

The Kinetic Reaction of ZnO Nanorods Growth in Aqueous Solution

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There are three most representing one-dimensional (1D) nanostructures that are being actively studied in nanotechnology i.e. carbon nanotubes, silicon nanowires, and ZnO nanowire/nanotube. In recent years, ZnO-based nanostructures such as nanowires (NWs), nanoneedles, nanotubes and nanorods have attracted much interest because of their use as building blocks for future optical, electrical and optoelectronic devices. In our studies, we have vertically grown ZnO nanorods by aqueous solution process using zinc nitrate hexahydrate ($\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$) and hexamethylenetetramine (HMTA) as precursor source materials. In this research, we are demonstrating the simple, easy and low-temperature synthesis process to produce 1D ZnO nanorods to take advantages of growth mechanism and calculate kinetics of ZnO nanorods with the help of chemical reaction occurred in the solution.