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The Construction of a FRET Assembly by Using Gold Nanoclusters and Carbon Dots and their Application as a Ratiometric Probe for Cysteine Detection

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Highlights

- A FRET assembly is constructed by using gold nanoclusters (AuNCs) and carbon dots (CDs) through supramolecular interactions.
- The transfer efficiency has been calculated to be 65.7%, which is sufficient enough for practical applications.
- The assembly is utilized as fluorescent ratiometric probe for cysteine detection with high sensitivity and selectivity.
- The present method could be used to detect cysteine in fetal calf serum showing very high potential in practical applications.

Abstract

Förster resonance energy transfer (FRET) is a powerful tool to study single molecular conformation and/or distance changes between two fluorophores, which is mainly depended on the combinations and spatial distance between the donor and acceptor. The present study has built a FRET assembly by using gold nanoclusters capped by glutathione (AuNCs@GSH) and carbon dots (CDs) prepared by polyethyleneimine (PEI) through supramolecular interactions. The assembly is characterized in detail by employing Zeta potential, UV-vis absorption and fluorescence spectra, the

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