

Supporting Information

Highly Luminescent Polyethylene Glycol-passivated Graphene Quantum Dots for Light Emitting Diode

Hyun Jun Kim^a, Chung Kyeong Lee^a, Jin Gwan Seo^a, Soon Jik Hong^a, Gian Song^a, Junghoon

Lee^{b,}, Changui Ahn^{c,*}, DongJu Lee^{c,*}, Sung Ho Song^{a,*}*

^aDivision of Advanced Materials Engineering, Kongju National University, Chungnam,
Republic of Korea

^bDivison of Chemical Engineering, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan,
Republic of Korea

^cEngineering Ceramic Center, Korea Institute of Ceramic Engineering and Technology,
Icheon, Gyeonggi 17303, Republic of Korea

^dDepartment of Advanced Materials Engineering, Chungbuk National University, Chungbuk
Republic of Korea

*Corresponding authors. E-mails: shsong805@kongju.ac.kr

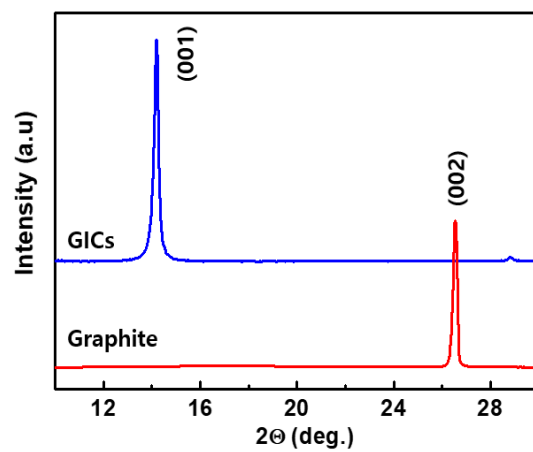


Figure S1. XRD patterns of the GICs (Graphite intercalation compounds) and Graphite

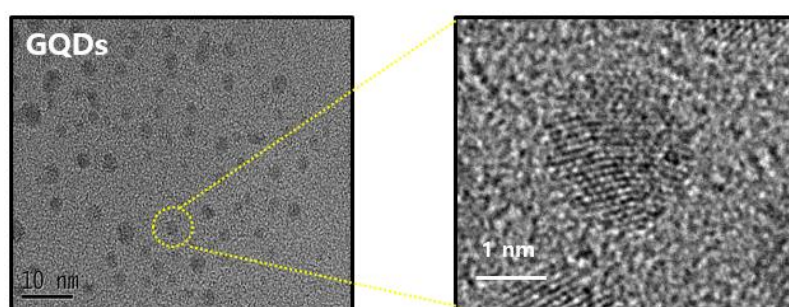


Figure S2. HR-TEM images of GQDs

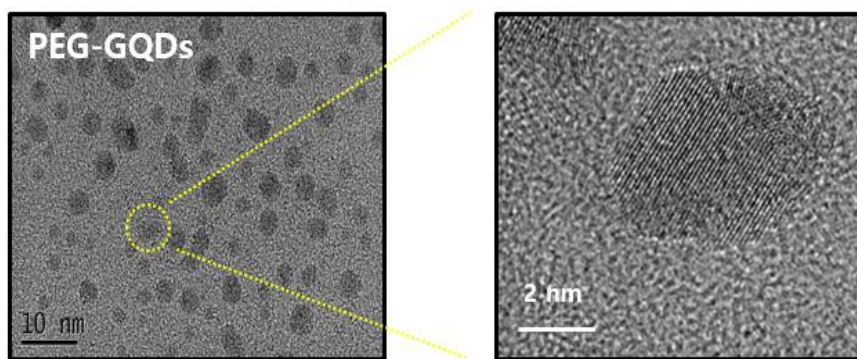


Figure S3. HR-TEM images of PEG-GQDs

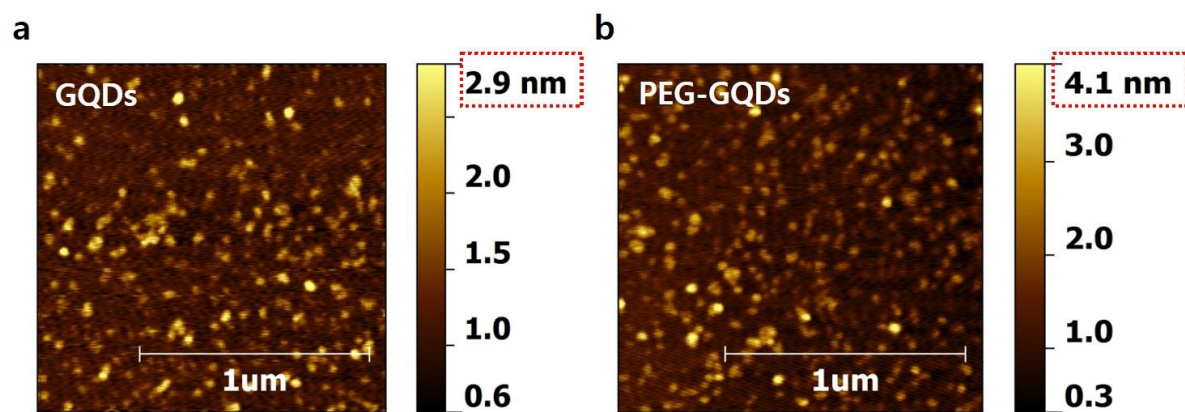


Figure S4. a. AFM image of GQDs. b. AFM image of PEG-GQDs

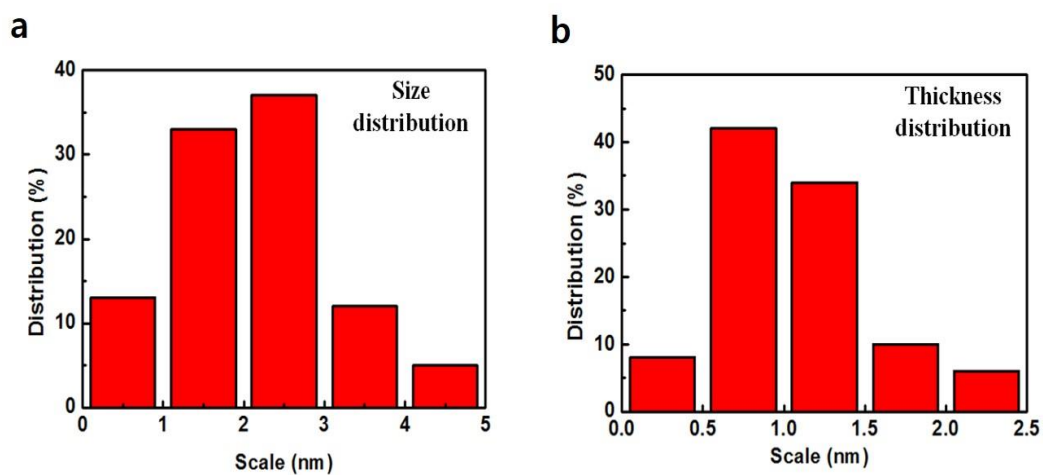


Figure S5. a. Size distribution of the GQDs. b. thickness distribution of the GQDs.

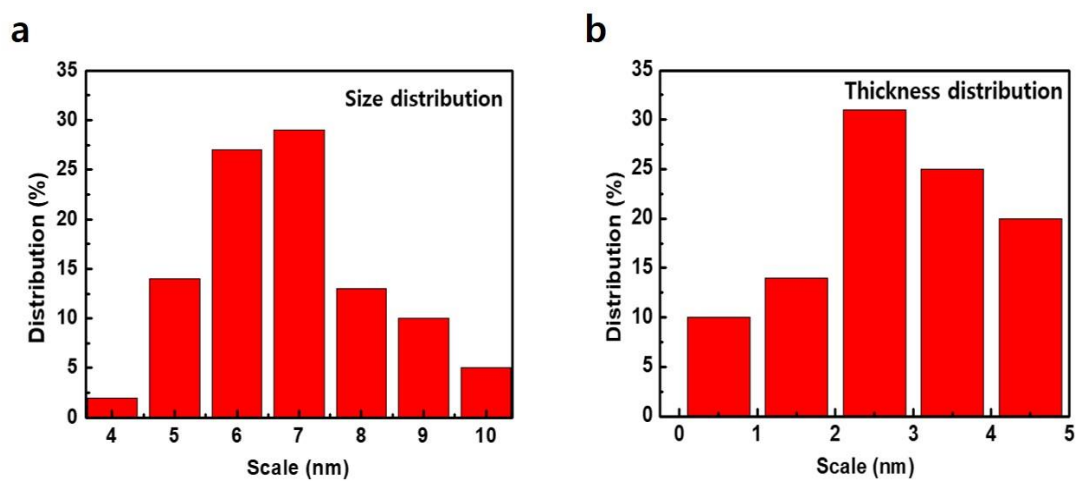


Figure S6. a. Size distribution of the PEG-GQDs. b. thickness distribution of the PEG-GQDs.

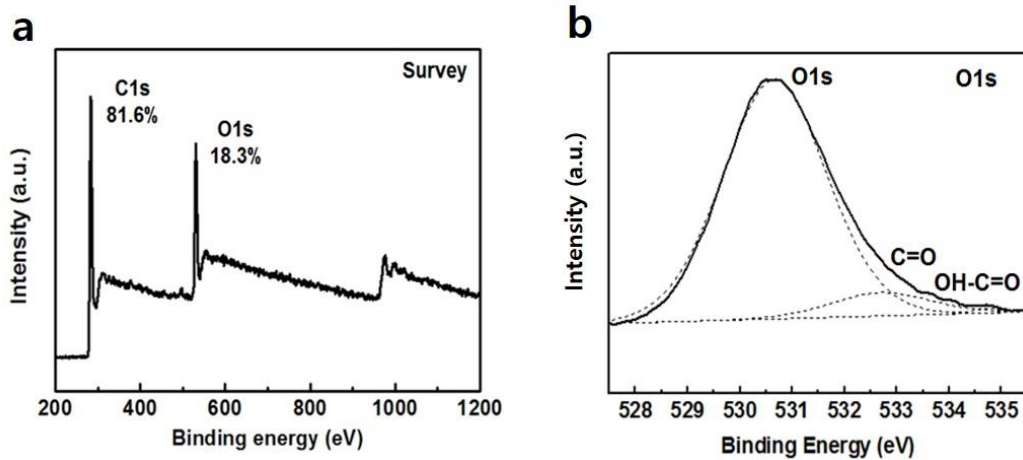


Figure S7. a. High-resolution XPS survey of GQDs. b. High-resolution XPS survey O1s spectra of GQDs.

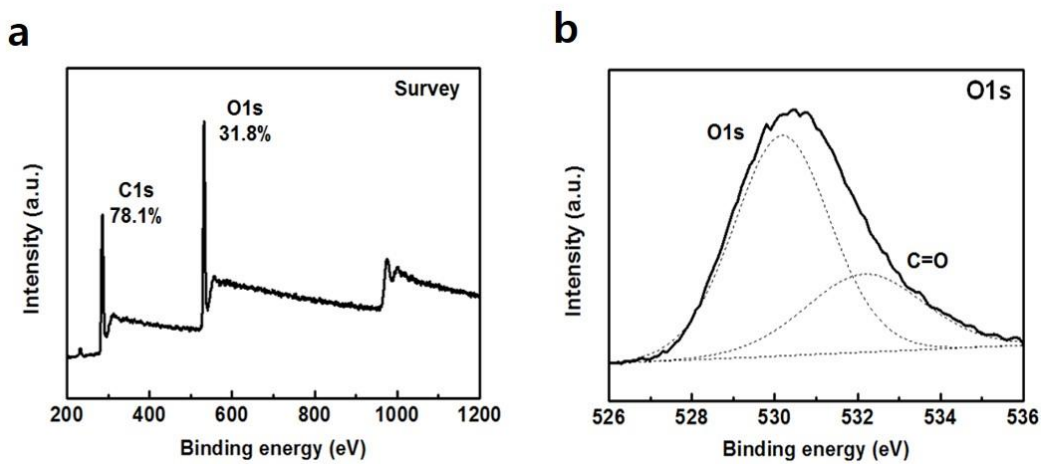


Figure S8. a. High-resolution XPS survey of PEG-GQDs. b. High-resolution XPS survey O1s spectra of PEG-GQDs.

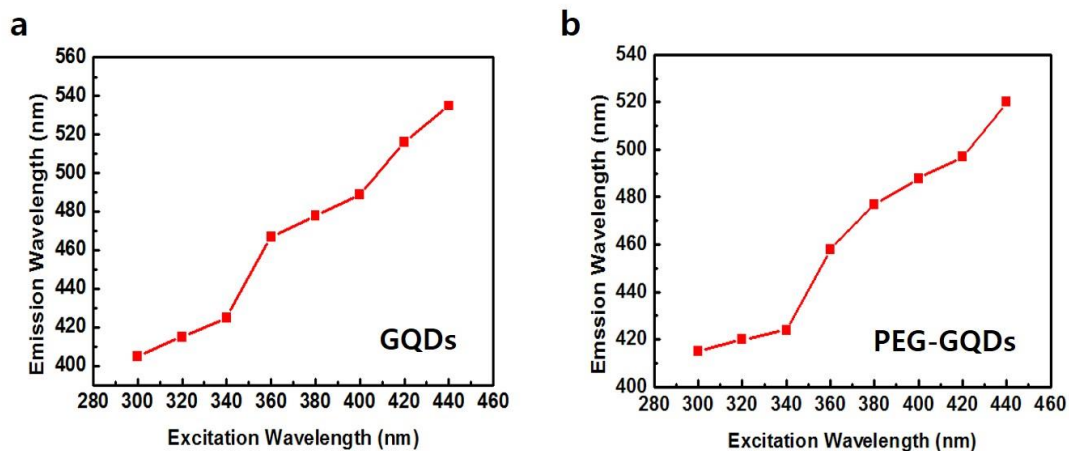


Figure S9. a. PL spectra of GQDs under different excitation wavelength. b. PL spectra of PEG-GQDs under different excitation wavelength.

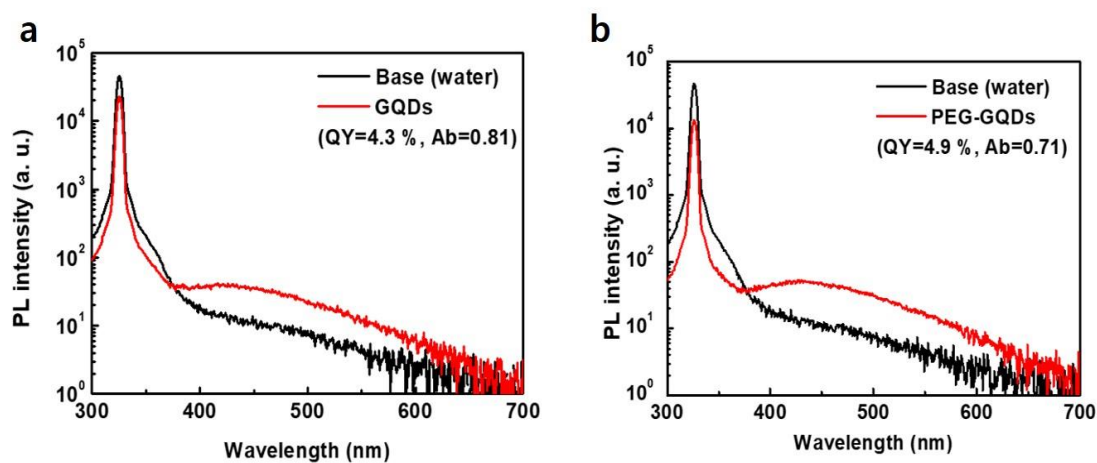


Figure S10. a. Quantum yields of GQDs. b. Quantum yields of PEG-GQDs.

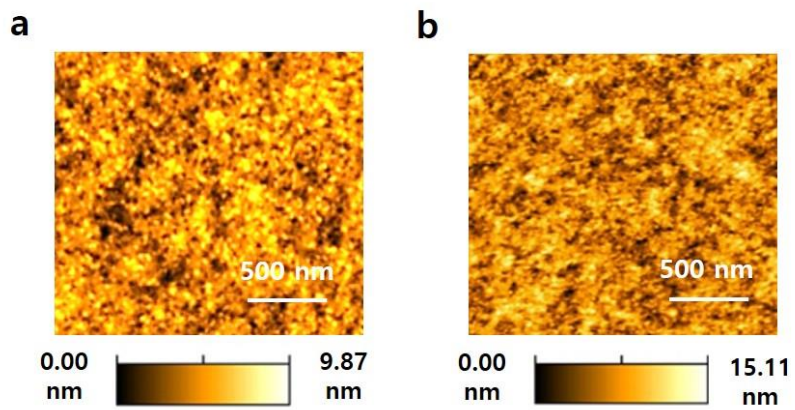


Figure S11. a. AFM images of PVK matrix with GQDs. b. AFM images of PVK matrix with PEG-GQDs.

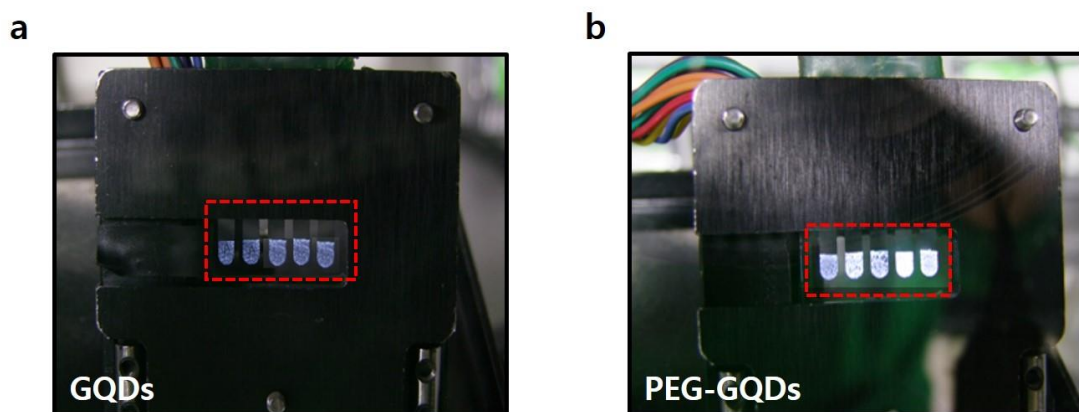


Figure S12. a. Electroluminescent image of GQDs, consisting of five emitting areas. b. Electroluminescent image of PEG-GQDs, consisting of five emitting areas.