

Single nanowire nanosensors: Fabrication and detailed studies

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Abstract

Individual metal oxide nanostructures are ideal building blocks for ultra-low-power and high performance sensing devices. Due to their multifunctionality, they are promising candidates for future optoelectronic and gas sensor devices, especially those based on individual nanostructures integrated by bottom-up strategies of nanotechnology. Thus, the development of different multifunctional devices is in rapid progress due to their unique properties. In this work, the individual nanowires (NWs) of semiconducting metal oxides were integrated into sensing devices using focused ion beam (FIB)/scanning electron microscopy (SEM) for their application in room temperature UV detection and gas sensing. Experimental results and possible sensing mechanisms are discussed.

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