

**(Research Article)**  
**Investigation of the effect of elastic constants on the gap width in the two  
dimension phononic crystal**

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**Abstract**

In this paper, using finite element computational methods and Camsul package and programming in Matlab environment, first the frequency band structure and the band gap of the 2D phononic crystal structure with a lattice of hexagonal phononic and the optimal filling fraction are performed and then considering three phononic crystal structures including air cavities in aluminum, iron and silver base material with cylindrical cavities and cross-section deformation, we investigated the effect of lame coefficients on the band structure, band gap and we observed that with increasing the size of these constants, the gap width will also be larger. Also, we investigation three non-metallic structures including polyethylene polymer, silica non-conductive and a type of glass, it was observed that by reducing the amount of lame coefficients, the band gap for these structures increases.

**Keywords:** Phononic crystal, Phononic band structure, Finite element, Lame coefficients.

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