

Electric Supplementary Information

Long-term stability of Si-organic hybrid solar cells with thermally tunable graphene oxide platform

Beo Deul Ryu^{a,1}, Jung-Hwan Hyung,^{ab,1} Min Han^a, Gil-Sung Kim^a, Nam Han^c, Kang Bok Ko^a, Ko Ku Kang^a, Tran Viet Cuong^{ad}, and Chang-Hee Hong^{a}*

^a School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, Jeonju, Jellabuk-do 54896, Korea

^b Department of Nanosystem Research, National Nano Fab Center (NNFC), Daejeon, 305-701, Korea

^c Department of Material Science and Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Korea

^d NTT Hi-Tech Institute, Nguyen Tat Thanh University, 298-300 A Nguyen Tat Thanh Street, Ho Chi Minh City, Vietnam

This file includes:

Figures S1~S6.

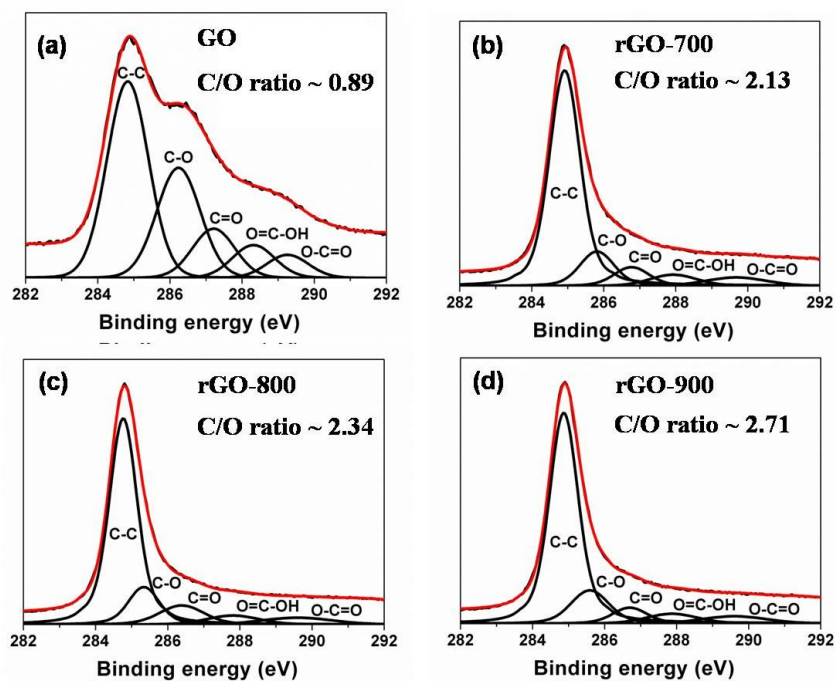


Figure S1. XPS C1s spectra of (a) GO layer, and thermally rGO by (b) annealed 700 °C, (c) annealed 800 °C, and (d) annealed 900 °C.

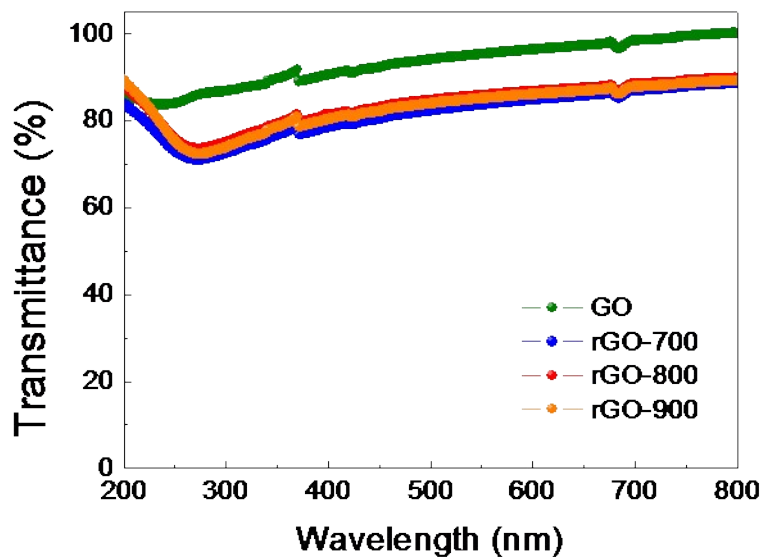


Figure S2. The optical transmission spectra of the GO and rGO layers by annealed 700, 800, and 900 °C, respectively.

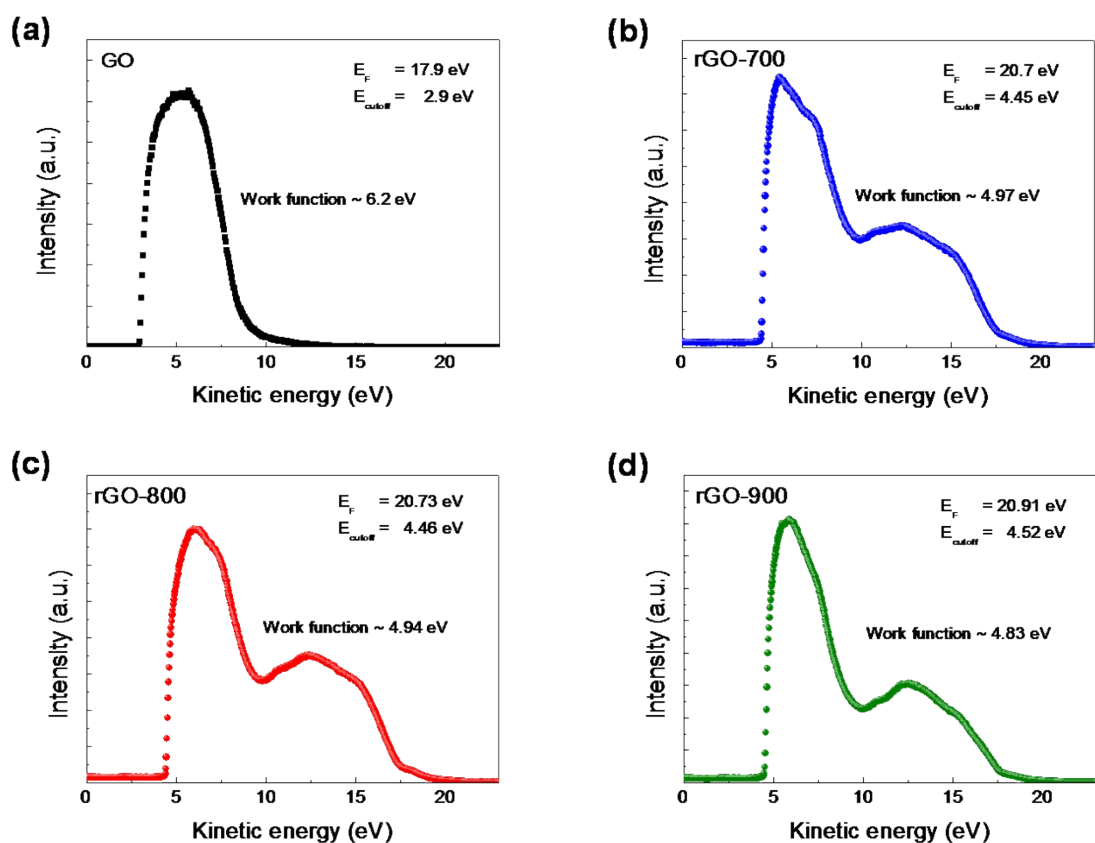


Figure S3. UPS spectra of (a) GO layer, and thermally rGO by (b) annealed 700 °C, (c) annealed 800 °C, and (d) annealed 900 °C.

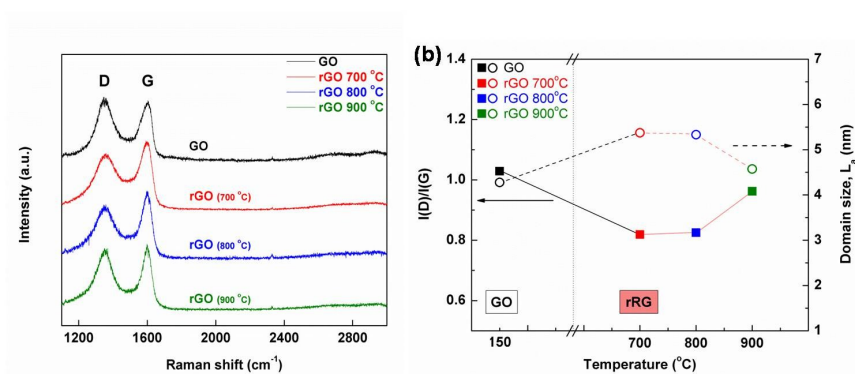


Figure S4. (a) Raman spectra of GO layer and rGO layers by annealed 700, 800, and 900 °C, respectively. (b) Variations of the I(D)/I(G) ratio and domain size with GO and rGO by several reduction temperature.

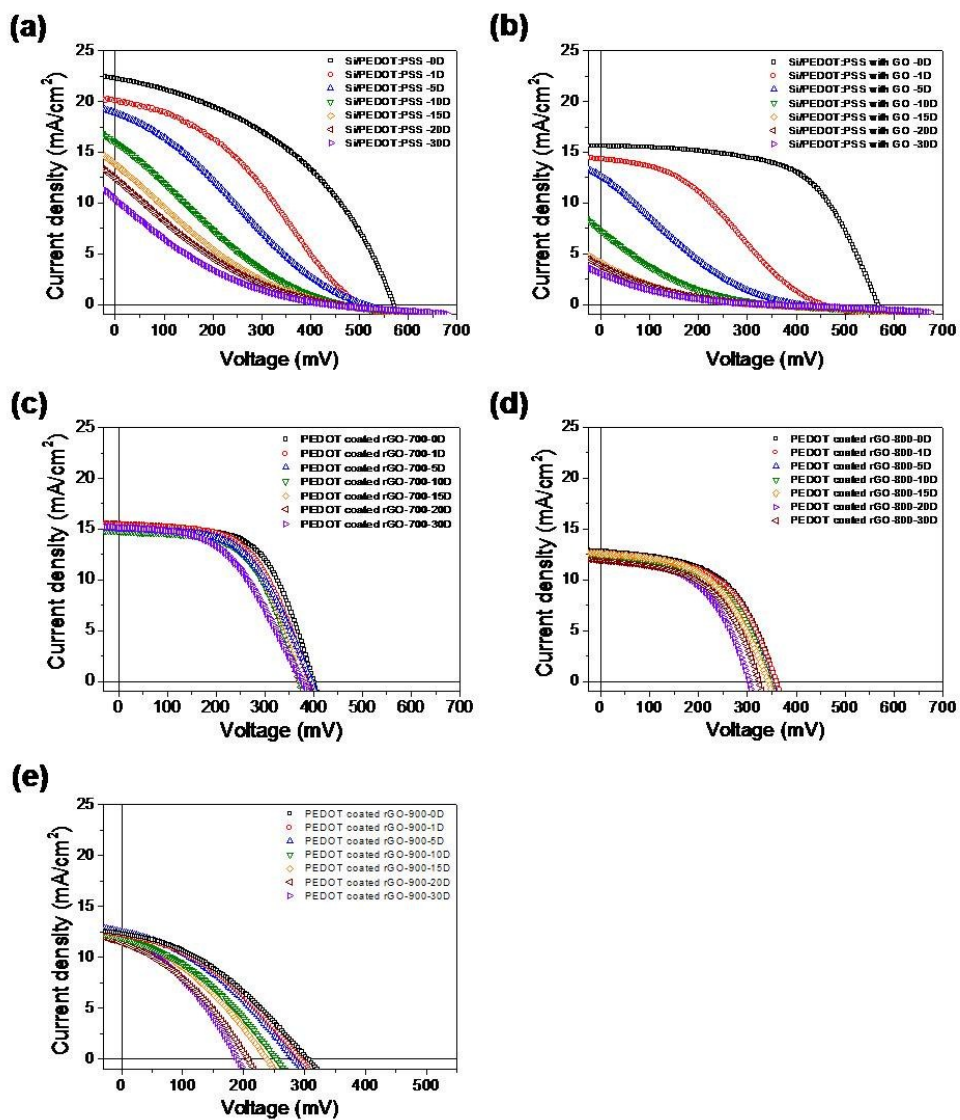


Figure S5. J-V curves of PEDOT:PSS devices (a) without GO barrier layer, (b) with GO barrier layer, (c) with rGO-700 layer, (d) with rGO-800 layer, and (e) with rGO-900 layer during 31 days.

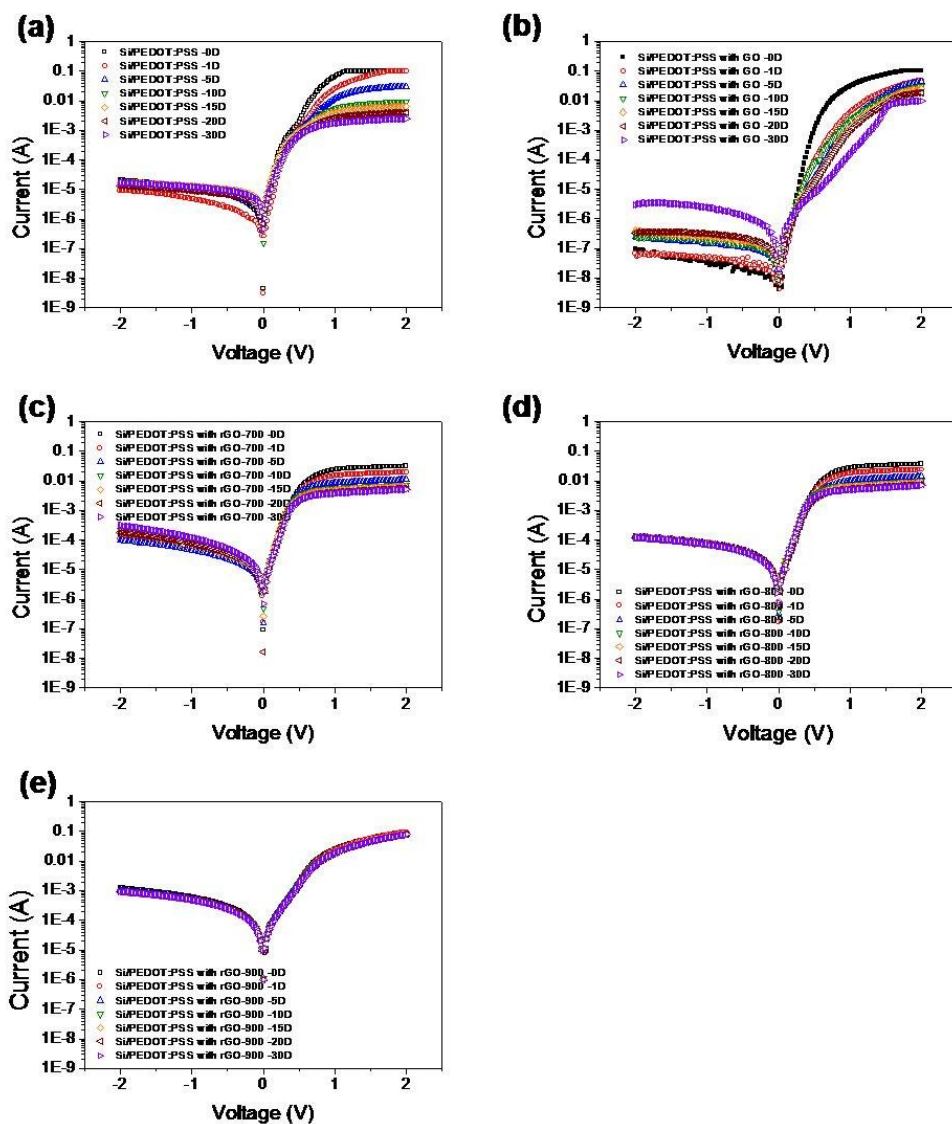


Figure S6. I-V curves of PEDOT:PSS devices (a) without GO barrier layer, (b) with GO barrier layer, (c) with rGO-700 layer, (d) with rGO-800 layer, and (e) with rGO-900 layer in dark condition during 31 days.