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Title:New type of 5-22 THz radiation sources based on semiconductor resonant reflectors

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Abstract:In polar semiconductors, the lattice dielectric function varies resonantly in the radiation frequency range  $\omega_T < \omega < \omega_L$ , where  $\omega_T$  and  $\omega_L$  are the transverse and longitudinal optical phonon frequencies, respectively. The resonant reflectance spectra in the 5-22 THz range from polar semiconductors InSb, AlAs, InP, GaAs, GaN and GaAs/AlGaAs heterostructures are investigated experimentally. The semiconductor resonant reflectors are proposed, and a capability of separating a narrow spectral band from the heated-body emission spectrum was realized. A new type of the continuous wave THz radiation source operational in the 5-22 THz range is proposed. © 2012 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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