

Solid Mechanics Methods in Nano-technologies**Elena A. Ivanova⁽¹⁾, Anton M. Krivtsov⁽¹⁾, Nikita F. Morozov⁽²⁾, Boris Semenov⁽²⁾***(1) St. Petersburg State Polytechnical University, Russia**(2) St. Petersburg State University, Russia*

Advances in high technologies using nanometer-size structures requires calculation of mechanical properties for the objects of the nanosize scale level. Majority of the theoretical mechanical models for nanoobjects is based on the macroscopic equations of theory of elasticity. However, a lot of researchers have noted inconsistency between the values of the elastic moduli obtained from micro- and macroexperiments. The presented paper is devoted to theoretical investigation of the influence of the scale effects on Young modulus, Poisson's ratio and the bending stiffness of a nanocrystal, which is extended in one direction and has a limited number of atomic layers in another direction. The model of the delamination processes of a preliminary stressed bi-layered plate from rigid foundation is proposed. On the basis of the considered solution of specified dependence of its diameter on the parameters of plate layers is found.

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