시스테인을 가진 양친성 분자 자기조립체를 지지체로 사용하는 헤모글로빈 모방 산소 흡착제

이채명, 이상엽†
연세대학교
(leessy@yonsei.ac.kr†)

As a facile way to organize the amino acid in an ordered structure, self-assembly of amphiphilic molecules with amino acid motifs is very attractive. Previously, the complex-structured self-assembly of various amphiphilic molecules was considered just as a template. However, here we utilized the arrangement of functional segments of the amphiphilic molecules. The hydrophilic segments of the amphiphilic molecules face to the outer surface and they are organized in an ordered way. This organization can be utilized to create a biomimetic system providing protein-like environments. The organized amino acids on the self-assembly surface express unique biochemical activity and have a great potential for the development of a biomimetic system for oxygen delivery. In nature, the unit protein of hemoglobin is such a microscopic active system containing well-organized amino acids and a prosthetic molecule of heme. Through the self-assembly of amino acid-based bolaamphiphilic molecules, the hemoglobin protein could be mimicked. The structure and composition of the self-assembly surface can be controlled by adjusting hydrophobic segment and by controlling the composition of amino acids when synthesizing the bio-amphiphilic molecules.