Synthesis of Nano TiO_2 Thin Films by Plasma Chemical Vapor Depositon Process

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Plasma Chemical Vapor Deposition (PCVD) is an important technique to deposit thin films for surface modification. Nanostructured TiO_2 thin film are prepared by using an rf PCVD process. The titanium tetra-isopropoxide is the precursor of TiO_2 thin film and the pure N_2 gas or N_2 mixed with O_2 gas is used as plasma gas. The properties of TiO_2 thin film depend on several process variables such as gas flow rate, gas and substrate temperatures and plasma power. In this study, we investigated the effects of those process variables on the morphology of TiO_2 thin films. The prepared samples were mainly characterized by TEM, SEM, EDS and ultraviolet-visible spectroscopy.