Electronic Supplementary Material (ESI) for Analytical Methods
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Electronic supplementary information

Fluorescent Silver Nanoclusters Embedded Polymer Nanoparticles for Sensing Copper Ions

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1. GC-Mass spectrum of silver nanoclusters before and after the addition of copper ions.

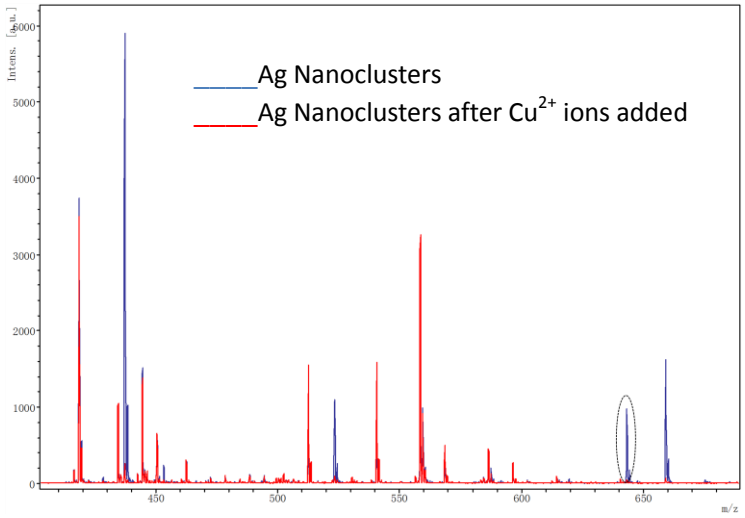

Fig.S1 GC-Mass spectrum of silver nanoclusters before (blue) and after (red) the addition of copper ions.

With the addition of copper ions, the copper ions first seized carboxyls which protected the stabilities of large nanoclusters, thus quenching the fluorescent and resulting in the blue-shift of the peak position. The changes of the peaks of Ag_6 before and after the addition of copper ions can be seen from the mass spectroscopy graph (Fig.S1). When copper ions are added, the peaks of Ag_6 almost

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disappeared, and the others peaks showed little changes, which can explain that copper ions associated with carboxylates around bigger nanoparticles.

As we known, the diameters of the silver nanoclusters increased, during which the color of the solution was also found to change. The optical photos of the nanoclusters also reflect changes in the existence forms, which can be explained as different emission bodies present different colors. When copper ions were added, they were associated with carboxylates which protect the larger sized silver nanoclusters, such as Ag_6. This causes the stability of Ag_6 decreasing and their fluorescence quenches as well. At the same time, the small sized silver nanoclusters (e.g. Ag_2 and Ag_3) had little change and kept their fluorescence. Thus, the peak of silver nanoclusters blue-shifted in position and became narrower.