

**Facile synthesis of quantum dots/mesoporous silica/quantum dots core/shell/shell  
hybrid microspheres for ratiometric fluorescence detection of 5-fluorouracil in  
human serum**

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## Part S1: Preparation of MPA-capped CdTe QDs

Firstly, NaHTe precursor was synthesized by redox reaction of Te power and NaBH<sub>4</sub> according to the procedure reported in Ref. [S1]. And then, CdTe QDs were prepared with a modified method of Ref. [S2, S3]. Briefly, 50 mL of aqueous solution, containing 0.25 mmol of Cd<sup>2+</sup>, 0.05 mmol of thiourea and 0.53 mmol of MPA, were placed in a three-necked flask, adjusting pH of the mixture solution to 12.0 by dropwise adding 1.0 M of NaOH. Under the protection of N<sub>2</sub>, freshly prepared 0.025 mmol of NaHTe was injected swiftly with a syringe into the mixture at room temperature. The resultant mixture was heated to reflux with a condenser attached at 100 °C. Aliquots of the production were taken out at different time intervals to record temporal evolution of UV-visible and fluorescence spectra. When expected fluorescence wavelength was observed, following work was to remove the heating source and cool this mixture to room temperature. Finally, the as-prepared products were concentrated by circumrotate evaporation, precipitated with 2-propanol and collected by centrifugation. The colloidal precipitates were dried at 60 °C in vacuum, and dispersed in aqueous solution for applications in subsequent experiments.

## References

- [S1] Gu Z, Zou L, Fang Z, Zhu W, Zhong X. Nanotechnology 2008;19:135604-11.
- [S2] Zou L, Gu Z, Zhang N, Zhang Y, Fang Z, Zhu W, et al. J Mater Chem 2008;18:2807-15.
- [S3] Fang Z, Liu L, Wang J, Zhong X. J Phys Chem C 2009;113:4301-06.