

Bio-Inspired Peptide-Based Functional Coating

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The lecture will present bio-inspired functional coatings that are spontaneously formed by short peptides. These peptide-based coatings self-assemble on metals, oxides and polymers under mild conditions without any need for a curing step. The coating can serve in many functions. One application is preventing biofouling - the undesirable adhesion of biomolecules and organisms to surfaces. [1-2] This process leads to numerous adverse phenomena including hospital-acquired infections, blockage of water desalination facilities and food contamination. We showed that this coating prevents the first step of biofouling, which involves the adsorption of bioorganic molecules to the substrate. Moreover, the coating significantly reduces the attachment of various organisms such as bacteria and fungi to surfaces. Another function that these peptide-based coatings can mediate is the adhesion of mammalian cells to implants. [3] This function is important for the integration of implants into the human body. Finally, we showed that these peptides self-assemble in solution into particles that adsorb and release active compound that synergistically reduce the number of bacteria on the surface. [4]

References

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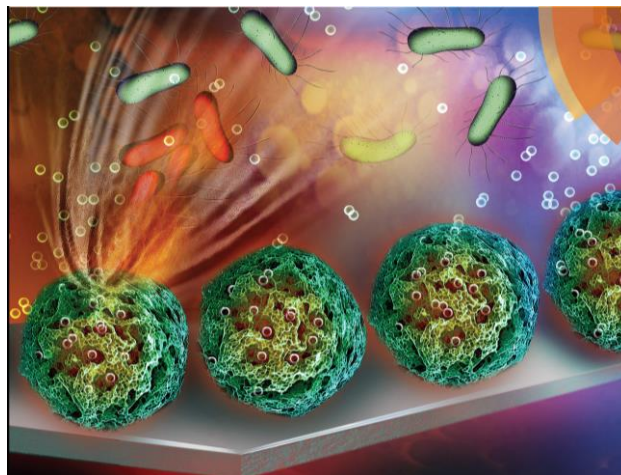


Figure 1. Peptide-based antifouling particles on surface release antimicrobial agents.