

Application of surface plasmon resonance for biological toxicity test using immobilized microbes

박광원, 이우창, 천범석, 이원홍, 최정우*
서강대학교 화공생명공학과
(jwchoi@ccs.sogang.ac.kr*)

An immobilized bacteria biosensor has been developed for the biological toxicity testing of a sample that may contain the various concentrations of pollutant. The damage following exposure of lethal compound has a significant influence on the amount of biomaterial inside the immobilized microbes. In this study, the biological surfaces for the immobilization of bacteria were fabricated using poly-L-lysine and self-assembled peptide respectively. The bacteria immobilized on the biological surfaces were investigated using surface plasmon resonance (SPR). The exposure to toxic pollutant such as phenol and ionic surfactant induced to change the amount of biomaterials in the immobilized bacteria, resulting from moving the SPR angle position. The fabricated surfaces were analyzed using atomic force microscopy (AFM) with non-contact mode. From the above results, there was a correlation between the bacterial viability and shift of SPR angle position. The proposed biological toxicity test using SPR will make it possible to realize *in situ* bio-monitoring system.