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Shear wave propagation in layered composites with degraded matrices at locations of imperfect bonding

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The research highlights of our articles are as follows:

In our article we study biodegradable polymers. These materials find an increasing number of applications in different fields of engineering and medicine due to their environmental-friendly degradation. The process of degradation of biodegradable polymer constituents and the bonding quality between the constituents in composites can be identified by the means of wave propagation through the material together with the analysis of the phononic band structure. In our article we consider a layered composite, in which the matrix degradation is modeled by multiple layers with decreasing values of their mechanical properties.

Bonding between the inclusion and the degrading matrix is taken into account by a linear elastic bonding model in the first case, and by a viscoelastic model in the second case.

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