

## Supporting Information

### **An electrochemical sensor based on chalcogenide molybdenum disulfide-gold-silver nanocomposite for detection of hydrogen peroxide released by cancer cells**

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## **1. EXPERIMENTAL SECTION**

### **1.1 MTT assay**

MCF-7 cells (human breast cancer cells) were purchased from the cell bank of the Chinese Academy of Sciences and cultured in the laboratory of Shandong Normal University. The standard MTT method was employed to study the biological activity of cells. The process of the cytotoxicity assay by MTT method is as follows: The 96-well cell culture plate was inoculated with  $5 \times 10^3$  MCF-7 cells per well and incubated at 37 °C under 5% CO<sub>2</sub> for 24 hours. Then, we aspirated the old cell culture medium and added 100 μL of new culture medium containing different concentrations of the proposed MoS<sub>2</sub>-Au-Ag nanocomposites to incubate for 24 hours. The group without nanoparticles was used as the control group, and the group with the concentration gradient of nanocomposites of 5 μg mL<sup>-1</sup>, 10 μg mL<sup>-1</sup>, 15 μg mL<sup>-1</sup>, 25 μg mL<sup>-1</sup> was used as the experimental group. After the cells were washed twice with PBS, 20 μL of the MTT solution (5 mg mL<sup>-1</sup> in PBS, pH 7.4) was added to each well and incubated for 4 h at 37 °C. The supernatant was removed from each well by using a pipette, and the products were dissolved with dimethyl sulfoxide (100 μL). Subsequently, we placed the 96-well plate on a shaker and shook for 10 minutes, and then used a microplate reader to detect the absorbance of the cells in each well at the wavelength of 570 nm. 5 replicate wells were designed in each group of cell experiments, and the relative cell viability was calculated based on the ratio of the absorbance of the experimental group to the untreated control cells.

## 2. PICTURE SECTION

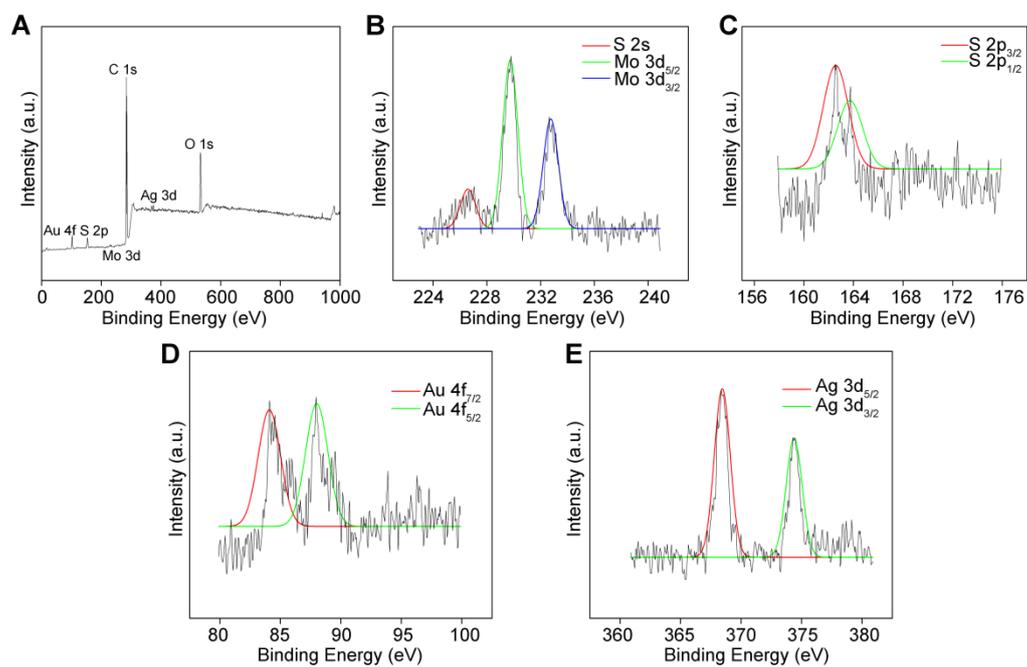


Figure S1. XPS survey spectrum of MoS<sub>2</sub>-Au-Ag (A), and XPS high-resolution spectra of MoS<sub>2</sub>-Au-Ag composites: Mo (B), S (C), Au (D) and Ag (E).