

Peptide-induced biomineralization for the synthesis of TiO₂ particle

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The biomineralization process utilizing various biomolecules (i.e. DNA, proteins, and viruses) has been studied for the synthesis of metal oxide particles. The mineralized particles have gained much interest in the area of photooxidation and solar energy conversion. For example, TiO₂ particles of various structures were investigated for photocatalytic degradation of organic pollutants. Meanwhile, the specific sequence of peptide was reported to have a binding affinity toward specific target. In this study, various sequence of short peptides (i.e. HKKPSKS) with affinity to TiO₂ was tested as nucleation core to induce biomineralization of TiO₂ particles. The size and morphology of synthesized particles via different peptide core and mineralization conditions were compared. And the photocatalytic activity of particles was analyzed.