Preparation and Characterization of Multifunctional Silica Particles using Silane Compounds by PDDA Trapping Layer

이창훈, 전병희, 김성현*
고려대학교
(kimsh@korea.ac.kr*)

Janus particles which consist of two or more phase are the fascinating concept. The Janus concept is the fascinating and promising technique on the nano-materials. The concept is that one material has the two or more phases whose physical and chemical characteristics differ from each other. This concept can be applied to dendrimers, block copolymer micelles, micro- and nano-particles.
In this research, multifunctional silica particles were prepared with organo-silane modifying compounds using PDDA(Poly(diallydimethylammonium chloride)) as trapping layer. After PDDA layer were arrayed by electrostatic self-assembly(SA) on the silicon wafer, silica particles were arrayed on the layer by SA process. The introduction of silane compounds on the unblocked surface of the silica particles were performed in DI water, ethanol, and ammonium hydroxide mixture solution. After the reaction, PDDA barrier was removed and the modified silica particles were gained. The silica particles were characterized by SEM, FT-IR ATR, water contact angle measurements.