

عنوان مقاله:

Magneto-Electro-Thermo-Mechanical Response of a Multiferroic Doubly-Curved Nano-Shell

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خلاصه مقاله:

Free vibration of a simply-supported magneto-electro-elastic doubly-curved nano-shell is studied based on the first-order shear deformation theory in the presence of the rotary inertia effect. To model the electric and magnetic behaviors of the nano-shell, Gauss's laws for electrostatics and magneto statics are used. By using Navier's method, the partial differential equations of motion are reduced to a single ordinary differential equation. Then, an analytical relation is obtained for the natural frequency of magneto-electro-elastic doubly-curved nano-shell. Some examples are presented to validate the proposed model. Moreover, the effects of the electric and magnetic potentials, temperature rise, nonlocal parameter, parameters of Pasternak foundation, and the geometry of the nano-shell on the natural frequencies of magneto-electro-elastic doubly-curved nano-shells are investigated. It is found that natural frequency of magneto-electro-elastic doubly-curved nano-shell decreases with increasing the temperature, increasing the electric potential, or decreasing the magnetic potential.

کلمات کلیدی:

Magneto-electro-elastic, Nano-shell, Doubly-curved, First-order theory

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