Growth of High Aspect Ratio ZnO Nanorods by Solution Process: Effect of Polyethyleneimine

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ZnO-based nanostructures such as nanorods have attracted much interest in recent years because of their use as building blocks for future optical, electrical or piezoelectric devices. Owing to its importance in various applications, high aspect ratio ZnO nanorods were grown on ZnO seed layer deposited glass, silicon and polyimide substrates by solution process at low-temperature using zinc nitrate hexahydrate, and hexamethylenetetramine. We studied the effect of growth-direction agent, polyethlyeneimine(PEI) on the growth of ZnO nanorods in terms of precursors concentration, temperature, and reaction time. It was found that PEI has a prominent effect on controlling the aspect ratio of ZnO nanorods in solution.