ABSTRACT

The studies of GaN etching behavior on heating are researched in order to avoid suppressing or delaying formation of GaN epilayers [1]-[2], but it is complete decomposition has not been extensively studied. In this paper, removing the GaN epilayers for reclaimed pattern sapphire substrates (PSS) was researched. A GaN decomposition reaction depends on the gas-flow rates and has a GaO2H reactant on an exposed PSS surface. The complete decomposition reaction can be expressed as below equation:

\[ \text{GaN(S)} + \text{H}_2(\text{V}) + \frac{1}{2} \text{O}_2(\text{V}) + \frac{1}{4} \text{N}_2(\text{V}) = \frac{1}{2} \text{Ga(V)} + \frac{1}{2} \text{GaO}_2\text{H(S)} + \frac{1}{2} \text{N}_2(\text{V}) + \frac{1}{2} \text{NH}_3(\text{V}). \]

Reclaiming substrates by this method are also used to regrown GaN-based LEDs epilayers will be demonstrated.

Keywords: GaN decomposition

REFERENCES
