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Biosensors based on carbon nanotube resonators[1] HYUN SEOK LEE, Dept. of Physic, HEE-JO LEE, Dept. of Electrical and Electronic Engineering, KYUNG HWA YOO, Dept. of Physic, JONG GWAN YOOK, Dept. of Electrical and Electronic Engineering, HUI YUL PARK, National Core Research Center, DEPT. OF PHYSIC, YONSEI UNIV., SEOUL, KOREA TEAM, DEPT. OF ELECTRICAL AND ELECTRONIC ENGINEERING, YONSEI UNIV., SEOUL, KOREA TEAM, DIRECTOR OF NATIONAL CORE RESEARCH CENTER FOR NANOMEDICAL TECHNOLOGY, YONSEI UNIV., SEOUL, KOREA TEAM —
We have developed biosensors based on carbon nanotubes (CNT) utilizing the resonance frequency measurements. The CNTs, which was attached to a resonant LC impedance-matching circuit whose resonance frequency was about 12GHz, have exhibited the resonance frequency of about 14GHz. However, when biotin molecules were attached on the CNT surface modified with linker and streptavidin, the resonance frequency was shifted to the lower frequency. For comparison, we have carried out similar measurements using as resonator without CNT, but found no resonance frequency shift. Possible origins of resonance frequency shift after attaching biotin on the CNT surface are discussed.

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