Homogeneous cadmium detection based on fluorescent novel metal nanocluster

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We developed a homogeneous, rapid and sensitive system for cadmium (Cd) detection based on concentration dependent Cd nanocluster formation ability.
Here in, we first synthesized cadmium nanocluster using the protein-directed synthesis method by Xie et al. This method is simple, but the reaction time (12 h) is not suitable for developing rapid a Cd detection system. For rapid cadmium detection, we reduced the reaction time by using other water-soluble reducing agent instead of NaOH in the conventional synthesis method. By formation of Cd nanocluster, the fluorescence intensity increase with increasing Cd concentration in the sample under the optimized conditions.
Compared to the performance of several prevalent Cd detection, our method is comparable in its sensitivity and specificity in a homogeneous manner. In addition, the proposed method can be successfully applied to the Cd in tap water samples.