

Peculiarities of the use of a piezo-motor in nanomanipulators

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Piezoelectric motors of various types are widely used for moving tools, targets and other objects in micro- and nanoscale bias. In this paper, the parameters of a piezo-motor of bimorph type, verified in the form of a circular membrane clamped along the edges, are checked. The dependence of displacement of the motor from the initial load on the central part (axis) of the membrane in the operating range of voltages 0-200V is determined. With an increase in the initial load from 0 to 3000 G, the shape of the hysteresis loop remains practically unchanged, the sensitivity slightly increases from 0.015 $\mu\text{m}/\text{V}$ to 0.016 $\mu\text{m}/\text{V}$, but the initial displacement of the initial coordinate of the hysteresis loop from 0 to 1.8 μm appreciably increases. For the initial load (1500 G), the preliminary tripping of the piezo-motor in the range 0 ... 200 V allows to decrease the hysteresis bias to 0.006 μm .