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Investigation of the thermal motion and mode coupling in a micromechanical resonator SEUNG-BO SHIM, SUNGWAN CHO, SANG GOON KIM, Korea Research Institute of Standards and Science, SUNG UN CHO, YUN PARK, Seoul National University, JUNHO SUH, Korea Research Institute of Standards and Science — We have investigated the thermal motion and mode coupling in a micromechanical resonator. The mechanical resonator was designed for dielectric gradient force actuation scheme. The laser reflection measurement method enabled multi-mode detection of the thermal motion up to 5th mode at room temperature. With these multi-modes, we could investigate the energy transfer between first and second mode by applying mechanical sideband signals. We have utilized the second mode as a phonon cavity and observed the coupling and interaction between two modes. Here, we will discuss about the room temperature mechanical mode detection method and mode coupling effect in the micromechanical resonator.

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