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**Detection of multiple tumor markers using ultra-long carbon nanotube devices** HYE-MI SO, DONG-WON PARK, BEOM SOO KIM, KI-JEONG KONG, GYOUNG-HO BUH, HYUNJU CHANG, JEONG-O LEE, Korea Research Institute of Chemical Technology, JING KONG, Massachusetts Institute of Technology — For the simultaneous detection of multiple tumor markers, we have fabricated ultra-long carbon nanotube sensors that can detect carcinoembryonic antigen (CEA) and prostate specific antigen (PSA), simultaneously. Ultra-long carbon nanotubes, several millimeters long, were grown by ethanol CVD, and fabricated as FET sensors by using conventional photolithography. To functionalize each segment of a single ultra-long nanotube device with multiple-tumor markers, we first functionalize the entire device with CDI-Tween 20 linking molecules, and then immobilized CEA and PSA antibodies using the microfluidic channel. The electrical conductance from CEA-antibody functionalized and PSA-antibody functionalized segment of a ultra-long carbon nanotube device was monitored simultaneously with Ag/AgCl reference electrode as a liquid gate. We will discuss the advantages of long-nanotube device in detail.

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