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Seed Layer Dependence of ZnO Nanorod Growth DARYL SPENCER, AMY HOR, HUAN LIANG, PARAMESWAR HARI, University of Tulsa — ZnO is a wide band gap semiconductor for optoelectronic applications such as solar cells, transparent conducting electrodes, and chemicals sensors. In past decades, significant progress has been achieved in controlled growth of ZnO nanorods and nanotubes. In this study we investigate the optimization of the growth properties such as orientation, diameter and shape of ZnO nanorods grown by a low temperature, chemical bath deposition technique. Our group fabricated nanorods on a glass substrate with a seed layer of ZnO deposited by RF and DC sputtering in a formamide solution bath (5%v/v) with zinc metal foil at 65 $^\circ$C for 24 hours. Scanning electron microscopy (SEM) images of ZnO nanorods reveal that the orientation and size of nanorods grown on various seed layers depend greatly on the initial seed layer of (doped) ZnO. Our research investigates the substrate dependence by experimenting with multiple seed layer deposition methods such as DC and RF coating, yielding both doped and undoped ZnO seed layers. The dependence on growth parameters, such as the concentration of formamide solution and heating methods, will be also characterized.

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