

Physically and Chemically Confined Polymeric Nano-patterns for Viral Detection

유필진*

성균관대학교 화학공학과

(pjyoo@skku.edu*)

In this presentation, a filamentous M13 within the physically patterned nanostructures of the proteins was used to verify the concept of physically and chemically confined nanopatterns of biomolecules. It was found that protein-virus recognition can be regulated by the geometric factors of the nanopatterns. The facile method of a combination between the top-down based physical patterning and the bottom-up based chemical functionalization was used to establish the physical-co-chemical nanopatterning of M13 viruses over a large area. The topological nanostructures with a physically patterned non-biofouling polymer were generated using the technique of modified capillary molding. The chemical patterning of the protein was then prepared by the self-assembly of linker molecules. In particular, the physically patterned polymeric nanostructures could retain their topological characteristics during the post process of chemical patterning, thereby enabling the spatial confinement of proteins and viruses within the pattern. Therefore, it will be potentially of great benefit the confined integration of biological self-assembly and the specific screening of biomolecules.