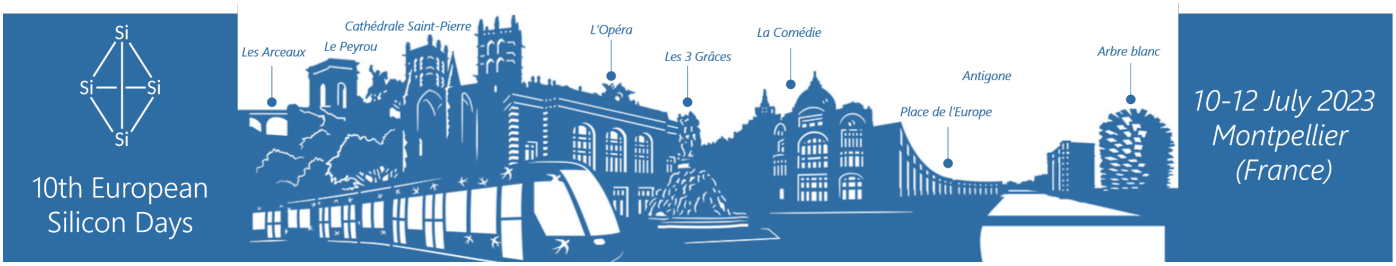

Reaction of Silane Coupling Reagent on the Surface of Functional Particles

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Reactions of silane coupling reagents on solid surfaces (condensation with the surface hydroxyl groups and that between the adsorbed silane coupling reagents) have been examined to deposit monolayer and multilayers of organosilcone compounds on the surfaces. The expected function of the surface thus designed is versatile, from chemical and mechanical robustness of the plastics and metals, hydrophobicity for self-cleaning, anti-corrosion, anti-fouling, anti-foggging and so on. The reactions on powder are way to modify surfaces properties of functional particles. Accordingly, grafting of organic functionalities by the silane coupling reagent and the deposition of thin layer silica coating have been reported. The coating of particles' surfaces with the ultrathin layer led such useful effects as suppressed particles' aggregation, the stabilization of the suspension for paint and ink application, molecular recognition for catalysts and adsorbents, and so on. [1-5] The resulting modified powder (as core-shell particles) is useful as the precursor of hollow particles after the removal of the core.

Here, recent examples on the deposition of thin silica layer on functional particles (carbon, titania etc.) will be introduced.[6] The coating was done based on the hydrolysis and condensation of alkoxysilane on the surface of the target particles, and the reaction was conducted in the suspension where the core particles were dispersed. The surface of the resulting core-shell particles was further modified with silane coupling reagent to modify the surface properties.

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