

Abstract Submitted
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Temporal and spectral photoluminescence from HVPE grown GaAs MATTHEW BOHN, Air Force Institute of Technology, WILLIAM GUINEY, Rose-Hulman Institute of Technology — Defects discovered in low temperature photoluminescence (PL) spectrum recorded from Hydride-Vapor Phase Epitaxial growth of GaAs were measured as a function of secondary HCl flow. An Argon ion laser illuminated the GaAs samples, which were held at 10 K using a liquid He cold finger in a cryogenic dewar. Transitions involving the point defects due to e-Si_{As}, V_{As}-Si_{As}, and e-V_{Ga} are identified in the PL spectrum. The Si defects are plotted as a function of HCl secondary flow rate and carrier concentration. It is postulated that the Si defects are introduced into the growth due to the quartz tube used in the secondary flow. In addition, time resolved PL measurements were made using a femtosecond Ti:sapphire laser and a synchronized Hamamatsu streak camera capable of picosecond temporal resolution. The time resolved PL measurements of the samples substantiated the excellent quality of the crystalline growth.

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