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High-frequency and multi-mode operation of substrate-free micromembrane resonator SUNGWAN CHO, Korea Research Institute of Standards and Science, MYUNG RAE CHO, Seoul National University, SANG GOON KIM, JUNHO SUH, Korea Research Institute of Standards and Science, YUN DANIEL PARK, Seoul National University, SEUNG-BO SHIM, Korea Research Institute of Standards and Science — Micromemembrane mechanical resonator is fabricated from stoichiometric silicon nitride and its resonant motions are actuated with electrical field gradient pumping method. Using electrical field gradient force by electrode deposited near the suspended structure, micromembrane resonator can be actuated without electrical components on the movable component. We can drive and investigate multiple modes of micromembrane up to 32th mode with 78 MHz resonant frequency by optical measurement technique. This membrane can be applicable to optical system compatible with cavity without external driving technique.

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