

Patterned Growth of Inorganic Nanoparticles Using the Perfluoropolyether as a Surface Modifier

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The fluoropolymer contains fluorine molecule in its branch resulting in low surface energy. One of the fluoropolymer, perfluoropolyether (PFPE), has both hydrophobicity and oleophobicity such that it can be used as a patterning material that changes surface property. Using PFPE surface-modified micro patterns were prepared through the micro contact printing (μ CP) method. Then, inorganic nanoparticles such as TiO_2 and Cu_2S were selectively grown on the modified patterns. Due to the anti-coating property of PFPE, growth of inorganic nanoparticles was achieved only on the patterns where PFPE was not covered. To promote the selective growth of nanoparticles, peptides with specific affinity was introduced on the patterns. The outcomes of this study suggest that PFPE can be used as an effective mask molecule for the patterned growth of inorganic materials.