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Palladium and Palladium-Carbon Nanotube Composite Nanomechanical Resonator SUNGWAN CHO, YOUNGDUCK KIM, JUNGHOON BAK, JUHYUNG LEE, SEUNGRAN LEE, KOOKRIN CHAR, SEUNGHUN HONG, YUN DANIEL PARK, School of Physics and Astronomy, Seoul National University — For its bio-compatibility, conductivity and optical reflectivity, metallic thin films are an attractive choice to realize multifunctional micromechanical resonators. However, moderate elastic properties of metallic thin films are ill suited for high frequency applications. Meanwhile, Carbon nanotubes have shown great potential with superior electrical and mechanical properties. Combined Metal-CNT nanolaminates have increased strengths and are less susceptible to onset of mechanical nonlinearity compared to equivalent metal beams without CNT. With palladium's good affinity to CNT to further study the role of the metal-CNT interface, we realized doubly clamped beam and torsional resonators from Palladium and Palladium/CNT composite. Resonance frequencies were detected using optical modulation technique with different wavelength at room temperature under moderate vacuum. Comparing the dynamic flexural response of Pd and Pd/CNT doubly clamped beam and torsional resonators, we will also discuss the difference between Pd-CNT and Al-CNT resonators as well as actuating the resonators electrostatically and optically

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