Abstract Template

Abstract Title: The Role of Growth Temperature, V/III Ratio and CBr4 flow on Carbon Doped p-GaAs Epilayers

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Abstract

Recently years carbon (C) has attracted much attention for obtain p type GaAs and AlGaAs because of its low diffusion coefficient, ability to be doped to high levels, absence of memory effect. Furthermore, it has widely used for optical and electronical devices such as vertical cavity surface emitting lasers (VCSELs), Heterojunction Bipolar Transistors (HBTs) and edge emitting laser diode structures. High doping concentration of around ~10^{19}-10^{20} cm^{-3} is required ohmic contact layers. However, degradation of surface morphology also occurs at high doping concentrations and some hillocks can be seen the wafer surface. In this study, we have grown carbon p-GaAs staircase structures by using vertical type MOCVD reactor at the growth pressure of 50 mbar for obtain high doping concentration with good surfaces. Arsine (AsH_3) and trimethylgallium (TMGa) were used as precursors for arsenic and gallium, respectively. Carbon tetra bromide (CBr_4) was used for p-type dopant precursor. We have been investigated the effect of growth temperature, V/III ratio, CBr_4 flow to hole concentration of p-GaAs. Carrier concentration of p-GaAs staircase samples were performed by ECV measurements.

Keywords— *Doping level*, *ECV*, *MOCVD*

Professional Biography (100-150 words)

Ms KIZILBULUT is PhD student at Cumhuriyet University in solid state physics. She is working at ERMAKSAN Optoelectronic R&D Center as a researcher. Her specialities are the growth with MOCVD and structural, electrical and optical characterizations of semiconductor devices.



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