

### Fabrication of high density and activity protein array using micropatterned dendrimer

이 열, 김대년, 박상필, 장은지, 박새미, 김종수<sup>1</sup>, 고원건\*  
연세대학교 화학공학과; <sup>1</sup>연세대학교 화학과  
(wongun@yonsei.ac.kr\*)

In this study, we prepared a high-density microarray of porphyrin dendrimer terminated with anions (COONa<sup>-</sup>) which can provide multiple functional sites for proteins to attach, and thus increase the sensitivity for detection. Substrates were modified with silane group (3-aminopropyltriethoxysilane, APTES) followed by one was modified with aldehyde group and the other was modified with dendrimer. Compared with aldehyde group, protein loading and activity in modifying dendrimer was about 2 times greater. Micropatterns of dendrimer were prepared on silicon substrates modified with APTES by contacting polydimethylsiloxane (PDMS) stamp with 200  $\mu\text{m}$  or 300  $\mu\text{m}$  pillar diameter. After removing PDMS stamp from the substrates, well-defined dendrimer micropatterns were obtained. Proteins were immobilized on the individual patterns modified with N-hydroxysuccinimide (NHS) and 1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride (EDC) and florescent microscopy proved that proteins were successfully attached within a micropattern. Based on these results, the biotin-streptavidin system was investigated and the molecular recognition mediated, specific binding between biotin and streptavidin was successfully assayed, demonstrating the possibility of micropatterned dendrimers for various biosensor.