Eco-friendly Siloxane Based Inorganic-Organic Anti-Stick Surfaces

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Keywords: bio-inspired surfaces, organogel, secretion, anti-stick, omniphobicity

Functional coatings with exceptional surface properties, such as liquid-repellency and low-friction/adhesion, have been commonly prepared by combining textured surfaces with long-chain perfluorinated compounds [1]. However, unfortunately, the chemical and physical effects of the LPFCs on human health and environment have been viewed lately with concern [2]. In addition, perfluorinated compounds emit corrosive and toxic gasses when they are overheated (above ca. 260 °C). Thus, an alternative approach not requiring LPFCs has is strongly demanded.

Here, we introduce our recent developments for the preparation of eco-friendly liquid-repellent coatings using several type of siloxane sources through a monolayer formation of polydimethylsiloxane, a simple sol-gel reaction using organosilanes, crosslinking reaction of modified silicones.[3-5] In addition, surface properties of mesoporous nanoparticles will be also introduced.[6]

![Diagram of coating preparation process](image)

References