

Abstract Submitted
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Catalyst free synthesis and luminescence of well aligned ZnO nanorods AURANGZEB KHAN, Department of Physics and Astronomy & CMSS Program, Ohio University, Athens OH 45701., WOJCIECH JADWISIENCZAK, School of Electrical Engineering and Computer Science, Ohio University, Athens , MARTIN KORDESCH, Department of Physics and Astronomy & CMSS Program, Ohio University, Athens OH 45701. — Quasi-aligned undoped ZnO nanorods with diameter in the range 100-300 nm and length of several micrometers have been grown catalyst free on Si (100) wafer in a one-step process by direct heating of Zn powders. All nanowires are single crystals and are well aligned vertically to the substrate surface with *c*-axis preferred orientation. XRD, HRTEM and Raman studies revealed that the ZnO nanorods have wurtzite phase, are highly crystalline and well aligned with the lattice parameters $a = 0.32$ nm and $c = 0.52$ nm. The PL spectra measured at different temperatures are dominated by excitonic emission at 380 nm and less intense below bandgap emission band centered at 520 nm. The intensity ratio between these two bands changes with temperature.

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