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Abstract

Metal oxide nanomaterials have been widely applied in the high-performance gas sensors. For metal oxide semiconductors, high surface-to-volume ratio and the exposed crystal facets are the two key factors for determining their gas sensing performances. In order to study the effect of surface structure on the gas sensing properties, in this work, two types of copper oxide (CuO) nanostructures, CuO nanotubes (CuO NTs) with exposed surface plane of (111) and CuO nanocubes (CuO NCs) with exposed surface plane of (110), were obtained from Cu nanowires (Cu NWs) and Cu_2O nanocubes (Cu_2O NCs), respectively. The morphologies, crystal and surface structures were characterized by high-resolution transmission electron microscopy (HRTEM),