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GaN 단일전구체를 사용한 Be 도핑된 GaN 성장과 특성 분석
Characteristics of Be doped GaN grown using single GaN precursor

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Gallium nitride has attracted great attention as a kind of perspective material for semiconductor devices. Be atoms have been considered as dopants to obtain high concentration of carriers. We have initially grown GaN via molecular beam epitaxy using a single molecular precursor. During the growth, the substrate temperature was varied from 590 ℃ to 700 ℃. It was established that the substrate temperature 620 ℃ is an optimum temperature to grow Be doped GaN. The resistance, surface roughness and photoluminescence measurements were performed after the growth. The roughness of the GaN film grown at 620 ℃ is about 15 Å. In the Be doped GaN, the roughness of the sample decreases to about 9 Å. The measuring of photoluminescence shows that the presence of Be lead to the intensity decreasing of the peak at 540 nm and the intensity increasing of the peak at 350 nm. No obvious resistance changes were observed even though the temperature of Be varying from 800 ℃ to 1150 ℃. This shows much difference with what expected. Detailed reasons are still on the researching.

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