Selective Deposition of TiO_2 and Cu_2S Nanoparticles on the Patterned Surface and Their Electrical Property

박상우, 이상엽*
연세대학교 화공생명공학과
(leessy@yonsei.ac.kr*)

Micro-patterned multifunctional surfaces were fabricated by selective deposition of inorganic nanoparticles using designer peptides and perfluoropolyether (PFPE) as a binder and a passivating molecule, respectively. The peptide was used as a binder molecule binding inorganic nanoparticles on the surface, and PFPE was developed as a patterning material preventing binding of nanoparticles. PFPE is a widely studied as a coating chemical with both hydrophobicity, and oleophobicity. It was applied in patterning to repel additional deposition both organic and inorganic materials. Through the micro contact printing method, patterned surfaces modified with PFPE and peptides were prepared, and then model inorganic nanoparticles of Cu2S and TiO2 were selectively deposited on the patterns. Through this way, selective deposition surface of inorganic or organic layer was easy to achieve without additional surface treatment. The surface bound nanoparticles were characterized by the electrical impedance measurement. Through the AFM-based impedance measurement, the semi-conducting property of the nanoparticles were easily characterized.