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Title:THz wave propagation in two-dimensional metallic photonic crystal with mechanically tunable photonic-bands

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Abstract:Transmission and dispersion relation of THz waves in two-dimensional photonic crystal (PC) composed of metal rods are studied by using finite-difference time-domain simulation and THz time-domain spectroscopy measurement. The PC is embedded in a parallel metal plate waveguide with an air gap between the PC and one of the plates. The photonic-band-gap well-defined at small air gap narrows systematically with opening the air gap and disappears when the air gap is 2 \sim 3 times the rod height, where the two-dimensional nature of PC is destroyed. The mechanical tunability of photonic band structure would be useful in functional THz device. \copyright 2012 Optical Society of America.

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