Short Communication

Gas Sensing and Electrochemical Behaviors of Ag-doped 3D Spherical WO₃ Assembled by Nanostrips to Formaldehyde

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A novel Ag-doped WO₃ sensing material was successfully prepared via a facile hydrothermal method combining with a wet dipping process. The phase composition and micromorphology of the as-obtained samples were characterized by X-ray diffraction (XRD) and field emission scanning electron microscope (SEM) technology. The electrochemical behavior and sensing were investigated, the results demonstrated that the vibration in resistance of Ag-doped WO₃ was approximately 3.5 times higher than the pure one after contacting formalin, and a higher response of 10.3 to 100 ppm HCHO was exhibited at working temperature of 250 °C, which was better than the pure WO₃ of 6.5 at 350 °C, the response/recovery time was shorted to 3 s/3 s. The enhanced of gas sensing behavior of WO₃ after introducing Ag could be attributed to the hetero-structure and the catalysis role of silver. The Ag-doped WO₃ is expected to be a promising in HCHO gas-sensing practical applications.

Keywords: WO₃; Ag-doping; HCHO sensor; electrochemical; gas sensing

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