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16 µm InP-related quantum cascade laser

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The Quantum Cascade Laser are valuable as the sources for the detection of large organic hydrocarbon molecules like the BTX compounds in the 12–16 μ m region or for radio-astronomy as local oscillators in heterodyne detectors. In this work, long wavelength 16 μ m quantum cascade lasers will be demonstrated at room temperature with high peak output power using a bound-to-continuum structure design. The structure was grown by gas sources molecular beam epitaxy and consist of a 45 period active region embedded in an optical waveguide. The devices were processed in 50 - to 70 - μ m wide mesa using wet chemical etching and a SiO₂ for passivation. Multimode emission with pulsed peak power up to 700 mW at 30°C and above 200 mW at 100°C will be presented. The emission spectrum consists of modes around 641 cm-1 (λ ~15.6 µm) and around 602 cm-1 (λ ~16.6 µm).

Biography

Anna Szerling received MSc in Physics from the Warsaw University of Technology, Warsaw, Poland, in 2002 and PhD degree in field of electronics from the Institute of Electron Technology, Warsaw, Poland, in 2008. Her main research interests include processing and characterization of the semiconductor devices. She currently works on the THz and MIR quantum cascade lasers. For 10.2014 – 11.2014, she joined the group of Prof. M. Razeghi at CQD, USA, as a Visiting Scholar.

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