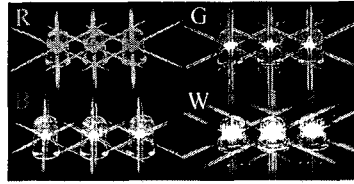
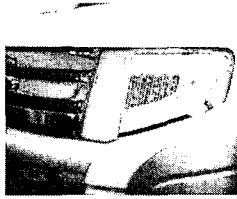




## 2004 소성가공학회 특별세션

저결함 밀도를 갖는 질화물 계열 반도체 박막 성장 연구



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## Introduction

### ▶ III-Nitride Semiconductors

#### ■ Hexagonal Wurtzite & Direct Bandgap Materials

InN : 1.9 eV GaN : 3.4 eV AlN : 6.2 eV

→ InAlGaN : Whole Visible & UV Emission (200 ~ 650 nm)

#### ■ High Bond Strength & Good Thermal Conductivity

: Hostile Environmental Application

#### ■ Two Main Applications

High Brightness LEDs (Full Color Display)

CD & DVD Memory Source Short Wavelength LDs

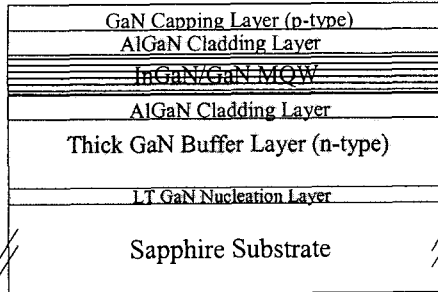
Semicond. Character. Lab.



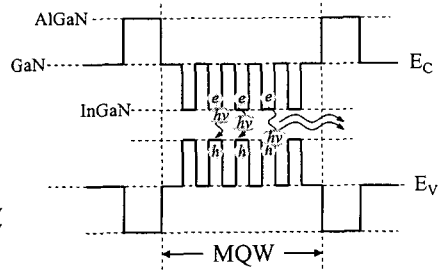


## Conventional GaN LED Structure

### Cross section view



### Band diagram



### Regrowth Technique

- ☑ Epitaxial Lateral Overgrowth (ELO)
- ☑ Pendeoepitaxy (PE)

저결함 밀도의 질화물 반도체 박막 구현을 통한 발광효율 향상

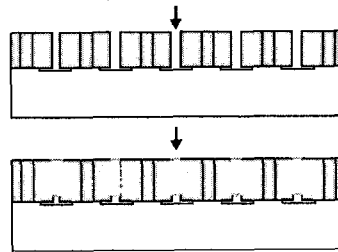
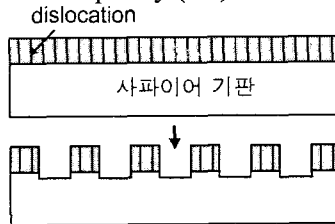
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## 실험결과

### Regrowth Technique

- ☑ Pendeoepitaxy (PE)



Lower TD density in seed



$g=11\bar{2}0$



Bending of many TDs

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