

417. Title:Complex-coupled photonic crystal THz lasers with independent loss and refractive index modulation

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PuAbstract:Compared to near infra-red photonic crystal (PhC) band-edge lasers, achieving vertical emission with quantum cascade (QC) material operating in the THz range needs dedicated engineering because the TM polarized emission of QCLs favors in-plane emitting schemes and the currently used double plasmon waveguide, prevents vertical light extraction. We present an approach with independent refractive index and extraction losses modulation. The extraction losses are obtained with small extracting holes located at appropriate positions. The modal operation of the PhC is shown to critically depend on the external losses introduced. Very high surface emission power for optimum loss extractor design is achieved.