**A novel method for the determination of cadmium ions based on the quenching of the fluorescence of CdSe quantum dots**

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**Abstract**

A novel method for the determination of Cd2+ has been developed based on quenching of the fluorescence of thioglycerol-capped CdSe quantum dots (QDs) by Cd2+ in aqueous solutions. Under optimum conditions, the relative fluorescence intensity was linearly proportional to the concentration of Cd2+ between 1.0 and 22 µM with a detection limit of 0.32 µM. The detection mechanism between the thioglycerol capped CdSe QDs and Cd2+ ions was discussed using various experimental techniques such as TEM, fluorescence lifetime, UV–vis and fluorescence spectroscopy. Based on these optical properties, the TG-CdSe QDs could be used as a highly selective probe for the detection of Cd2+ ions in aqueous solutions, a species highly toxic for cells.

***Keywords:*** CdSe quantum dots synthesis, Quenching of the fluorescence, Electronic microscopy, Cadmium detection, Cation binding selectivity