ENHANCEMENT OF CO GAS SENSING PROPERTIES IN ZNO THIN FILMS DEPOSITED ON SELF–ASSEMBLED AU NANODOTS

Nguyen Le Hung, Hyojin Kim, Soon-Ku Hong, Dojin Kim

TÓM TẮT:

We present an excellent detection of carbon monoxide (CO) gas using Al-doped ZnO nanostructured thin films deposited on self-assembled Au nanodots (ZnO/Au thin films). We formed the self-assembled Au nanodots by annealing a thin Au layer with a thickness of 2 nm at a moderate temperature of 500 C prior to the growth of the main ZnO layer via the sputtering method. We observed an enhancement of CO gas sensing response in the ZnO/Au gas sensors by the insertion of a thin Au nucleation layer, especially showing a high maximum sensitivity to CO at 250 C and a low CO detection limit of 5ppm in dry air. In addition, the ZnO/Au thin film CO gas sensors displayed fast response and recovery behaviors.