

Bio-inspired Zwitterionic Membranes: Design and Applications

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Abstract:

Zwitterionic polymers have become a kind of potential bio-inert material system used to design nonfouling membranes between general materials and biological environments. This zwitterionic membrane system is inspired by biology, especially due to the presence of zwitterions or alternately charged groups on cell membranes and protein surfaces. Our previous systematic studies have shown that the zwitterionic membrane system can exhibit excellent anti-adsorption, anti-coagulation, anti-adhesion and anti-attachment functions for biological components such as human proteins, blood cells, tissue cells, general bacteria, and marine shellfish. Research in recent years has pointed out that the latest development of zwitterionic membrane is of great significance in the fields of membrane bio-separation and disease control. This talk focuses on sorting out and illustrating the research and development of molecular design, material properties, engineering process, and system applications of zwitterionic membranes, which is expected to inspire new ideas and directions in medical applications.

Keywords: Zwitterionic Membranes, bio-inert material, molecular design, bio-separation, engineering process