

Band Alignment Effect in Ag-CuO/CuO MQWs Fabricated by All Step Solution Process

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Copper oxide (CuO) is an extensively studied semiconductor with a narrow and indirect energy band-gap of 1.2–1.8 eV. CuO has attracted a lot of research interest due to its unique properties and wide variety of morphologies in the nano regime that can be grown by tuning the growth habit of the CuO crystal. Combinations of silver-CuO (Ag-CuO) nanostructures have been utilized to enhance the performance of various applications. The spatial quantum confinement excitons in semiconductor lead to tailor the desire emission wavelength in quantum wells. In this regards, Ag-CuO/CuO MQWs were fabricated on glass substrate via low cost solution process with film thickness of 50 to 300 nm for Ag-CuO and CuO films. Furthermore, the samples were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), UV-vis absorption, photoluminescence (PL) and hall-measurement. We observed an absorption transitions shift to higher energy in Ag-CuO/CuO thin films, which is an indication of the presence of strong quantum confinement effect.