

Growth of n-ZnO nanorods on p-GaN using an Aqueous Solution Method

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Wide band gap semiconductors like GaN and ZnO have high electron mobility and wide band gap energy. Zinc oxide (ZnO) nanorod arrays are grown on a seed-layer ZnO/GaN / sapphire substrate using a wet chemical bath deposition method. Chemical solution deposition is a low-temperature and possibly the lowest-cost method of growing ZnO nanorods on a GaN substrate. Field emission scanning electron microscopy (FESEM) and X-ray diffraction (XRD) measurements were used to examine the morphology, phase growth orientation and the structure of the ZnO nanorods and the GaN thin film. Optical property of the as-grown ZnO nanorods and the GaN thin film was analyzed by room temperature photoluminescence measurements. The synthesis of vertically well-aligned n-ZnO nanorods on p-GaN film with large aspect ratio, high optical quality, and high density can be very useful for fabricating nanoelectronic and nano-optical devices.