



Fabrication and Characterisation of Device Quality ZnO Nanostructures

By Augustine Che Mofor

Cuvillier Verlag Jul 2007, 2007. Taschenbuch. Book Condition: Neu. 211x147x12 mm. Neuware - Since ZnO resurfaced as a very promising semiconductor material for applications in microelectronics, optoelectronics, sensor technology, biomedicine and spin electronics, producing high purity ZnO nanostructures for such applications has rather proven to be challenging. This book first revises the main properties of ZnO as a semiconductor and nanomaterial and also some fabrication techniques for nanostructures. It later concentrates on the development of a vapour transport system for the growth of high quality ZnO nanostructures (mainly nanorods). The book attempts to explain the influence of reactor pressure, growth temperature and growth time on the morphology and quality of ZnO nanorods. While intrinsic (undoped) ZnO nanorods were grown for extensive analysis, transition metal-doped ZnO nanorods were also fabricated and investigated for possible applications in magnetoelectronics/spintronics. Conventional material characterisation methods are also revisited and employed to analyse the crystalline quality, optical, electrical and magnetic properties of ZnO nanorods. Since the book is written in an application-oriented fashion, it extends to the fabrication of ZnO nanorod-based device structures. Here, nano p-n junctions and nano ZnO/ZnMgO quantum well structures are also presented. At the end, the reader clearly sees how ZnO nanorods of...



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