عنوان مقاله:

Acoustic waves scattering from polymer rods

محل انتشار:

دهمین کنفرانس بین‌المللی آکوستیک و ارتعاشات (سال: 1399)

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خلاصه مقاله:

Acoustic and elastic wave scattering can be used for nondestructive evaluation purposes. By analyzing the scattered field of an object, significant information can be obtained about the physical properties and integrity of the component. The scattered field is usually analyzed by using the form function. The form function has already been investigated analytically and ex-perimentally in many studies for isotropic and transversely isotropic cylinders as well as cylin-drical shells and spheres. In this paper, the scattering of acoustic waves from polymer cylinders is considered. An analytical model is used for acoustic wave scattering from an immersed pol-ymer cylinder. The corresponding form function of the polymer cylinder shows that its ampli-tude at different frequencies gradually diminishes compared to metallic cylinders which have no attenuation. Moreover, the number of resonance frequencies that appear in the form function of polymer cylinders is much more than those of metal cylinders. This could be attributed to the lower values of modulus of elasticity, density, and longitudinal and shear wave velocities of polymeric materials

کلمات کلیدی:

Acoustic wave scattering, form function, wave attenuation, cylinder