

Application of wavelength interrogation-based SPR sensor

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We have developed a wavelength interrogation-based SPR sensor for the analysis of multiple protein interactions on protein arrays. The surface structure of protein array is consisted of glass/metal/protein/air. The SPR-based optical biosensor was self-constructed and its detection limit of minimal refractive index variation was calculated to be 7.1×10^{-5} within signal fluctuation of 0.15 nm. Protein arrays can be analyzed by three different methods, such as spot scanning, line scanning and nano-imaging methods. In particular, nano-imaging method is an useful tool to analyze the surface morphology of protein array spots after incubation with biomolecules. The SPR sensor was used to analyze protein arrays using antigen-antibody and avidin-biotin interactions. In addition, the SPR sensor can be used to analyze enzyme activities. Thus, SPR sensors have various applications for proteome researches.