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Authors:Benz, A. (1); Brandstetter, M. (1); Deutsch, C. (1); Unterrainer, K. (1); Detz, H. (2); Andrews, A.M. (2); Klang, P. (2); Schrenk, W. (2); Strasser, G. (2)
Author affiliation:(1) Photonics Institute and Center for Micro- and Nanostructures, Vienna University of Technology, Gusshausstrasse 29/387, A-1040 Vienna, Austria; (2) Institute of Solid-State Electronics and Center for Micro- and Nanostructures, Vienna University of Technology, Floragasse 7/362, A-1040 Vienna, Austria
Corresponding author:Benz, A.(alexander.benz@tuwien.ac.at)
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Abstract:We present the design and realization of active photonic crystal (PhC) terahertz (THz) lasers operating in higher photonic bands. The structure consists of an array of isolated pillars fabricated from a THz quantum-cascade laser and embedded in a double-metal waveguide. The PhC geometry is adopted to achieve lasing in the first and second photonic bands. Thereby, the optical mode is pushed from the active pillars into the surrounding. The sensitivity of local sensors can be increased by almost one order of magnitude compared to designs operating in the lowest photonic band.
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