Supporting Information

Photoelectrocatalytic effect of unbalanced RF magnetron sputtered TiO₂ thin film on ITO-coated patterned SiO₂ nanocone arrays

Gyu Jin Choi,¹ Hyemin Jung,¹ Dong Ho Kim,¹ Youngku Sohn,^{2,*}and Jin Seog

Gwag^{1,*}

¹Department of Physics, Yeungnam University, Gyeongsan, Gyeongbuk 38541, Republic of Korea

²Department of Chemistry, Chungnam National University, Daejeon 34134, Republic of Korea

* Corresponding author e-mails: youngkusohn@cnu.ac.kr and sweat3000@ ynu.ac.kr



Figure S1. Schematic diagram of (a) balanced and (b) unbalanced RF magnetron sputtering systems.



Figure S2. XRD patterns of various substrates.



Figure S3. XRD patterns of TiO₂ films on various substrates after thermal annealing.



Figure S4. XRD patterns of ITO thermal-treated at different annealing temperatures.



Figure S5. XRD patterns of the TiO_2 on the ITO supports with different crystallinity before and after thermal treatments.



Figure S6. O 1s XPS peaks plotted with a same baseline.



Figure S7. Ti 2p and O 1s XPS peaks with increasing Ar⁺ ion sputtering time.



(anorphous, porycrystainne, crystainne)

Figure S8. Band energy level alignment at the interfaces between the five substrates (amorphous, polycrystalline and crystalline ITO, Si and Al) and the TiO_2 . When the electrode is biased under photo-irradiation a band bending and a charge accumulation will be created at the interface.