

Photo-patterning of inverted opal pHEMA for biosensor

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pHEMA(poly(2-hydroxyethylmethacrylate)) has some advantage to use for biosensor. Protein activity can be more increasing because of soft surface of pHEMA. In addition, pHEMA has plenty of hydroxyl group, so its surface modification is easy. Furthermore, inverted opal pHEMA has much more surface area than pHEMA, so lots of protein can be adsorbed pHEMA. Consequently, sensitivity of biosensor can be enhanced.

Poly styrene(PS) particle can be easily dissolved in chloroform. Adopting this property, it is possible to make inverted opal pHEMA hydrogel irradiating UV to pHEMA and PS particle mixture after covering photomask. Then, we put patterned-hydrogel into chloroform to dissolve PS particle. Finally, porous pHEMA is fabricated.

As comparing fluorescence intensity between pHEMA and inverted opal pHEMA, we can observe and determine whether inverted opal pHEMA has stronger intensity than pHEMA. Interconnected 3D biosensor which is enhanced sensitivity can be manufactured using this fabrication method.