465. Title:Molecular beam epitaxy growth of GaN/AlGaN quantum cascade structure using droplet elimination by thermal annealing technique
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Abstract:We studied on the radio-frequency molecular beam epitaxial (RF-MBE) growth of

GaN/AlGaN quantum cascade (QC) structure grown on a metal organic chemical vapor deposition (MOCVD)-GaN template by employing the droplet elimination by thermal annealing (DETA) technique, in order to realize the successful fabrication of a QC structure with a large number of periods and to increase the radiant intensity from terahertz-quantum cascade lasers (THz-QCL) sample. DETA is a technique in which the metal droplets that form on the surface are evaporated and eliminated by temporarily increasing the substrate temperature, utilizing the property whereby the equilibrium vapor pressures of the metal components (Ga, Al) are larger than those of the resulting nitrides (GaN, AlN). DETA is a useful method which not only makes it possible to increase the number of periods in the QC structure, but also to improve the surface and structural properties of the QC structure. We could successfully increase the radiant intensity from a THz-QCL sample by increasing the number of periods in the stacked QC structure by using the DETA technique.