

Important planes of wurtzite GaN

This teaching module shows the important planes of wurtzite GaN.

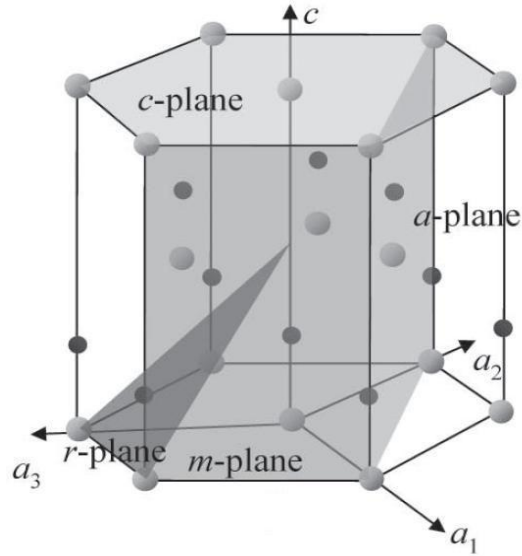


Figure 1: Important planes of wurtzite GaN [1]. The structure does not have inversion symmetry with respect to c -axis.

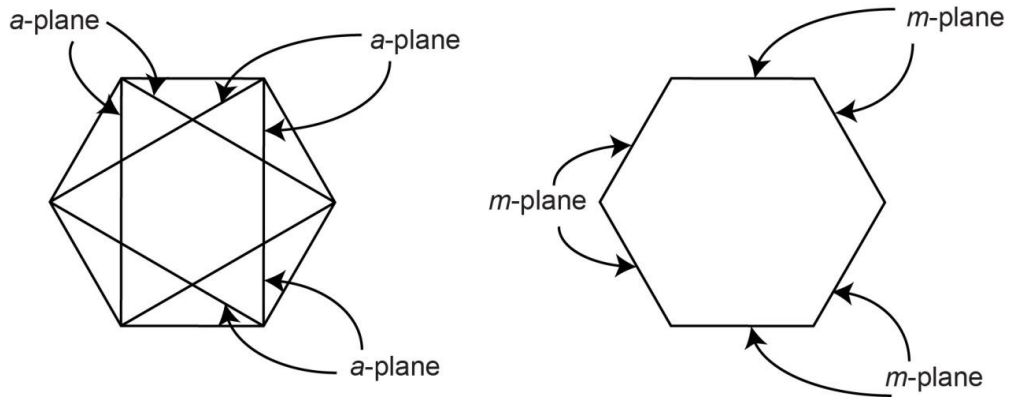


Figure 2: Top view of a - and m -planes of wurtzite GaN.

Table 1: Miller indices of important crystal planes in wurtzite GaN along with their polarity.

| Plane | Index | Polarity |
|------------|------------------|-----------|
| c -plane | (0001) | polar |
| a -plane | (11 $\bar{2}$ 0) | nonpolar |
| m -plane | (10 $\bar{1}$ 0) | nonpolar |
| r -plane | (1 $\bar{1}$ 02) | semipolar |

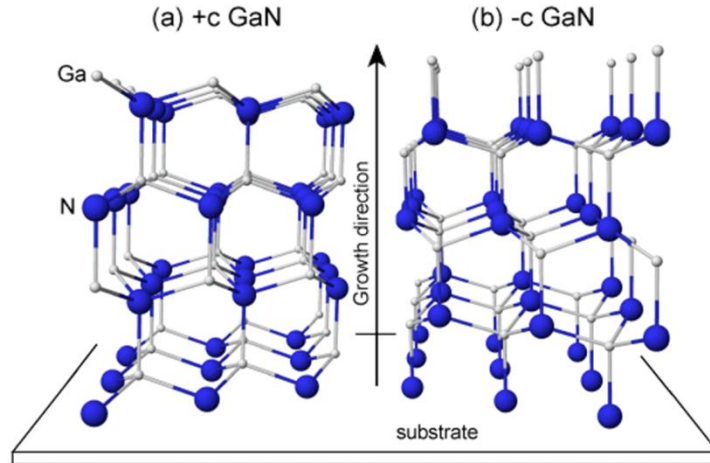


Figure 3: Schematic illustration of wurtzite GaN structure exhibiting the polarity along the c -axis. The small and large spheres indicate Ga and N, respectively. GaN with Ga-face (+ c) polarity is on the left side and N-face ($-c$) polarity is on the right side. [2]

References

- [1] J. H. Ryou *et al.*, "Control of quantum-confined Stark effect in InGaN-based quantum wells", *IEEE Journal of Selected Topics in Quantum Electronics*, **15**, 1080 (2009)
- [2] M. Sumiya "Review of polarity determination and control of GaN" Materials Research Society (MRS) < http://www.mrs.org/s_mrs/doc.asp?CID=26415&DID=321208 > (accessed October 2010)