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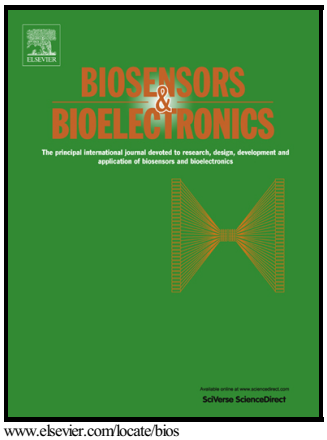

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Chemical etching of bovine serum albumin-protected Au_{25} nanoclusters for label-free and separation-free detection of cysteamine

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Abstract

This study describes a novel Au nanocluster-based fluorescent sensor for label-free, separation-free and selective detection of cysteamine (CSH). The sensing mechanism is based on CSH etching-induced fluorescence quenching of the bovine serum albumin-protected Au_{25} nanoclusters (BSAGNCs). A series of characterizations is carried out towards a better understanding of the CSH-induced fluorescence quenching of the BSAGNCs. It is found that CSH can etch the Au_{25} nanoclusters, exhibiting the potent etching activity. Other thiol-containing compounds such as glutathione and cysteine and other 19 natural amino acids do not interfere with such CSH-induced etching process. The decreases in fluorescence intensity of the