

عنوان مقاله:

Investigation of Solid-Solid Honeycomb Lattice Phononic Crystallin Hypersonic Applications

محل انتشار:

سومین کنفرانس پژوهشی های کاربردی در مهندسی برق (سال: 1401)

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خلاصه مقاله:

In this study, a ۲D solid-solid honeycomb lattice phononic crystal comprised of PMMA and steel has been investigated. Honeycomb lattice configuration contains two identical scatterers with radii of "r" in a single unit cell separated equally. The radius of scatterers has been swept in the range of $۲۵۰\mu\text{m}$ - ۱mm to achieve the largest band gap. The band structure and the transmission spectra have been obtained using the finite element method and there is a good agreement between the obtained results. The two configurations of PMMA inclusions in steel background and vice versa have been analysed and the largest band gap of ۱۵۰kHz has been achieved for the radii of ۱mm for scatterers of steel immersed in PMMA. Also, the deaf and flat bands have been appeared in the band structure which resulted in suppression of wave transmission in the corresponding frequency range.

کلمات کلیدی:

Phononic crystal, Honeycomb, FEM, Solid-Solid

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