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Data Article

Quantum dots based "On-Off" fluorescence probe for the selective detection of Cu^{2+} ion: Application to real sample analysis

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ABSTRACT

Turn 'On-Off' quantum dot-based fluorescent probe has been developed for the selective detection of Cu^{2+}. This strategy achieved by consecutively fluorescence enhancement and quenching of mercapto propionic acid (MPA) capped cadmium sulphide quantum dots (MPA-CdS QDs) by the addition of D-penicillamine (D-PA) and Cu^{2+} respectively. After successive addition of Cu^{2+}in CdS QDs-(D-PA) system, the fluorescence intensity of quantum dots decrease due to the removal of D-PA molecules from the surface of QDs as well as selective ion exchange process takes place between Cu^{2+} and Cd^{2+} at the surface of QDs. At optimal conditions, probe offers a good response in the linear range between 4 ng/mL and 40 ng/mL with LOD 2.71 ng/mL. This reported strategy is a very simple and selective towards Cu^{2+}. Hence, a new method for the potential detection of Cu^{2+} in real pharmaceutical samples can be developed by using QDs-based fluorescence probe.

Specifications Table

Subject area	Analytical Chemistry, Fluorescence spectroscopy
Compounds	–
Data category	Spectral and analytical data
Data acquisition format	Fluorescence spectra
Data type	Experimental analyzed
Procedure	Measurement of fluorescence enhancement and quenching of MPA capped CdS quantum dots by the addition of fixed amount of D-penicillamine (D-PA) and successive addition of Cu^{2+} respectively.
Data accessibility	Data is enlisted in tables within article

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