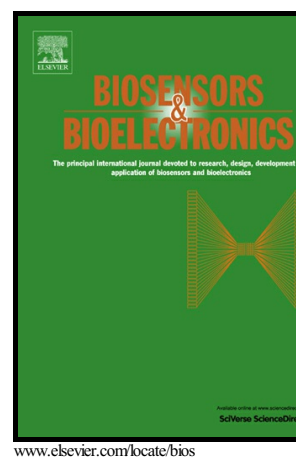


A gold nanoparticle-based fluorescence sensor for High sensitive and selective detection of thiols in living cells

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A gold nanoparticle-based fluorescence sensor for high sensitive and selective detection of thiols in living cells

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Abstract: A novel gold nanoparticle (AuNP)-based sensor for detecting thiols in aqueous solution has been developed. Due to the weak N $\cdots$ Au interactions, *meso*-(4-pyridinyl)-substituted BODIPY (4,4-difluoro-4-bora-3a,4a-diaza-s-indacene) dyes were coordinated to AuNP surfaces, which effectively quenched the fluorescence of organic/inorganic hybrid systems. The fluorescent quenching mechanism was mainly ascribed to the highly efficient fluorescent resonance energy transfer (FRET) and the inner filter effect. In the presence of thiols, *meso*-(4-pyridinyl)-substituted BODIPY chromophore were displaced and released from the AuNP surfaces and thus restored the fluorescence of BODIPY chromophore. The modulation of the fluorescence quenching efficiency of BODIPY-AuNPs in the presence of thiols can achieve a large turn-on fluorescence enhancement (40-fold) in aqueous solution. The new AuNP-based fluorescence sensor displayed desired properties such as high

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