

ZnO nanostructure grown by metalorganic chemical vapor deposition : Nanoparticles and nanorods

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We have synthesized ZnO nano-particles at room temperature with sizes of 10 - 50 nm using diethylzinc(DEZ) precursor and oxygen gas by MOCVD method. With changing the flux of both DEZ and oxygen reactive gas together with carrier gas like as nitrogen, the size of particles was controllable. Well-aligned single crystalline ZnO nanorods have been synthesized on silicon substrates by a single-step process without using any metal catalysts or a pre-deposited ZnO seed layer that was a requirement for such synthesis. The mean diameter of the nanorods is ~120 nm. In addition, x-ray diffraction measurements show that ZnO nanorods had single crystalline atomic structure and pure compositions with no any impurities. More importantly, from photoluminescence spectra of the nanorods strong and narrow excitonic emission and extremely weak deep level emission were observed, indicating that the nanorods are of high optical quality.

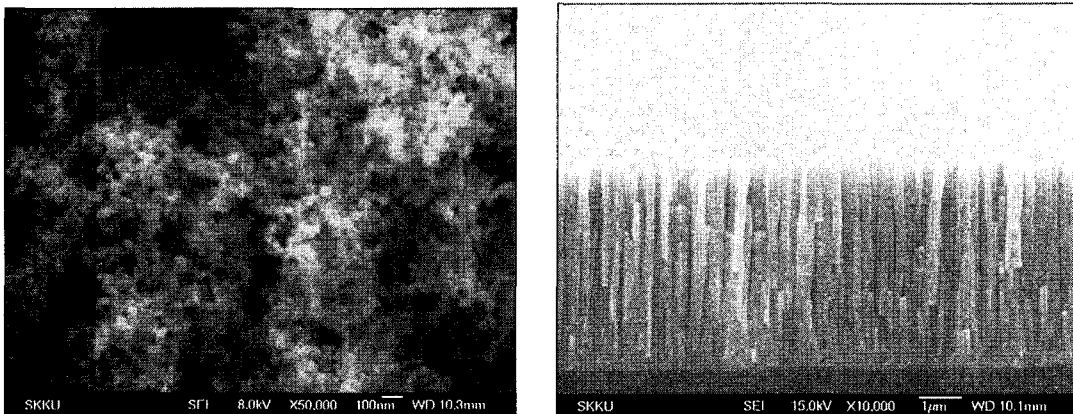


Figure. ZnO nanoparticles and nanorods by MOCVD method

참고 문헌

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