

Improved Light Harvesting of Fiber-Shaped Dye-Sensitized Solar Cells by Using a Bacteriophage Doping Method

Sung-Jun Koo^{1,2,†}, Jae Ho Kim^{1,†}, Yong-Ki Kim³, Myunghun Shin³, Jin Woo Choi¹, Jin-Woo Oh^{2,5,*}, Hyung Woo Lee^{2,4,*}, and Myungkwan Song^{1,*}

¹ Department of Energy and Electronic Materials, Korea Institute of Materials Science (KIMS), Changwon 51508, South Korea; sungun666@kims.re.kr (S.-J.K.); jho83@kims.re.kr (J.H.K.); jinwoo.choi@kims.re.kr (J.W.C.)

² Department of Nano Fusion Technology, Pusan National University, Busan 46241, South Korea

³ School of Electronics and Information Engineering, Korea Aerospace University, Goyang 10540, South Korea; ygk3373@kau.kr (Y.-K.M.); mhshin@kau.ac.kr (M.Shin)

⁴ Department of Nanoenergy Engineering and Research Center of Energy Convergence Technology, Pusan Natuional University, Busan 46241, South Korea

⁵ Bio-IT Fusion Technology Research Institute, Pusan National University, Busan 46241, South Korea

[†] These authors contributed equally to this project.

* Correspondence: ojw@pusan.ac.kr (J.-W.O.); LHW2010@pusan.ac.kr (H.W.L); smk1017@kims.re.kr (M.S.)

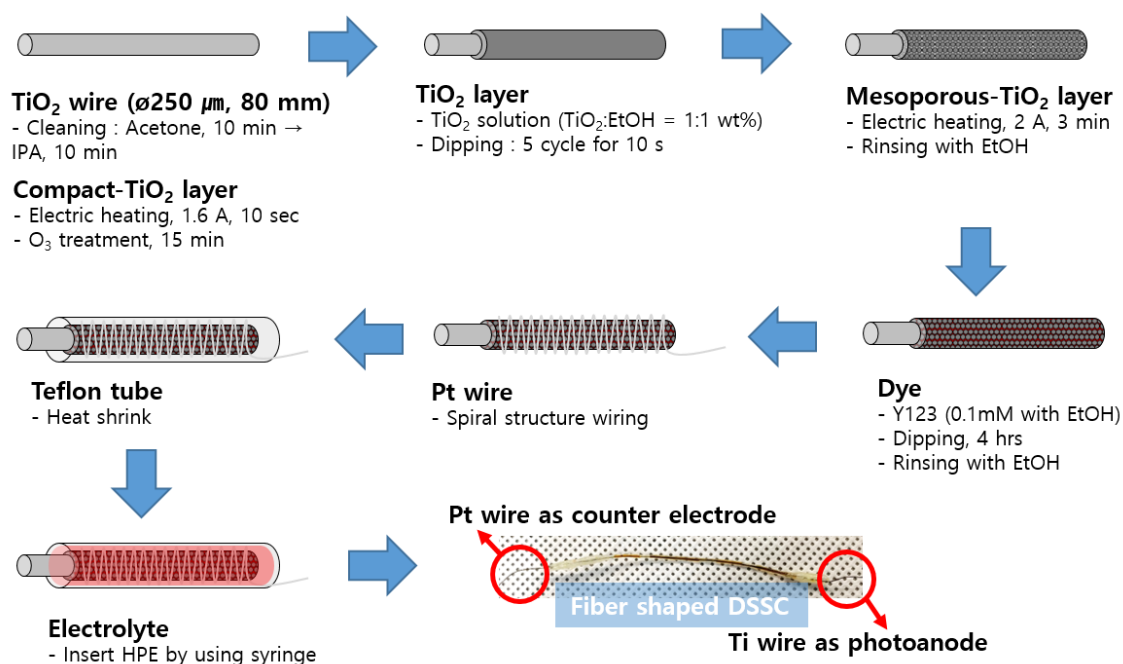


Figure S1. Schematic representation of the fabrication process of FDSSCs.

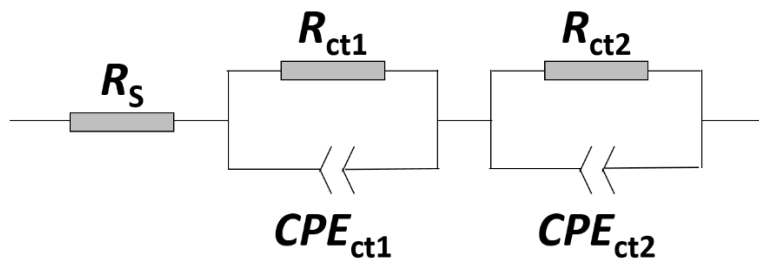


Figure S2. The equivalent circuit used for the EIS analysis.

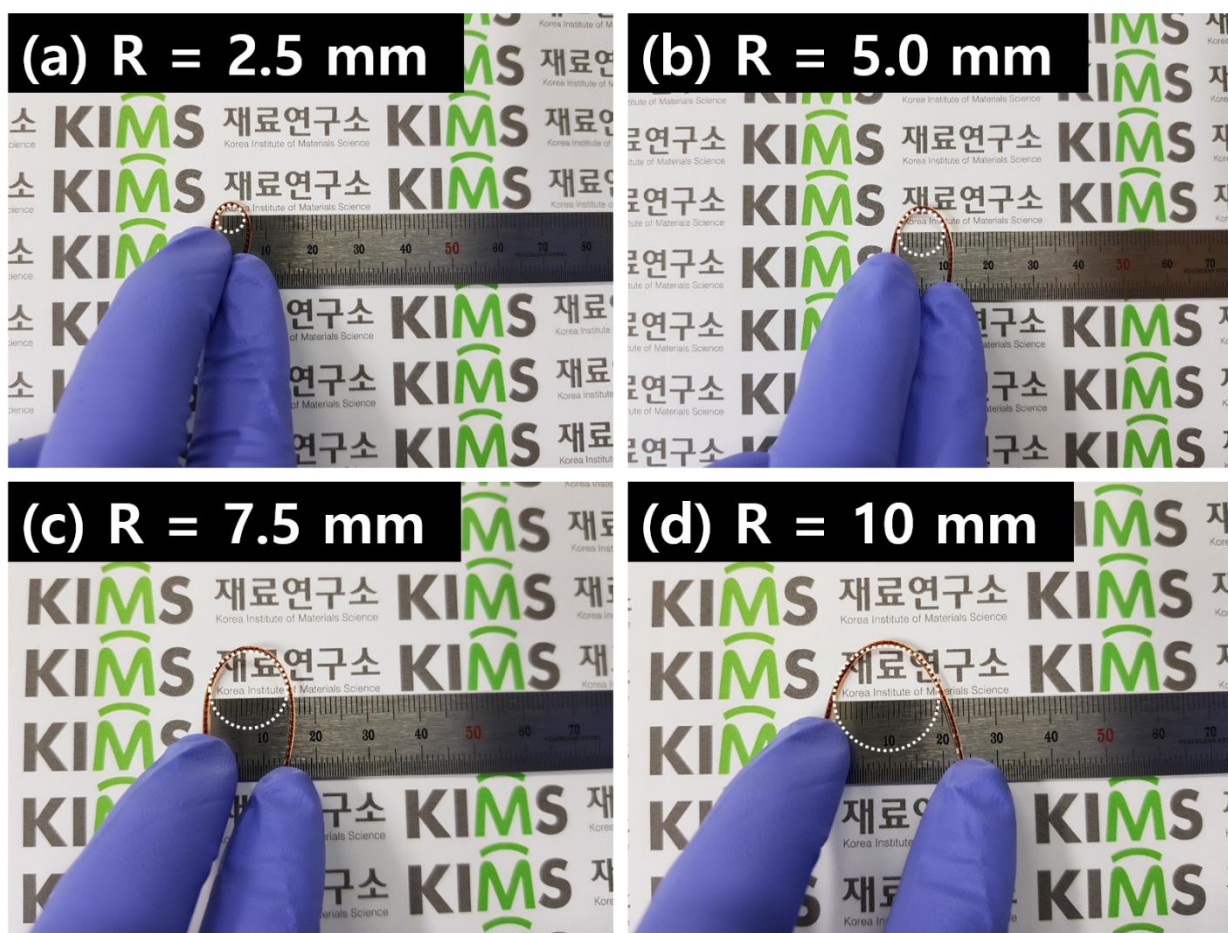


Figure S3. Photographs of Ag@M13 enhanced FDSSCs on bending with width of radius of (a) 0.25, (b) 0.5, (c) 0.75, and, (d) 1 cm.

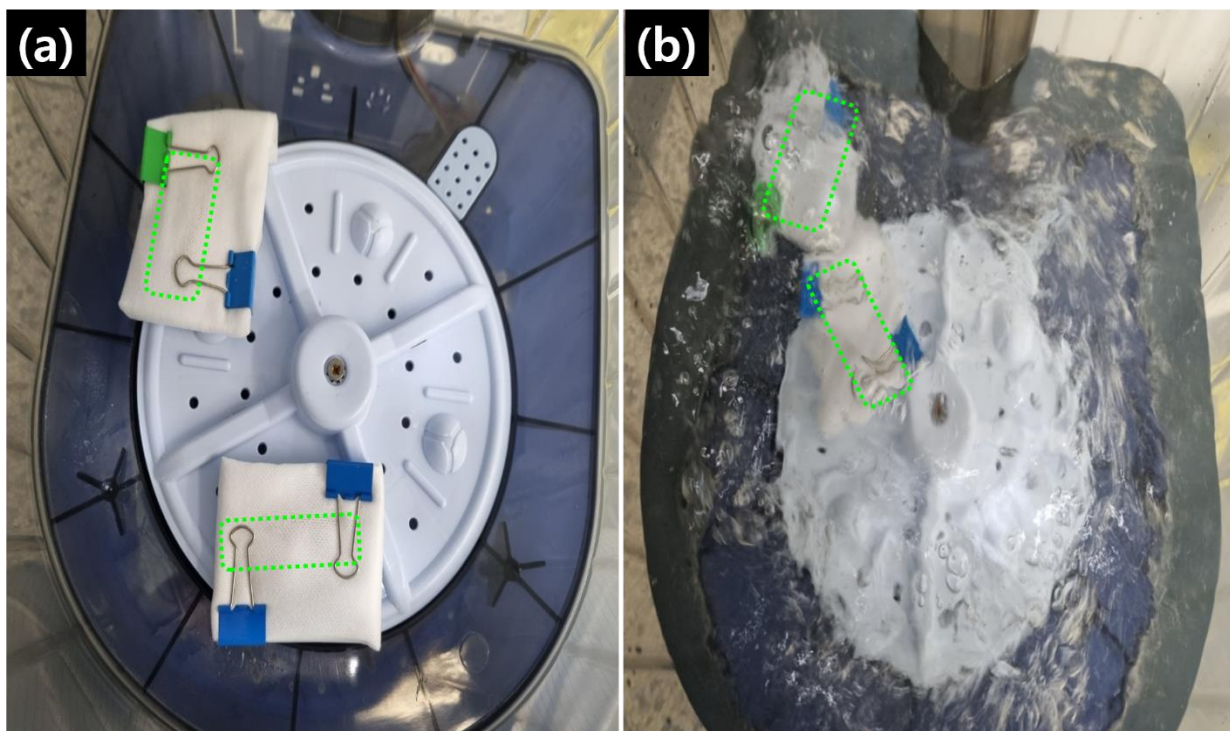


Figure S4. Photographs of Ag@M13 enhanced FDSSCs on being washed in a laundry net: (a) the laundry net enclosing the devices was placed in the washing machine, and (b) the laundry net and enclosed devices being washed.



Figure S5. Photographs of Ag@M13 enhanced FDSSCs connected in series and parallel to drive liquid-crystal (LC) device.