

Fabrication of diameter-tunable ZnO nanorod arrays via a sonochemical route

오유진, 정승호¹, 정수환*
경북대학교; ¹포항공과대학교
(shjeong@knu.ac.kr*)

A simple and novel sonochemical route has been demonstrated for the fabrication of diameter-tunable ZnO nanorod arrays on Si wafer. The diameter of ZnO nanorods was controlled by the concentration of Zn salt and hexamethylenetetramine (HMT) in aqueous solution. HMT was added to generate hydroxide ions (OH⁻) which react with Zn²⁺ ions. At high concentration of Zn salt and HMT, thick ZnO nanorod arrays were formed. On the contrary, thin ZnO nanorod arrays were formed at low concentration of Zn salt and HMT. The average diameter of ZnO nanorods varies from 40 nm to 200 nm. Growth mechanism of ZnO nanorod arrays was proposed. By the use of chemical effects of ultrasound under ambient conditions, highly crystalline ZnO nanorod arrays with different diameters can be readily fabricated on flexible polymer substrates.