

?Use of acidophilic bacteria of the genus *Acidithiobacillus* to biosynthesize CdS fluorescent nanoparticles (quantum dots) with high tolerance to acidic pH?

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© 2016 Elsevier Inc. The use of bacterial cells to produce fluorescent semiconductor nanoparticles (quantum dots, QDs) represents a green alternative with promising economic potential. In the present work, we report for the first time the biosynthesis of CdS QDs by acidophilic bacteria of the *Acidithiobacillus* genus. CdS QDs were obtained by exposing *A. ferrooxidans*, *A. thiooxidans* and *A. caldus* cells to sublethal Cd<sup>2+</sup> concentrations in the presence of cysteine and glutathione. The fluorescence of cadmium-exposed cells moves from green to red with incubation time, a characteristic property of QDs associated with nanocrystals growth. Biosynthesized nanoparticles (NPs) display an absorption peak at 360 nm and a broad emission spectra between 450 and 650 nm when excited at 370 nm, both characteristic of CdS QDs. Average sizes of 6 and 10 nm were determined for green and red NPs, respectively. The importance of cysteine and glutathione on QDs biosynthesis in *Acidithiobacillus* was related wi