

Document Type	: Thesis
Document Title	: <u>CHARACTERIZATIO OF THE ELECTRICAL BEHAVIOUR OF MULTILAYER SYSTEM BASED ON GaN</u> توصيف السلوك الكهربى لنظام متعدد الطبقات مبنى على نتريد الجاليوم
Document Language	: Arabic
Abstract	: intrinsic (i-GaN) with aluminum strips as contacts. Sample (2) is doped (n-GaN) with gold and aluminum dots as contacts. These samples grown by MOCVD method on sapphire substrate. For sample (1), I-V-T measurements were carried out under vacuum in the temperature range 300-700K. The resistivity of intrinsic GaN at room temperature was found to be $2.5 \times 10^8 \Omega \cdot \text{cm}$. The detailed analysis of conductivity and temperature reveals the presence of traps in the wide band gap of GaN with activation energies of 1.326 and 0.1387 eV. For sample (2), I-V-T measurements were carried out under vacuum in the temperature range 300-473K. There was a departure from non-linear behaviour of the current to a linear one as temperature increases. The dominant transport mechanism of the current has been believed to be the tunneling mechanism. The saturation current was calculated. C-V measurements were carried out at room temperature indicating a built-in potential V_i of about 1.45108 V and depletion width W_D as thin as 41.832 μm . The probability of tunneling enhanced by the width of the depletion region and the presence of surface states
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