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# One-pot synthesis of bovine serum albumin protected gold/silver bimetallic nanoclusters for ratiometric and visual detection of mercury

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## Abstract

A novel, rapid and ultrasensitive ratiometric and colorimetric fluorescence method was developed using bovine serum albumin protected gold/silver bimetallic nanoclusters (BSA-Au/Ag NCs) as fluorescent sensor for mercury (Hg) detection. The fluorescence sensor which was synthesized by one-pot approach shows dual-emissions at 470 nm (Ag NCs) and 630 nm (Au NCs) under a single excitation at 390 nm. In the presence of Hg<sup>2+</sup>, the red fluorescence of Au NCs was quenched while the fluorescence of Ag NCs almost unchanged, which exhibited a ratiometric fluorescence response and an obvious fluorescence color change toward Hg<sup>2+</sup>. The selective quenching mechanism may be due to the formation of gold amalgam bonds

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