# Electroactive Au@Ag nanoparticles driven electrochemical sensor for endogenous $H_2S$ detection

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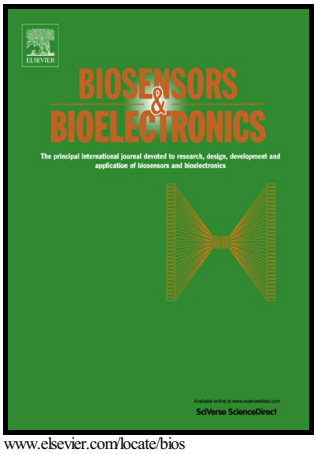


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# Electroactive Au@Ag nanoparticles driven electrochemical sensor for endogenous $H_2S$ detection

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## ABSTRACT:

In this work, a novel and facile electrochemical sensor is reported for the highly selective and sensitive detection of dissolved hydrogen sulfide ($H_2S$), attributing to the redox reaction between Au@Ag core-shell nanoparticles (Au@Ag NPs) and $H_2S$. Electroactive Au@Ag NPs not only possess excellent conductivity, but exhibit great electrochemical reactivity at 0.26 V due to the electrochemical oxidation from $Ag^0$ to $Ag^+$. In the presence of $H_2S$, the Ag shell of Au@Ag NPs can be oxidized to $Ag_2S$, resulting in the decrease of differential pulse voltammetry (DPV) peak at 0.26 V. The electrochemical sensor exhibits a wide linear response range from 0.1 nM to 500 nM. The limit of detection (LOD) for $H_2S$ is as low as 0.04 nM. The developed sensor shows significant prospects in the study of pathological processes related to the mechanism of $H_2S$ production.