

Observation of 1 dimensional crystal structures of ZnO nanorods on different conductivity seed layer

JunSeok Lee, HyeWon Nam, SangHyo Lee, JongHyun Lee and JinPyo Hong

Novel Functional Materials and Device Lab, Hanyang University, Seoul, 133-791, Korea

The fine-structure properties of ZnO nanorods synthesized on different conductivity seed layer by hydro-thermal method with zinc nitrate ($\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, Aldrich) and hexamethylenetetramine (HMT, Aldrich) in convection oven were investigated with X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning transmission electron microscopy (STEM) and selective area electron diffraction (SAED). The conductivity of ZnO seed layers was determined by controlling rates and kinds of dopants for pure ZnO seed layer which was formed by an inductively coupled RF sputtering method. The maximum length of ZnO nanorods is about 2 μm . The lattice constant of single crystalline formation of the ZnO nanorods can be controlled by adjustment of rates and kinds of dopants for pure ZnO seed layers.