

Ultra-sensitive acetone detection based on bimetal nanoparticles decorated high-resolution CuO nanopattern

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This study demonstrated ultra-sensitive acetone detection performance by decorating bimetal nanoparticles on the surface of high-resolution CuO nanopattern. The bimetal nanoparticles functionalized high-resolution CuO nanopattern channel could be fabricated through secondary sputtering techniques. Compared with the pristine high-resolution CuO and single metal nanoparticles decorated high-resolution CuO nanopattern channels, the bimetal nanoparticles decorated high-resolution CuO nanopattern channels exhibited excellent gas response ($\Delta R/R_a$) to the low concentration of acetone. The unique high-resolution morphology composed of ultrasmall CuO grains and synergistic sensitization of bimetal nanoparticles could contribute to the ultra-high performance of acetone sensing.