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Resonant Operation of Nanoelectromechanical Systems in a Viscous Fluid DEVREZ KARABACAK, KAMIL L. EKINCI, Dept. of Aerospace and Mechanical Eng., Boston University — Up to date, most work on nanoelectromechanical systems (NEMS) has been done in high vacuum. Yet, many applications may require fluidic NEMS operation. Here, we present measurements of the quality (Q) factor and resonance frequency in nanomechanical doubly-clamped beam resonators as a function of surrounding gas pressure — from high vacuum to atmospheric conditions. Atmospheric Qs obtained are $\sim 10^2$. The experimental results also suggest that viscous effects become less severe in high frequency devices.

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