

Ag@silica-Entrapped Hydrogel Microarray:
A New System For A Metal Enhanced
Fluorescence-Based Protein Assay

김민수, 한상원, 조강희, 방혜정, 민지홍, 고원건[†]

연세대학교

(wongun@yonsei.ac.kr[†])

Recently, the fluorescence detection method utilizing metal-enhanced fluorescence (MEF) has been widely studied in an effort to improve the detection sensitivity of protein-based bioassays. MEF is now a well-established technology, wherein the interactions of fluorophores with metallic nanoparticles results in fluorescence enhancement. In this study, as one solution for the problems associated with plate- and particle-based platforms, we developed a novel silver-based MEF biosensing platform that consisted of poly (ethylene glycol)(PEG) hydrogel microstructures entrapping silica-coated AgNPs (Ag@silica). Hydrogels are three-dimensional polymeric structures that absorb water or other biological fluids, and as it have a soft and hydrated nature, biomolecules is retained their activation. So, We took advantage of the MEF from Ag@SiO₂ within the hydrogel microstructures to improve the performance of the fluorescence detection device.