

Growth of ZnO Nanostructures by Wet Oxidation of Zn Thin Film Deposited on Heat-Resistant Flexible Substrates at Low Temperature

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Coral-like ZnO nanostructures were successfully grown onto heat-resistant flexible substrates by the oxidation of Zn thin films. At a relatively low temperature (100°C), Zn thin film was oxidized using a horizontal furnace under the flow of water vapour. The obtained results revealed well-defined aggregates of ZnO nanostructures grown on the flexible films. XRD patterns exhibited a strong and sharp diffraction along the (002) plane suggesting a well-crystallized ZnO phase. Field emission scanning electron microscopy observations showed high-density ZnO nanostructures aggregated in coral-like shape. The present study introduced a cost-effective and simple approach to grow high-quality ZnO nanostructures with controlled shape and size, offering a promising candidate for nano-based devices such as fast-response photodiodes and gas sensors.

Keywords: ZnO, nanostructures, low temperature, wet oxidation.

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