

(SP-08)

Formation of Alkylsiloxane Self-Assembled Monolayers(SAMs) on SiO₂ and TiO₂ in Vacuum

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Self-assembled monolayers (SAMs) are thin organic films which form spontaneously on solid surfaces. They have been shown to be useful as passivating layers and also for the modification of surface properties. Potential applications include wetting, adhesion, friction, chemical sensing, ultrafine scale lithography, and protection of metals against corrosion. SAMs of Alkyltrichlorosilane were formed on SiO₂ and TiO₂ surface from a gas phase. Several different varieties of SAMs have been investigated, including Alkyltrichlorosilanes(CH₃(CH₂)_n-1-SiCl₃) on SiO₂ and TiO₂. Alkyltrichlorosilane-based SAMs formed on SiO₂ and TiO₂ have been studied using X-ray photoelectron spectroscopy(XPS) and Atomic Force Microscopy(AFM) and contact angle analysis.

The Alkyltrichlorosilane-based SAMs are more efficiently and well formed on the TiO₂ surface as compared to those on the SiO₂.