

Supplementary information

Insight into the Role of Surface Wettability in Electrocatalytic Hydrogen Evolution Reactions Using Light-Sensitive Nanotubular TiO₂ Supported Pt Electrodes

Chenhui Meng¹, Bing Wang¹, Ziyue Gao¹, Zhaoyue Liu^{1*}, Qianqian Zhang^{2*} & Jin Zhai^{1*}

¹ Key Laboratory of Bio-Inspired Smart Interfacial Science and Technology of Ministry of Education, Beijing Key Laboratory of Bio-inspired Energy Materials and Devices, School of Chemistry and Environment, Beihang University, Beijing 10019, China.

² School of Physics and Nuclear Energy Engineering, Beihang University, Beijing 100191, China.

*Corresponding Author. E-mail: liuzy@buaa.edu.cn; zhangqq@buaa.edu.cn; zhaijin@buaa.edu.cn

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Figure S1. EDX patterns of OTS-modified Pt-TiO₂-NTs after UV illumination for 200 min on the specific surface of (a) Pt particles and (b) TiO₂ nanotubes. It is found that Si elements mainly distribute on the surface of TiO₂ nanotubes, which indicates that OTS molecules easily bond to TiO₂ nanotubes.

Figure S2. Magnified polarization curves of OTS-modified Pt-TiO₂-NTs at potential ranging -0.08 and 0 V (vs. SHE) when the UV illumination time is 0, 5 and 50 min in 0.5 M H₂SO₄. Following the decrease of water CA by UV illumination, the current density for HERs increases.

Video S1: The video of Pt-TiO₂-NTs with a water CA of ~139 °during polarization process demonstrates that small hydrogen bubbles will merge into a large one, which sticks on the electrode surface strongly.

Video S2: The video of Pt-TiO₂-NTs with a water CA of ~14 °during polarization process indicates that most of large hydrogen bubbles can leave the electrode surface quickly during hydrogen evolution.

Video S3: A gas bubble is easy to adhere onto the surface of hydrophobic Pt-TiO₂-NTs with a water CA of ~139 °because of its large adhesion force.

Video S4: A gas bubble is very hard to adhere onto the surface of hydrophilic Pt-TiO₂-NTs with a water CA of ~14 °because of its extremely low adhesion force.

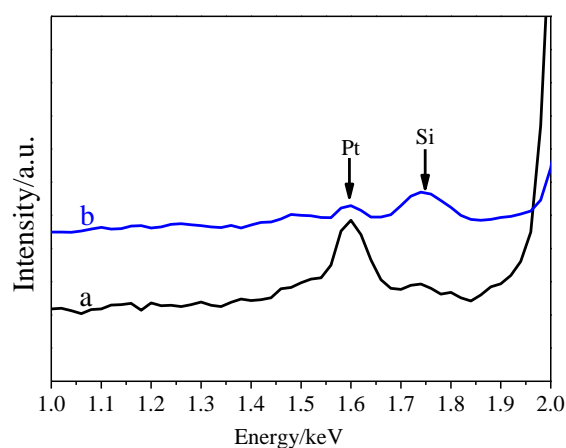


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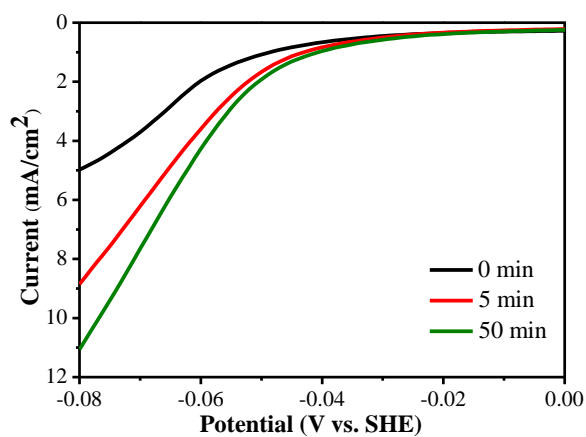


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