Published Online: 02 June 2017

Tunable cutoff frequency in one dimensional all superconducting photonic crystal

AIP Conference Proceedings **1849**, 020013 (2017); https://doi.org/10.1063/1.4984160

Sreejith K. P.[1] *and* Vincent Mathew[1,a)]

Hide Affiliations

[1]Department of Physics, Central University of Kerala, Riverside Transit Campus, Padannakad, Nileshwar, Kasaragod, Kerala--671 314, India

[a)]Corresponding author: vincent@cukerala.ac.in

ABSTRACT

Based on two fluid model and characteristic matrix method, we have numerically investigated the transmittance properties of one dimensional binary photonic crystal comprising of two superconducting materials in the infrared region. We mainly concentrate on the cutoff frequency of transmittance spectra. The study reveals that the cutoff frequency can be tuned by number of periods of photonic crystal, thickness of both superconducting materials and operating temperature. The proposed structure is a good candidate for the infrared frequency application such as reflector, high pass filter etc.

PDF

1. E. Yablonovitch, Physical review letters **58**, p. 2059 (1987). https://doi.org/10.1103/PhysRevLett.58.2059, Google Scholar, Crossref

2. S. John, Physical review letters **58**, p. 2486 (1987). https://doi.org/10.1103/PhysRevLett.58.2486, Google Scholar, Crossref

3. A. H. Aly and D. Mohamed, Journal of Superconductivity and Novel Magnetism **28**, 1699–1703 (2015). https://doi.org/10.1007/s10948-015-2993-x, Google Scholar, Crossref