

Supporting informations

Vapour phase nucleation of ZnO nanowires on GaN: growth habit, interface study and optical properties

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Content

X-ray diffraction spectroscopy (XRD) was performed using an Empyrean diffractometer (PANalytical, Almelo, The Netherlands) mounting a Cu-LFF ($\lambda = 1.5406 \text{ \AA}$) tube operated at 40kV-40mA. XRD spectra were recorded by a parallel-plate collimated proportional Xe detector with a nickel large- β filter, in glancing-angle mode ($\omega=1.5^\circ$).

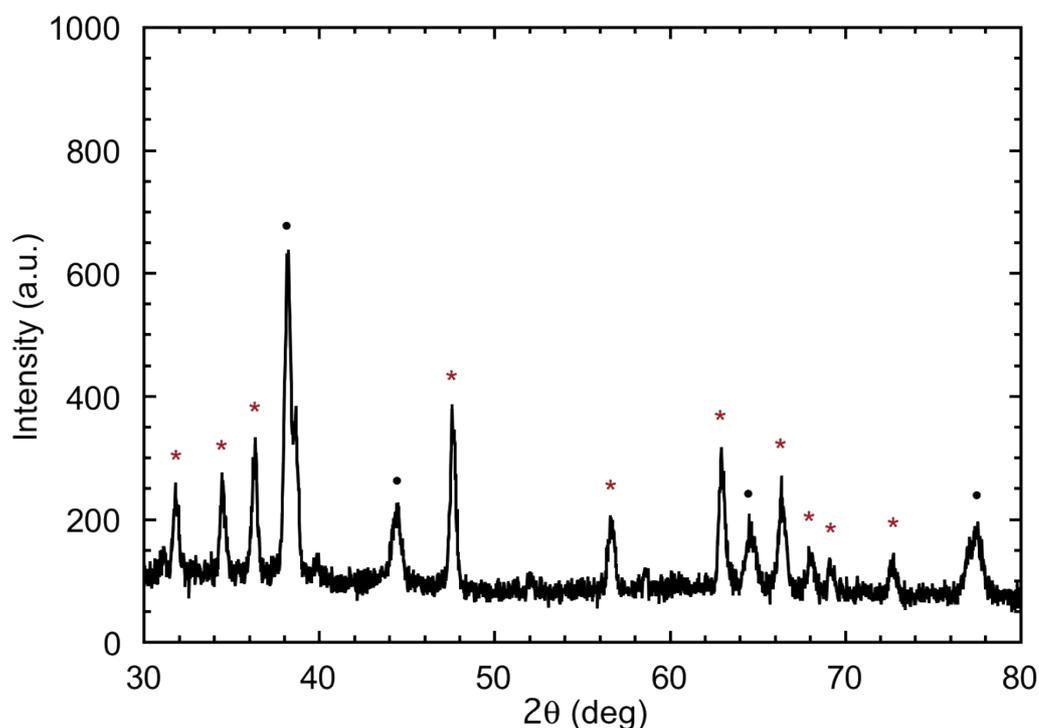


Figure 1: X-Ray diffraction pattern for ZnO nanowires, *indicate the zincite peaks while • indicate the gold peaks

GIXRD analysis of the samples is reported in Figure 1. The diffraction peaks of as-prepared samples can be indexed as ZnO zincite hexagonal structure. Gold signal is coming from contacts deposited on top of the device.

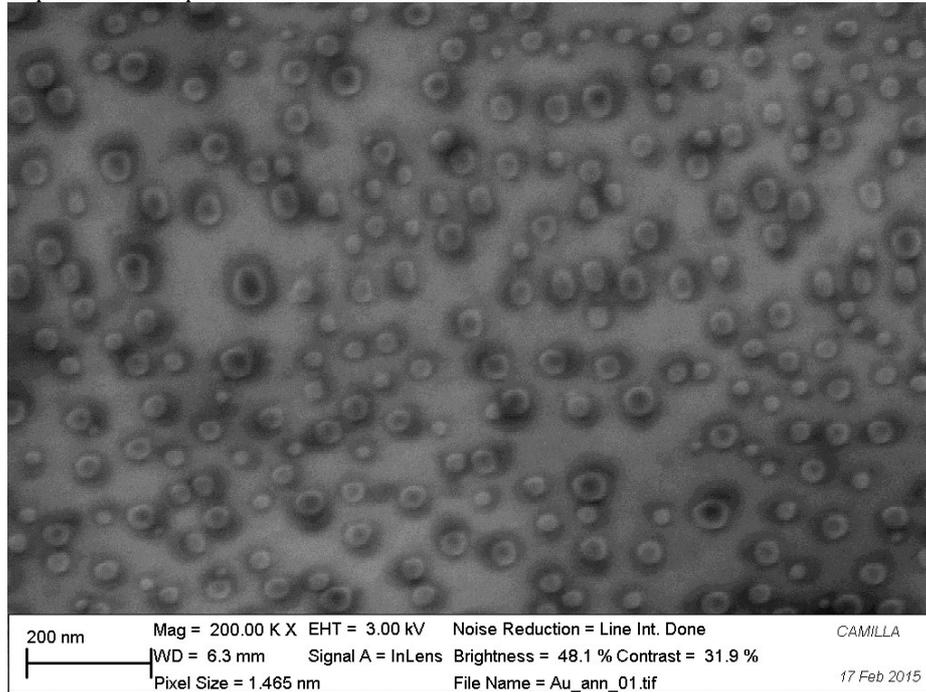


Figure 2: (a) SEM image of a GaN substrate with gold catalyzer particles acquired with In Lens detector.

Figure 2 reports the morphology of gold particles deposited as catalyzer on GaN substrate. The sample was prepared in the same way as the ones used for ZnO growth, with the difference that no zinc oxide powder was inserted into the crucible during the process: thus the Au layer deposited by sputtering clusterize into gold droplets as a consequence of the annealing treatment. The diameter of gold particles ranges from 10 nm to 40 nm.