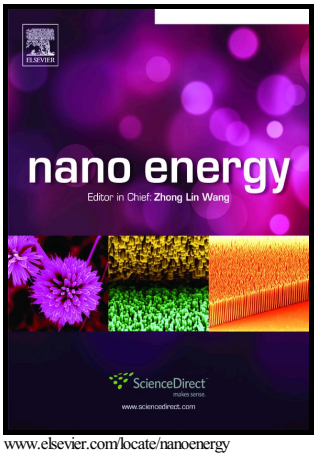

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The Charge Transfer Mechanism of Bi Modified TiO_2 Nanotube Arrays: TiO_2 Serving as a "Charge-Transfer-Bridge"

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Abstract

The surface of Bi nanoparticles would be oxidized to amorphous Bi_2O_3 layer with thickness about 7 nm in the air. Until now, it is still unclear about the different roles of Bi and Bi_2O_3 in the photocatalysis when Bi nanoparticles are deposited on semiconductors. In this work, Bi nanospheres have been decorated on the top aperture of TiO_2 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