

## 電子線誘起電流法による GaN Schottky 領域の転位と電流リーク箇所の観察

### EBIC Investigation of Dislocations and Leakage Sites in GaN Schottky Diode

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GaN-based wide band gap semiconductors are promising for the applications in high electron mobility transistors and power devices. The performance and reliability of devices strongly depend on the material quality and the fabrication process. Dislocation is one of the major defects in GaN. However, the electrical activity of dislocations in GaN devices has not been well understood. In this study, we attempted to investigate the electrical properties of dislocations in GaN Schottky diodes by using electron-beam-induced current technique.

Figure 1 showed the SE and EBIC images of a region with a scratch on the electrode. In the EBIC image at zero bias, dislocations were observed as dark dots suggesting the recombination occurred. With the increasing of reverse bias, the dark contrast of dislocations disappeared, while leakage sites gradually became visible. The reverse leakage current is not directly related with dislocations, which means dislocations do not act as the detrimental sites for power devices. Now, the origin of bright spots is under investigation.

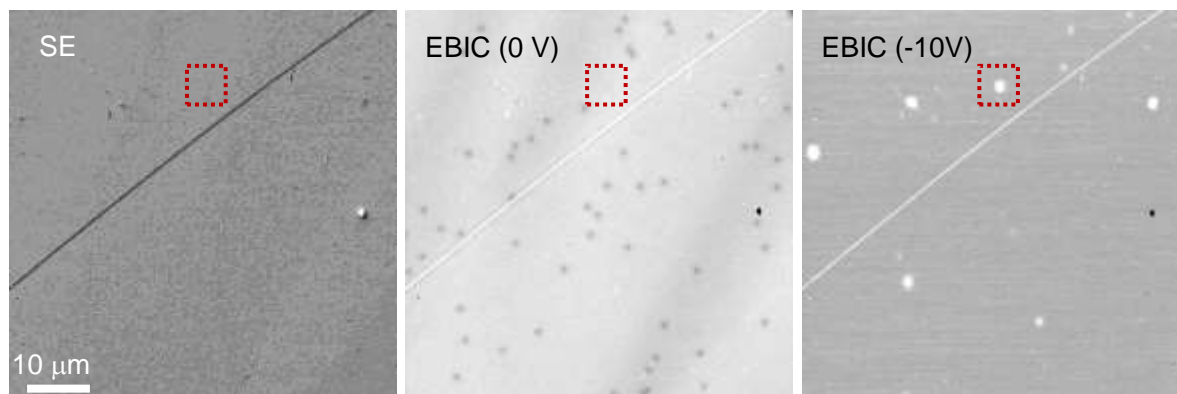


Fig. 1 SE and EBIC images of GaN Schottky. Dislocations were observed as dark spots in EBIC mode without bias, while bright leakage sites appeared when bias increased.

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