

Supplementary Data

Flexible electrode based on PES/GO Mixed matrix woven membrane for efficient photoelectrochemical water splitting application

Ghadah M. Al-Senani ¹, Mohamed Zayed ², Mervat Nasr ^{2,3}, Sahar S. Ali ⁴, Mohamed Shaban ^{5,2*}, Fatma Mohamed ^{2,3,6}

¹ Department of Chemistry, College of Science, Princess Nourah bint Abdulrahman University, P.O. Box 84428, Riyadh 11671, Saudi Arabia

² Nanophotonics and Applications Lab, Physics Department, Faculty of Science, Beni-Suef University, Beni-Suef 62514, Egypt

³ Chemistry Department, Faculty of Science, Beni-Suef University, Beni-Suef 62514, Egypt

⁴ Chemical Engineering and Pilot-Plant Department, National Research Center, P.O. Box 12622, Dokki, Cairo, Egypt

⁵ Department of Physics, Faculty of Science, Islamic University of Madinah, P. O. Box: 170, Madinah 42351, Saudi Arabia

⁶ Materials Science Research Laboratory, Chemistry Department, Faculty of Science, Beni-Suef University, Beni-Suef, Egypt

* Correspondence: author: mssfadel@aucegypt.edu

Table S1. Values of electronic conductance and ionic conductance of PES/GO electrode.

Sample	PG0	PG1	PG2	PG3	PG4	PG5
Electronic Conductance (μS)	$4.85869\text{E-}4 \pm 2.28843\text{E-}6$	$0.02429 \pm 1.14421\text{E-}4$	$0.09717 \pm 4.57686\text{E-}4$	$0.02186 \pm 1.02979\text{E-}4$	$0.01992 \pm 9.38256\text{E-}5$	$0.01822 \pm 8.58161\text{E-}5$
Ionic Conductance (mS)	0.16223 ± 0.00167	0.70683 ± 0.00182	2.71506 ± 0.00307	0.14521 ± 0.00167	0.12819 ± 0.00166	0.10096 ± 0.00166

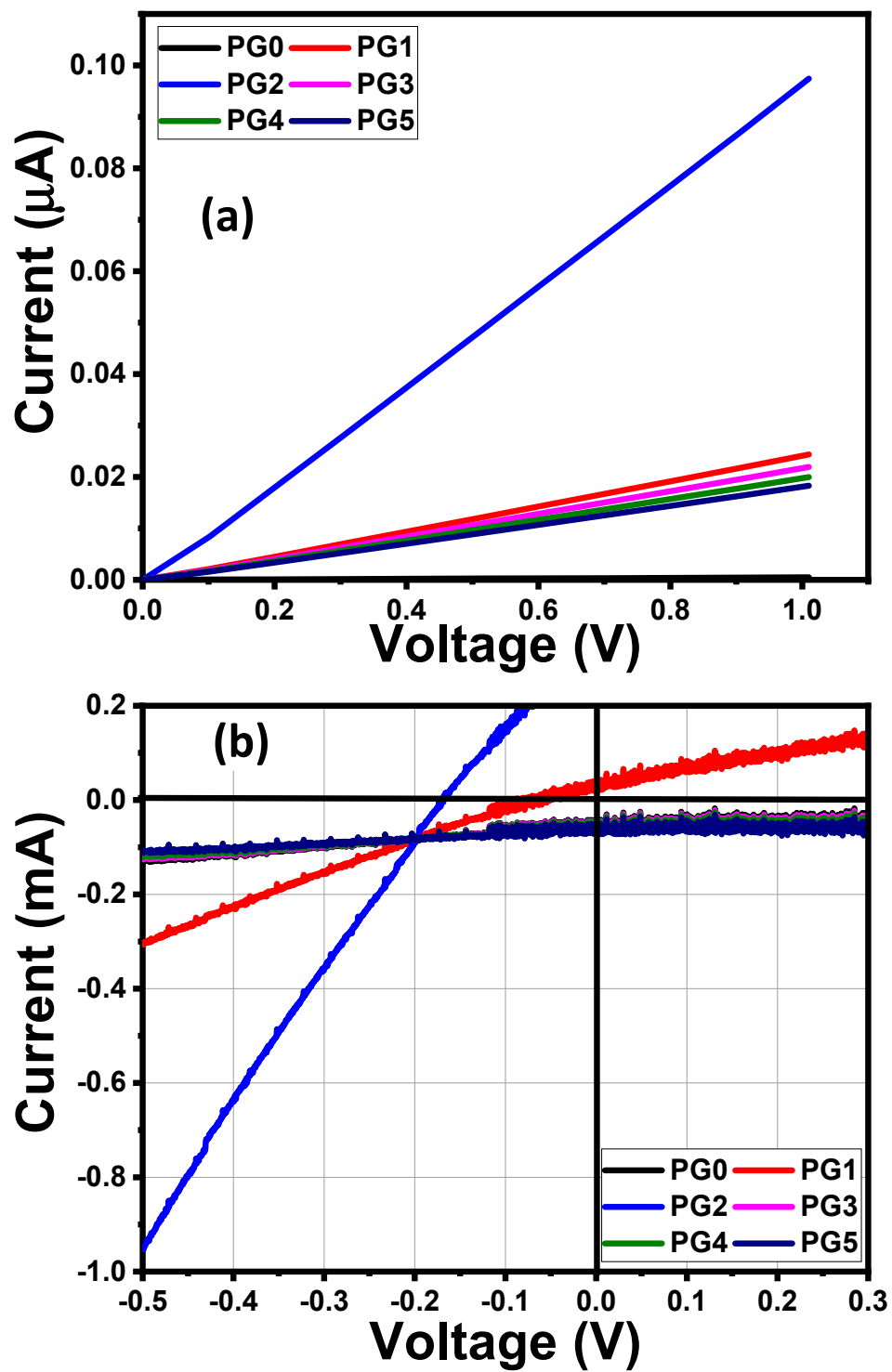


Figure S1. I-V characteristics of the PES/GO electrodes for (a) electronic conductance and (b) ionic conductance calculations.

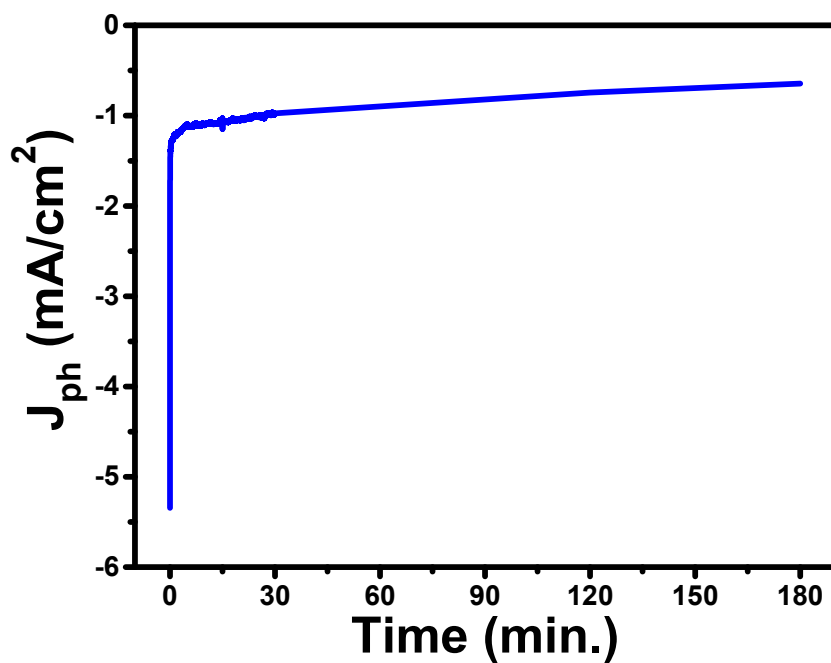


Figure S2. chronoamperometry J_{ph} -t response of PG2 for 180 min at 0.3 M of sodium sulfate (Na_2SO_4) aqueous solution under applied bias voltage of -1V.

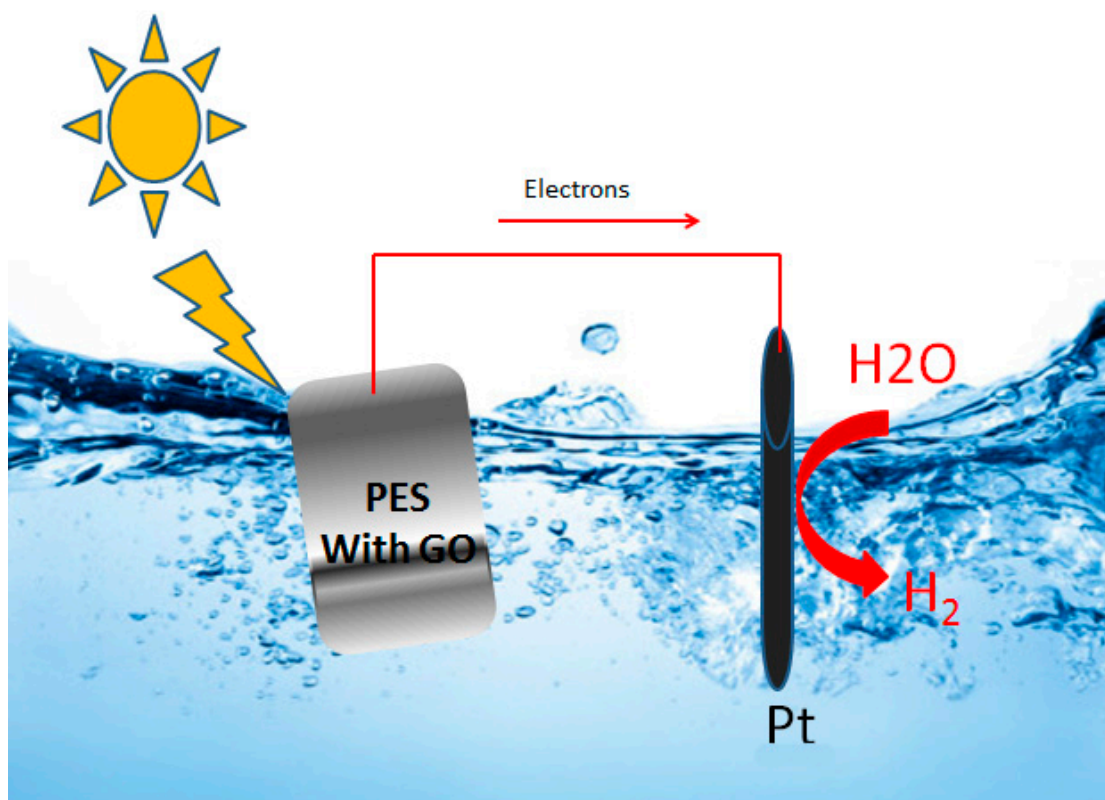


Figure S3. Schematic diagram for PEC water splitting using PES/GO electrode.