

## Fabrication of Biosensor Arrays on Poly(ethylene glycol) Hydrogel by Micropatterning of Biological Molecules

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Simple, inexpensive method for surface modification and micropatterning of deformable and solvated substrate was demonstrated using poly(ethylene glycol)(PEG)-based hydrogels as model substrate. Surface modification was performed via surface-initiated graft polymerization which was based on a photoreactive benzophenone derivatives coated on or entrapped in the hydrogel substrate. This substrate was then covered with monomer solution of acrylic acid or acryl amide that was polymerized by illumination with UV light. As a result of the photochemical reaction, a thin layer of the poly(acrylic acid)(PAA) polymer attached on the hydrogel surface was obtained. For the micropatterning of hydrogel surface, designed photomask was aligned over the monomer-coated hydrogel surface and exposed to UV light. After UV exposure, only exposed region underwent polymerization resulting in patterned PAA on the hydrogel surface. Because of non-adhesiveness of PEG hydrogel to biomolecules, proteins and biotin-FITC streptavidin were selectively attached to the modified region. Micropatterned proteins were identified by optical and fluorescence microscopy.