氧化物半導體缺陷之研究

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摘 要

在本研究?我們使用快速升溫化學氣相沉積法(Rapid ThermalAnnealing method of Chemical Vapor Deposition, RTCVD)成長ZnO薄膜，薄膜在可?光範圍之穿透?可達到80%以上。在原子?顯微鏡Atomic Force Microscope (AFM)，觀察樣品平整?，表面結構?有部分塌陷的區塊，其原因可能是ZnO 薄膜開始?解或者是成長過程中曾有雜質附著在上面。?測X-Ray 繞射(X-rayDiffraction，XRD)峰值位置，在繞射角?(2θ)?，在34 ?有一個峰值，晶面結構(002)。場發掃描式電子顯微鏡Field Emission ScanningElectron Microscopy (FE-SEM) 的觀測下，薄膜厚?約59nm。在熱激發電?效應下，所計算出的活化能，接近氧化鋅激子束縛能60meV，持續性光電導效應?我們明顯看出隨溫?上升衰減速?也相對增加，再計算出 τ 值與溫?和電子捕捉能?的關係。

關鍵詞 : 氧化鋅、快速升溫化學氣相沉積法、熱激發電流、持續性光電導、薄膜

目錄

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