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Pattern Generation of Biomolecules and Cells

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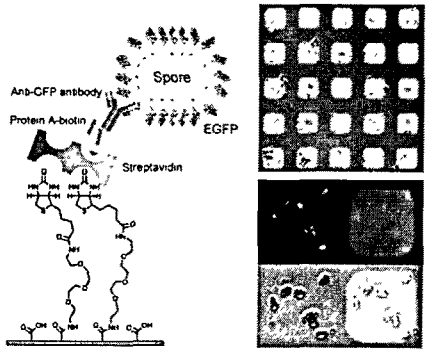
Micropatterns of biological molecules (e.g., biotin, DNAs, saccharides, peptides, and proteins) and cells on solid substrates have been one of the intensively studied topics due to potential applications in biosensors, modulation of cell-substrate interactions, neuroelectronics, high-throughput drug screening, and microarrays. Among the methods for generating two-dimensional patterns on solid substrates, a soft lithographic technique called microcontact printing (mCP) has intensively been used to generate patterns of self-assembled monolayers (SAMs) and been applied to the pattern generation of biomolecules and cells based on the patterns of the SAMs. The technique of mCP is relatively simple to perform in ordinary chemistry and biology research laboratories and does not require any special equipments or apparatus.

In this presentation, we discuss the pattern generation of proteins and cells on biodegradable poly(glycolic acid) (PGA) surfaces[1] and the pattern generation of Bacillus thuringiensis spores (BT spores) on glass substrates[2]. In particular, spore-based micropatterns would have advantages over the conventional cell-based micropatterns, including high stability and easy manipulatability, in the areas of sensors/detectors.



[참고문헌]

1. K.-B. Lee, D. J. Kim, Z.-W. Lee, S. I. Woo, I. S. Choi, Langmuir 20, 253, (2004).

2. T. J. Park, K.-B. Lee, S. J. Lee, J. P. Park, Z.-W. Lee, S. Y. Lee, I. S. Choi, J. Am. Chem. Soc. in press.