

課題番号 : F-20-NU-0033
 利用形態 : 機器利用
 利用課題名(日本語) :
 Program Title (English) : Fabrication and evaluation of InAlN/GaN MIS-HEMTs
 利用者名(日本語) :
 Username (English) : N. H. Trung
 所属名(日本語) : 産業技術総合研究所(AIST) 名古屋大学 窒化物半導体先進デバイスオープンイノベーションラボラトリ(GaN-OIL)
 Affiliation (English) : GaN Advanced Device Open Innovation Laboratory (GaN-OIL), AIST-Nagoya University
 キーワード/Keyword : InAlN/GaN, MIS-HEMT, super lattice, 成膜・膜堆積

1. 概要(Summary)

Fabrication and evaluation of conventional InAlN/GaN MISHEMT and supper lattice InAlN/GaN MISHEMT

2. 実験(Experimental)

【利用した主な装置(Equipment)】

プラズマ CVD 装置

【実験方法】

- Structure formation -MOCVD
- SiO₂ hard mask
- Mesa-insulation
- ALD-Al₂O₃
- Gate electrode formation
- S/D electrode formation

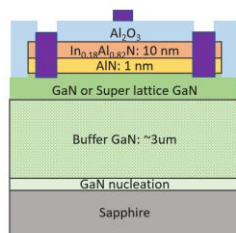


Fig. 1 Fabrication process and device structures.

3. 結果と考察(Results and Discussion)

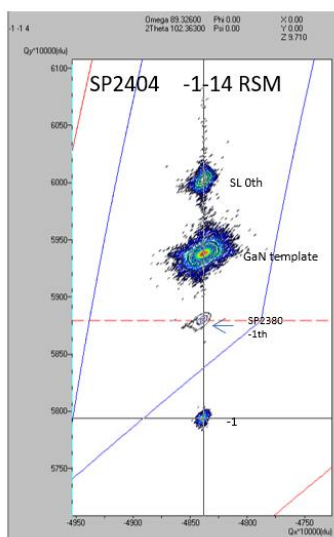


Fig. 2 Super lattice InAlN/GaN structure.

Fig. 2 shows the high-resolution X-ray diffraction reciprocal space mapping revealing that the AlN/GaN supper lattice structure is totally strained on the GaN template, ensuring a good quality super lattice structure.

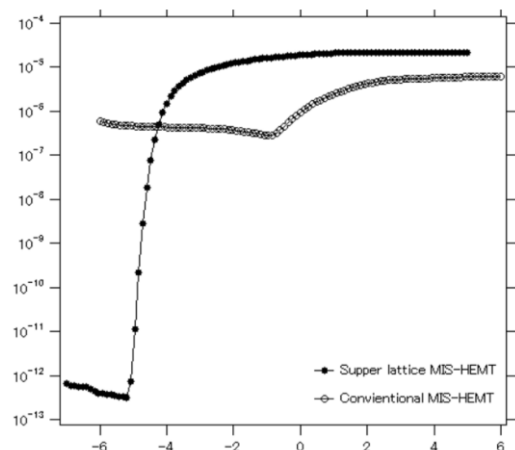


Fig. 3 ON/OFF ratios of devices.

Fig. 3 shows the ON/OFF ratios of MIS-HEMTs. The device fabricated on super lattice structure is much better than the conventional devices.

4. その他・特記事項(Others)

Work is conducted in both NPF-Tsukuba and NPF-Nagoya University

5. 論文・学会発表(Publication/Presentation)

None

6. 関連特許(Patent)

None