

## Abstract

Real structure of heteroepitaxial GaN and AlGaN layers is studied by diffuse x-ray scattering. A new developed method based on Monte Carlo simulation enabling to determine densities of threading dislocations in c-plane GaN and stacking faults in a-plane GaN is presented. The results of Monte Carlo simulations are compared with ones obtained by use of other conventional techniques. The advantages and limitations of the new method are discussed in detail. The methods accuracy is estimated as about 15%. We have shown that our method is a reliable tool for threading dislocations and stacking faults densities determination.