

## عنوان مقاله:

Considering Bending and Vibration of Homogeneous Nanobeam Coated by a FG Layer

## محل انتشار:

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## خلاصه مقاله:

In this research static deflection and free vibration of homogeneous nanobeams coated by a functionally graded (FG) layer is investigated according to the nonlocal elasticity theory. A higher order beam theory is used that does not need the shear correction factor. The equations of motion (equilibrium equations) are extracted by using Hamilton's principle. The material properties are considered to vary in the thickness direction of FG coated layer. This nonlocal nanobeam model incorporates the length scale parameter (nonlocal parameter) that can capture the small scale effects. In the numerical results section, the effects of different parameters, especially the ratio of thickness of FG layer to the total thickness of the beam are considered and discussed. The results reveal that the frequency is maximum for a special value of material power index. Also, increasing the ratio of thickness of FG layer to the total thickness of the beam increases the static deflection and decreases the natural frequencies. These results help with the understanding such coated structures and designing them carefully. The results also show that the new nonlocal .FG nanobeam model produces larger vibration and smaller deflection than homogeneous nonlocal nanobeam

## کلمات کلیدی:

Nanobeam, Nonlocal elasticity, FG coating, Free vibration, Static deflection

## لینک ثابت مقاله در پایگاه سیویلیکا:

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