Saulėtekio Puslaidininkių Fizikos Seminaras

CENTER FOR PHYSICAL SCIENCES AND TECHNOLOGY

VILNIAUS UNIVERSITETAS · 1579 · FIZIKOS FAKULTETAS

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# GaN micro- and nanophotonic cavities

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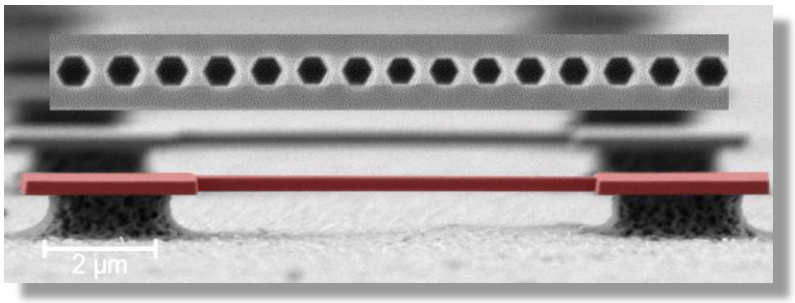


III-V nitride semiconductors are nowadays widely spread in the optoelectronic industry, which is mainly driven by the blue light emitting diode (LED). The latter is the corner-stone of white LEDs, which recently triggered the general lighting revolution. On the other hand, III-nitrides are also promising for photonics.

In this presentation, we will focus on GaN photonic crystal cavities, which are fabricated from GaN-on-silicon wafers. We will show that quality factors in excess of 40'000 can bee fabricated in two-dimensional photonic crystal cavities designed for 1.5 µm resonance. This allowed us achieving efficient second and third harmonic generations. We also fabricated nanobeam photonic structures in which a single InGaN quantum well was embedded. Thanks high β emission coupling factor, inherent to such a geometry, and the large material gain, we observed lasing action under continuous wave optical pumping at room-temperature. We will finally highlight the importance of surface states in GaN photonic structures through a careful study of microdisk optical resonators.

*coffee & snacks by*

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