Advancements in Self-assembled Monolayers of *N*-heterocylic Carbenes

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Metals are an important part of our modern society. They make up fundamental components of modern infrastructure including transportation, smart-phones, point-of care devices, electrical equipments and therapeutics (metallic nanoparticles). However, one of the major challenges we face is effective modulation of surface properties of metals. These properties can be achieved by surface modification and functionalization using self-assembled monolayers (SAMs). They have received considerable attention in last few decades with applications ranging from corrosion protection, and other interfacial properties, such as wetting, friction, and adhesion, anti-stiction coatings in microelectromechanical systems, to stabilize and sometimes functionalize nanosized objects, and nanopatterning.[1, 2, 3]
Alkanethiolates are one of the most studied molecules for SAM formation, but they are plagued by oxidative instabilities.[2, 3] Recently, *N*-heterocylic carbenes (NHCs) have attracted considerable scientific interest in the field of materials chemistry.[4, 5] This seminar will cover our investigations in understanding the mechanism of SAM formation using NHCs. Subsequently, we employed these fundamentals to build electrochemical biosensors for detection of whole-cell bacteria.

References

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