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Authors:Myoga, Seiji (1); Amemiya, Tomohiro (2); Ishikawa, Atsushi (3); Nishiyama, Nobuhiko (1); Tanaka, Takuo (3); Arai, Shigehisa (1)
Author affiliation:(1) Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo 152-8552, Japan; (2) Quantum Nanoelectronics Research Center, Tokyo Institute of Technology, Tokyo 152-8552, Japan; (3) Metamaterial Laboratory, RIKEN, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan
Corresponding author:Amemiya, T.(amemiya.t.ab@m.titech.ac.jp)
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Abstract:We examined the electromagnetic responses of near-infrared metamaterials consisting of split-ring resonators fabricated on GaInAs semiconductor layers with different doping levels on an InP substrate. The inductancecapacitance (LC) resonances of the split-ring resonators could be controlled entirely from 52 to 63 THz by changing the carrier concentrations from 2.6 × 10¹⁸ to 2.7 × 10¹⁹ cm⁻³. Our results show the feasibility of semiconductor-based tunable metamaterials. © 2012 Optical Society of America.
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