

Ultra-Sensitive and Real Time Detection of ZnO NW Using QCM

Authors : Juneseok You, Kuewhan Jang, Chanho Park, Jaeyeong Choi, Hyunjun Park, Sehyun Shin, Changsoo Han, Sungsoo Na

Abstract : Nanomaterials occur toxic effects to human being or ecological systems. Some sensors have been developed to detect toxic materials and the standard for toxic materials has been established. Zinc oxide nanowire (ZnO NW) is known for toxic material. By ionizing in cell body, ionized Zn ions are overexposed to cell components, which cause critical damage or death. In this paper, we detected ZnO NW in water using QCM (Quartz Crystal Microbalance) and ssDNA (single strand DNA). We achieved 30 minutes of response time for real time detection and 100 pg/mL of limit of detection (LOD).

Keywords : zinc oxide nanowire, QCM, ssDNA, toxic material, biosensor

Conference Title : ICABB 2016 : International Conference on Applied Biology and Biotechnology

Conference Location : Melbourne, Australia

Conference Dates : February 04-05, 2016