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Critical parameters for growth of optimized GaN and InGaN/GaN MQW structures on freestanding HVPE GaN substrates by MOCVD JAMES GRANDUSKY, VIBHU JINDAL, NEERAJ TRIPATHI, FATEMEH SHAHEDIPOUR-SANDVIK, College of Nanoscale Science and Engineering, University at Albany, Albany NY 12203, ALEXEI VERTIATCHIKH, GREG DUNNE, HAI LU, EDMUND KAMINSKY, RAJESH MELKOTE, General Electric Global Research Center, Niskayuna NY 12309 — With the continued improvement and availability of freestanding Nitride substrates, such as those grown by HVPE, these substrates are becoming more commonly used for growth and device applications. However, even with a reduced dislocation density as compared to heteroepitaxially grown GaN layers on sapphire or SiC, devices fabricated on these substrates are often less efficient. One reason for this is that generally growth is carried out using optimized conditions for growth on non-native substrates. In this work optimization of the growth conditions was carried out for GaN layers and InGaN/GaN MQW structures on freestanding HVPE GaN substrates. It was found that the optimized conditions for growth on these substrates are different as compared to growth on GaN on sapphire templates. The results of the optimization and the differences in the growth will be presented along with insight into the differences seen experimentally.

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