④ Polarity determination of III-V compound semiconductor crystals at nano region

Motivation

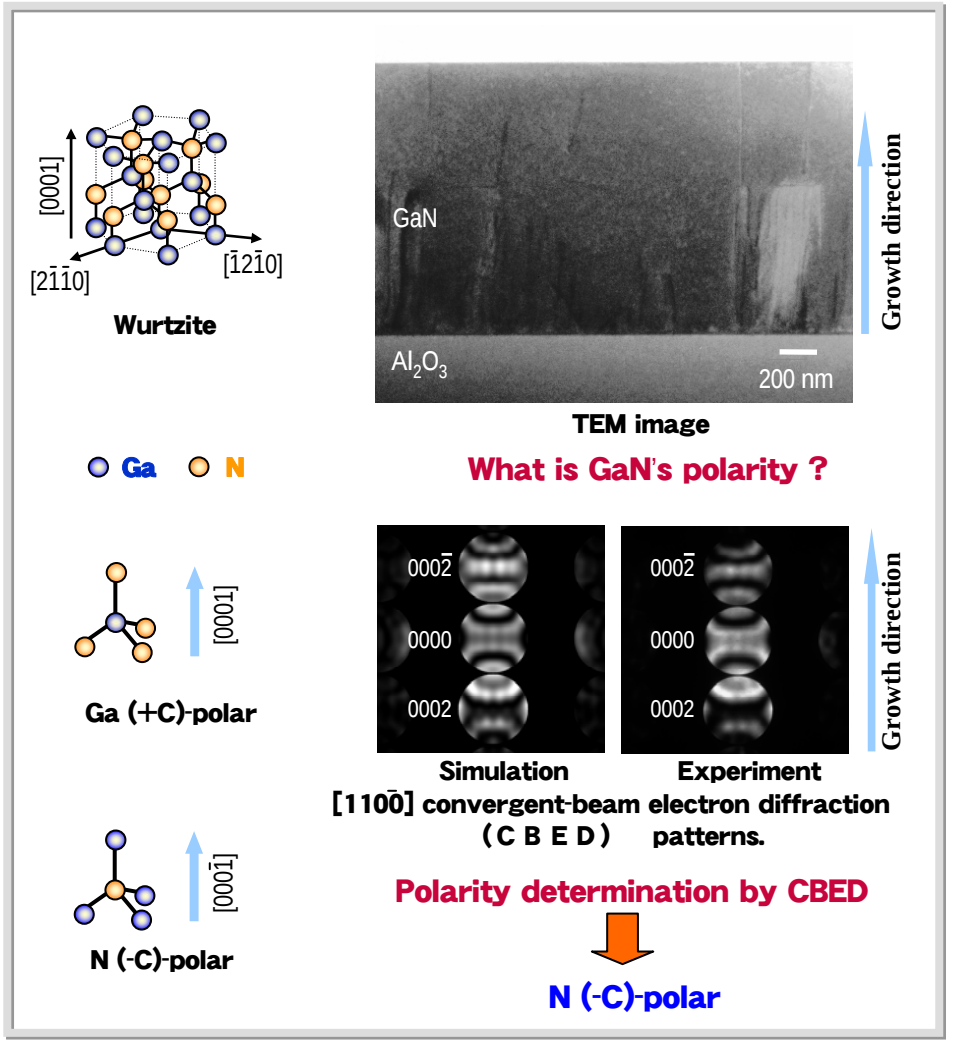
Since the polarity affects the crystalline quality of III-V compound semiconductors, controlling the polarity is very important to obtain a desired crystal. We have been trying to determine the polarity by transmission electron microscope (TEM) speedily and precisely.

Originality

We showed that high-quality GaN grown by metalorganic vapor phase epitaxy had N polarity from the early stage of its growth process by convergent-beam electron diffraction. This result shows it's possible to grow a high-quality GaN with N polarity, and it's helpful for further understanding of the growth mechanism of GaN.

Impact

TEM techniques enable to determine the polarity of a multilayered structure and a nanowire speedily, which is difficult to determine their polarity by other methods. It would be helpful for understanding the growth mechanism.



Contact person:

Dr. Toshitsugu Mitate
Materials Analysis Center, NTT-AT
TEL: 046-250-3678 FAX: 046-250-1678
e-mail: toshitsugu.mitate@ntt-at.co.jp

Dr. Toshiki Makimoto
Research Planning Section, NTT Basic Research Laboratories
TEL: 046-240-3300 FAX: 046-270-2358
e-mail: makimoto@will.brl.ntt.co.jp