عنوان مقاله:

Effect of Micropolarity on the Propagation of Shear Waves in a Piezoelectric Layered Structure

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خلاصه مقاله:

This paper studies the propagation of shear waves in a composite structure consisting of a piezoelectric layer perfectly bonded over a micropolar elastic half space. The general dispersion equations for the existence of shear waves are obtained analytically in the closed form. Some particular cases have been discussed and in one special case the relation obtained is in agreement with existing results of the classical –Love wave equation. The micropolar and piezoelectric effects on the phase velocity are obtained for electrically open and mechanically free structure. To illustrate the utility of the problem numerical computations are carried out by considering PZT-4 as a piezoelectric and aluminium epoxy as micropolar elastic material. It is observed that the micropolarity present in the half space influence the phase velocity significantly in a particular region. The micropolar effects on the phase velocity in the piezoelectric coupled structure can be used to design high performance acoustic wave devices.

کلمات کلیدی:

Shear wave, Micropolar, Piezoelectric, Dispersion, Phase velocity