

課題番号 : F-20-NU-0013
 利用形態 : 機器利用
 利用課題名(日本語) :
 Program Title (English) : Fabrication of micron Light Emitting Diode
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 キーワード/Keyword : GaN, neutral beam etching, micro LED, リソグラフィ・露光・描画装置

1. 概要(Summary)

Fabrication of GaN based micron-LED was carried out employing the Electron Beam lithography System via dry etching techniques.

2. 実験(Experimental)

【利用した主な装置】

Electron Beam Lithography System

【実験方法】

Fabrication of 100-nanometer patterns

- Spin-coating of PMGI at 1500 rpm, baking at 190 °C for 5 min and ZEP:Anisole (1:1) at 3000 rpm, baking at 190 °C for 5 min
- Ebeam lithography writing with 2 nA
- Development with N50 rinsed by IPA for 2 min and with MIF300 rinse by DI water for 10 s.
- Deposit Ni and lift-off.
- Finally, dry etching using neutral beam was carried out

3. 結果と考察(Results and Discussion)

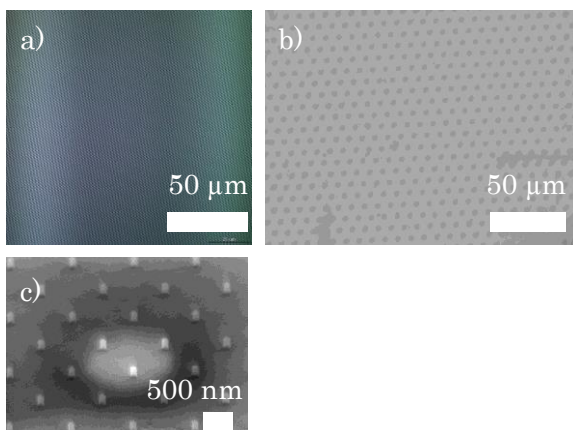


Fig. 1 Process of nanodisk fabrication.

Fig. 1a shows optical images of 100-nanometer patterns using ebeam lithography. Fig. 1b exhibits Ni deposition and lift-off process. Finally, Fig. 1c depicts nanodisks fabricated by neutral beam dry etching.

The photoluminescence measurements was carried out to evaluate IQE of samples (Fig. 2).

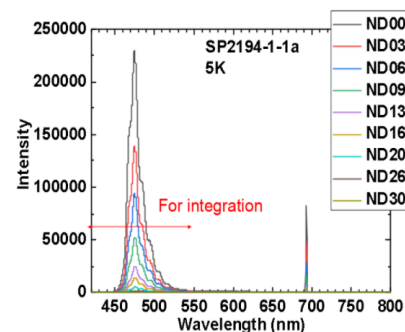


Fig. 2 Photoluminescence of nanodisks.

4. その他・特記事項(Others)

The dry etching using neutral beam was carried out in AIST, Tsukuba.

5. 論文・学会発表(Publication/Presentation)

None

6. 関連特許(Patent)

None