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# The Charge Transfer Mechanism of Bi Modified TiO<sub>2</sub> Nanotube Arrays: TiO<sub>2</sub> Serving as a “Charge-Transfer-Bridge”

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## Abstract

The surface of Bi nanoparticles would be oxidized to amorphous Bi<sub>2</sub>O<sub>3</sub> layer with thickness about 7 nm in the air. Until now, it is still unclear about the different roles of Bi and Bi<sub>2</sub>O<sub>3</sub> in the photocatalysis when Bi nanoparticles are deposited on semiconductors. In this work, Bi nanospheres have been decorated on the top aperture of TiO<sub>2</sub> nanotube arrays by vapor deposition method, and an X-ray photoelectron spectroscopy combined with synchronous illumination technique is applied to explore the charge transfer mechanism. Under visible light, the electrons

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