

Supplementary Material

Effect of Au Nanoparticles and Scattering Layer in Dye-Sensitized Solar Cells Based on Freestanding TiO₂ Nanotube Arrays

Kang-Hun Lee ^{1,†}, Seung-Hee Han ^{1,†}, Ana Chuquer ^{2,†}, Hwa-Young Yang ^{3,‡}, Jaehi Kim ⁴, Xuan-Hung Pham ⁴, Won-Ju Yun ⁵, Bong-Hyun Jun ^{4,*} and Won-Yeop Rho ^{1,*}

- ¹ School of International Engineering and Science, Jeonbuk National University, 567, Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do 54896, Korea; dlrkdgns343@naver.com (K.-H.L.); rinmin0616@naver.com (S.-H.H.)
- ² School of Bioenvironmental Chemistry, Jeonbuk National University, 567, Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do 54896, Korea; chuquerana@gmail.com (A.C.)
- ³ School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology (UNIST), 50 UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan 44919, Korea; hyang@unist.ac.kr (H.-Y.Y.)
- ⁴ Department of Bioscience and Biotechnology, Konkuk University, 120, Neungdong-ro, Gwangjin-gu, Seoul 05029, Korea; susia45@gmail.com (J.K.); phamricky@gmail.com (X.-H.P.)
- ⁵ Department of Physics, Jeonbuk National University, 567, Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do 54896, Korea; enneades@hanmail.net (W.-J.Y.)
- * Correspondence: bjun@konkuk.ac.kr (B.-H.J.); rho7272@jbnu.ac.kr (W.-Y.R.)
- † Kang-Hun Lee, Seung-Hee Han, Ana Chuquer, and Hwa-Young Yang contributed equally to this work.

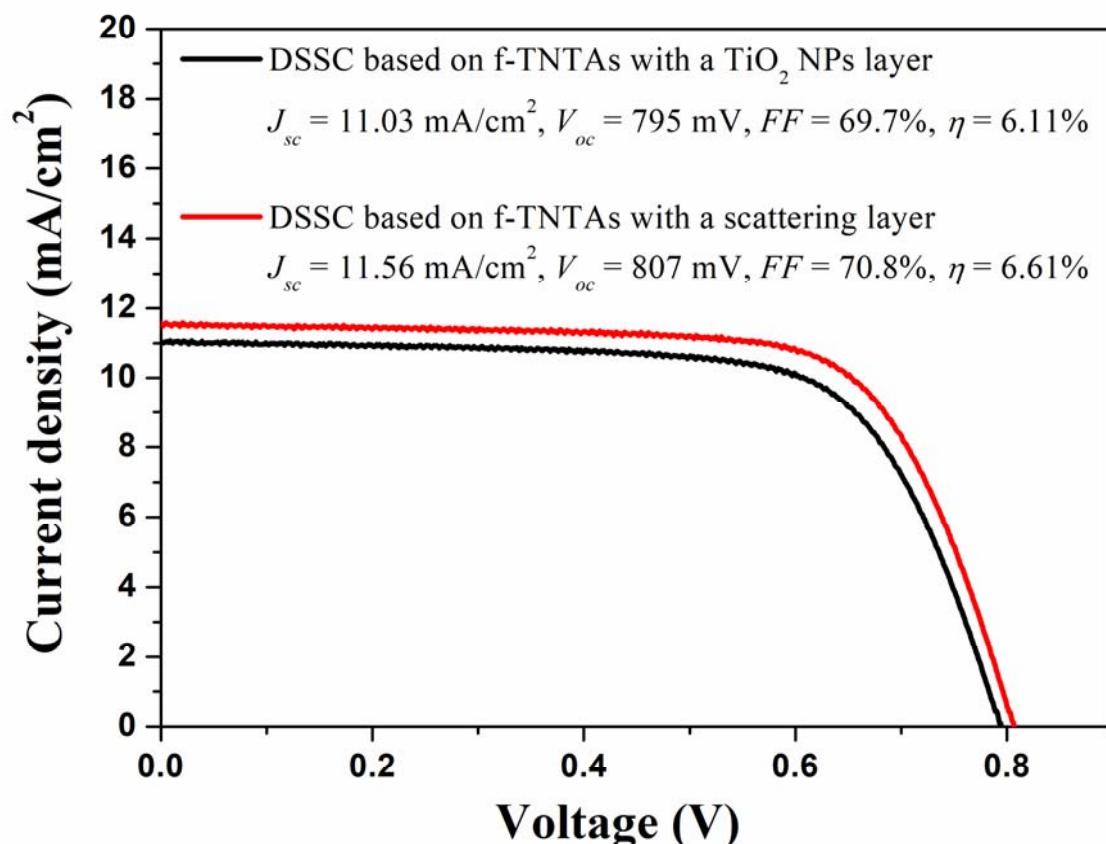


Figure S1. I-V curves of DSSCs based on the f-TNTAs DSSCs based on f-TNTAs with a TiO_2 NPs layer or a scattering layer.

Table S1. Photovoltaic properties of DSSCs based on f-TNTAs with a TiO_2 NPs layer or a scattering layer.

DSSCs based on the f-TNTAs		J_{sc} (mA/cm ²)	V_{oc} (mV)	FF (%)	η (%)	Dye Loading (nmol/cm ²)
(a)	with a TiO_2 NPs layer	11.03	795	69.7	6.11 ± 0.40	165
(b)	with a scattering layer	11.56	807	70.8	6.61 ± 0.37	153