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## ABSTRACT

As(III) is the most harmful substance of all over 20 kinds of arsenic compounds. In addition, the trivalent oxidation state of arsenic is not stable, which can be oxidized to pentavalent arsenic. Thus, it is attractive and challenging to sensitively and selectively monitor As(III) concentration, rather than As(V) concentration, in water. However, most of detection techniques suffer from the inability to distinguish As(III) and As(V), or even need specialized personnel and additional equipment. Herein, novel luminescent Ce(III)-based coordination polymer nanoparticles (Ce-CPNs) have been proposed for selective detection of As(III). The Ce-CPNs are dispersive and show a fluorescence peak at 353 nm under excitation at 280 nm. With the presence of As(III), aggregation of Ce-CPNs occurs, resulting in quenching of the fluorescent Ce-CPNs due to the aggregation-caused  $\pi$ - $\pi$  stacked layers of Ce-CPNs. Under optimal conditions, the detection limit for As(III) is down to 0.7 ppb. In addition, the Ce-CPNs

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