate that the suspension is the complex of MPAA with Ag^{+}. (Note: the Si element results from the silicon substrate.)

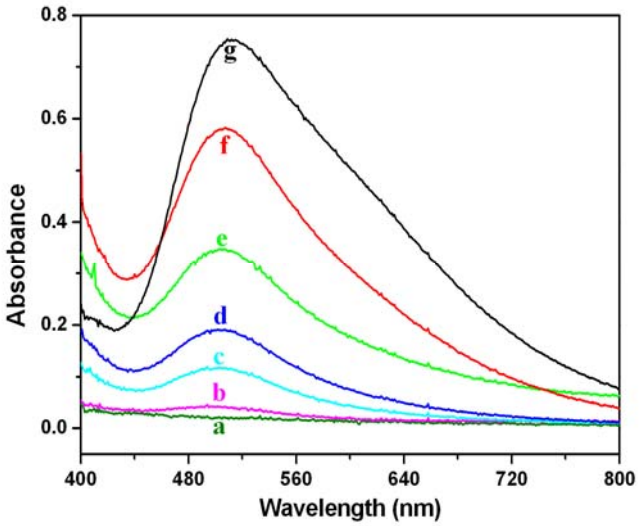

Fig. S2 UV-vis spectra of MPAA-Ag^{+} solution after different time of irradiation: (a) 0, (b) 120, (c) 150, (d) 160, (e) 170, (f) 180, (g) 190 s.

Fig. S3 Photograph of dialyzed solution of (a) ionized PAA-$AgNO_3$ and (b) non-ionized PAA-$AgNO_3$ in the presence of 0.05 M NaCl, (c) the solution of 0.05 M NaCl.

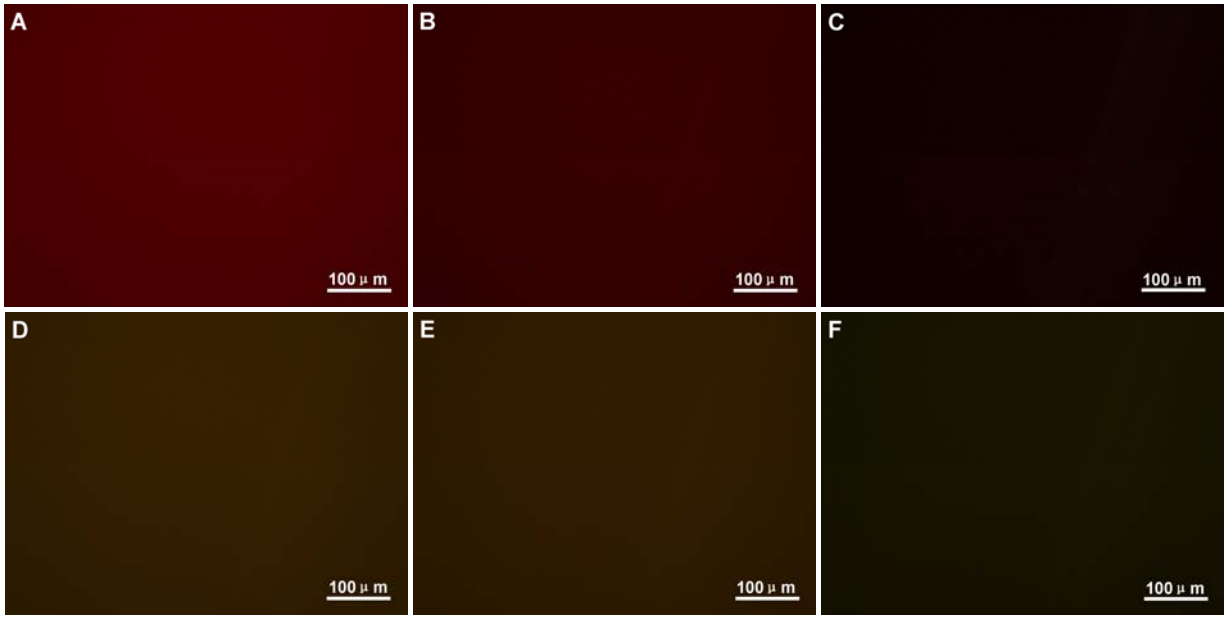

Fig. S4 Fluorescence images of the as-prepared AgNCs solution (A, D) in the absence of Cu^{2+}, and in the presence of (B, E) 10^{-4} M Cu^{2+}, and (C, F) 10^{-3} M Cu^{2+}. Note: (A-C) under green light excitation and (D-F) under blue light excitation.

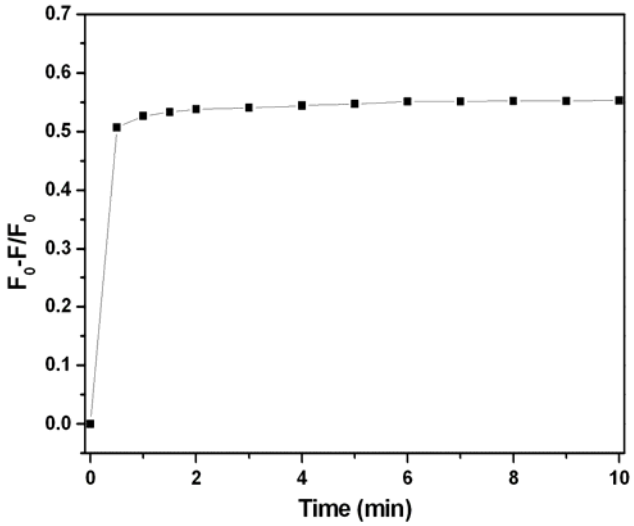

Fig. S5 Plot of F_0-F/F_0 against time in the presence of 2.5×10^{-4} M Cu^{2+}.

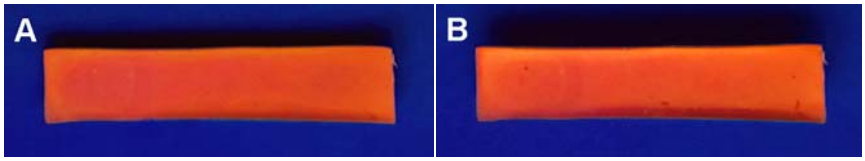

Fig. S6 Photographs of the same test paper (A) before and (B) after two weeks storage.

References:

[S1] X. Li, W. Li, Z. Li, X. Zhou, Z. Li and J. Qin, J. Hu, *Spectrochim. Acta A: Mol. Biomol. Spectrosc.*, 2011, **79**, 1976-1984.

[S2] L. W. Chou, Y. R. Lee, J. C. Jiang, J. C. Lin and J. K. Wang, *J. Phys. Chem. C*, 2011, **115**, 516-520.