

Evidence of Band Alignment in ZnCuO/CuO MQWs Fabricated by All Step Solution Process For Ink-printed Photonic Devices

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Recently, CuO & ZnO has been a promising material in the development of exciton-based optoelectronic devices such as light-emitting diode (LEDs) and photovoltaic. Moreover, band alignment of CuO & ZnO has potential in semiconductor physics and devices, as the spatial distribution of carriers determines the physical characteristics. Combination of Zinc-Copper oxide (Zn-CuO) nanostructures was showed enhanced performance for various applications. Quantum confinement effects are widely used in many semiconductor applications where the band structure of quantum wells is tailored to give the desire emission wavelength. In this regards, ZnCuO/CuO MQWs were fabricated on glass substrate, thin ZnCuO & CuO films of thickness 50 to 400 nm were deposited via low cost solution process. Furthermore, Optical and electrical properties of as-deposited MQWs were characterized by UV-vis absorption, photoluminescence (PL) and hall-measurement, respectively. Redshift of the energy gap in ZnCuO/CuO thin films is an indication of the presence of strong quantum confinement effect.