

عنوان مقاله:

Investigation on the Band Gap of Centered Square Phononic Crystals

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خلاصه مقاله:

The periodic structure of ۱-۳ piezocomposite phononic crystal minimize the effect of the coupling of parasitic modes on the deliberately excited plane modes and prevent the propagation of unwanted Lamb waves. In this article, the band structures of the centered square phononic crystals of PZT- $\Delta$ H rods in polyethylene terephthalate matrix was studied using the numerical method of finite elements. In particular, the phononic band gaps of the system was investigated as the functions of the volume of the PZT element at the center of the unit cell of the considered crystal under the constant filling fraction of PZT rods. According to the results, the band structure of the system contains three gaps whose widths vary by the volume. These gaps are extended in the (normalized) frequency range of  $1100-2530$  m/s. Further observations particularly show that in case the all PZT rods of the system are of the same size, the maximum achievable band gap of the system will be obtained

کلمات کلیدی:

phononic crystal, Band gap, Piezocomposite, Filling fraction

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