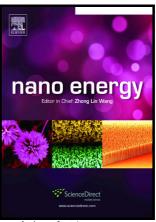
## Author's Accepted Manuscript

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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### **ACCEPTED MANUSCRIPT**

## The Charge Transfer Mechanism of Bi Modified TiO<sub>2</sub>

Nanotube Arrays: TiO<sub>2</sub> Serving as a

"Charge-Transfer-Bridge"

Zhengbo Jiao<sup>a,b\*</sup>, Mingdong Shang<sup>a</sup>, Jiamei Liu<sup>a</sup>, Gongxuan Lu<sup>a</sup>, Xuesen Wang<sup>b</sup>, Yingpu Bi<sup>a\*</sup>

<sup>a</sup>State Key Laboratory for Oxo Synthesis & Selective Oxidation, and National Engineering Research Center for Fine Petrochemical Intermediates, Lanzhou Institute of Chemical Physics, CAS, Lanzhou 730000, China

Singapo <sup>b</sup>Department of Physics, National University of Singapore, 117542 Singapore

jiaozhb@licp.cas.cn

yingpubi@licp.cas.cn

\*Corresponding author

#### 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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