Halbleiter-Nanophotonik

SFB 787

Einladung

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Thema: "Patterned GaN substrates with laterally variable vicinal angle for device applications"

Abstract:

Modern optoelectronic devices are based on layered structures, grown by different epitaxial methods. Chemical composition and physical properties of layers can usually be controlled only in the growth direction, and intentionally they are constant in the growth plane. In the present communication we show GaN- based structures in which chemical composition can be controlled in all directions, i.e., vertically and laterally.
Epitaxial growth is commonly carried out on uniform, miscut monocrystalline substrates. The substrate is cut so that its surface is angled with respect to a low index crystal lattice plane. In case of freestanding GaN substrates the most often used plane is the polar (0001) one and the miscut angle ranges from 0.3 up to 0.7 degrees.
In the present study we locally change the substrate micsut angle by surface patterning. We show that indium content, hole concentration and point defects concentration is sensitive to the local miscut angle. We also show some interesting device applications, such as laser diodes with variable wavelength on one wafer and superluminescent diodes with super-wide emission spectrum.

Gäste sind herzlich willkommen!

Prof. Kneissl und Dr. T. Wernicke