

### Biom mineralization of titanium dioxide induced by lysozyme/polystyrene with enhanced photocatalytic activity

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The biom mineralization 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 field of photooxidation and solar energy conversion. For example, TiO<sub>2</sub> particles of various structures were investigated for photocatalytic degradation of organic pollutants. Meanwhile, protein adsorption has drawn a lot of interest in recent years mainly because of its wide applications in the biomedical field. In this study, we present a facile biom mineralization route of TiO<sub>2</sub> particles with enhanced photocatalytic activities in the degradation of Rhodamine B (RhB) under visible light irradiation. To this end, lysozyme was firstly combined with polystyrene (PS) microspheres via passive adsorption, then acted as nucleation cores to induce the biom mineralization of TiO<sub>2</sub> particles. PS here is not only applied as the supporter of lysozyme, but also a rigid template for TiO<sub>2</sub>. The conditions of passive adsorption were optimized, and the morphology and characterization of synthesized particles were investigated.