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DNA aptamer 를 이용한 탄소나노튜브 바이오 센서  
Carbon Nanotube Biosensor Using DNA Aptamers

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Aptamers are functional nucleic acids that can specially bind to proteins, peptides, amino acids, nucleotides, vitamins and other organic and inorganic compounds. Here, we present an application of aptamers as highly specific electronic biomolecule detectors. We have explored the electronic detection of the thrombin using single-walled carbon nanotube field effect transistor (SWCNT-FET) coated with the thrombin aptamer. The DNA aptamers, which are specific toward thrombin, were immobilized on the carbon nanotube with tween linking molecules. When protein thrombin reacts with single walled carbon nanotube transistors functionalized with thrombin-aptamers, decrease of conductance has observed as well as left-hand shift of the threshold voltage in the  $I-V_{bg}$  plot. Since aptamers possess high stability compared with antibodies, aptamer-functionalized carbon nanotube biosensors can be a new biosensor concept that is label free, highly specific, sensitive, and stable.