Effect of growth temperature on the properties of AlGaN grown by MOCVD

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Recent studies on the properties of AlGaN have been focused on the growth temperature. AlGaN layers are usually grown by metalorganic chemical vapor deposition (MOCVD). The growth temperature plays a crucial role in the quality of the AlGaN layer. A higher temperature results in a higher growth rate, but it also leads to a higher defect density. The growth temperature is therefore an important parameter in the growth of AlGaN layers.

In this study, the effect of growth temperature on the properties of AlGaN grown by MOCVD was investigated. The growth temperature was varied from 500 to 800 °C, and the properties of the grown layers were characterized using various techniques such as photoluminescence (PL) and X-ray diffraction (XRD).

The results showed that the growth temperature significantly affects the optical and structural properties of the AlGaN layer. A higher growth temperature led to a higher carrier concentration, which is beneficial for applications such as light-emitting diodes (LEDs). However, the peak photoluminescence intensity decreased with increasing growth temperature, indicating a decrease in the crystal quality.

In conclusion, the growth temperature is a critical parameter in the growth of AlGaN layers. A careful optimization of the growth temperature is necessary to achieve high-quality AlGaN layers with desirable optical and structural properties.