

Electronic Supplementary Information

Highly Sensitive Ultraviolet Sensor Based on Facile *in situ* Solution-grown ZnO Nanorod/Graphene Heterostructure†

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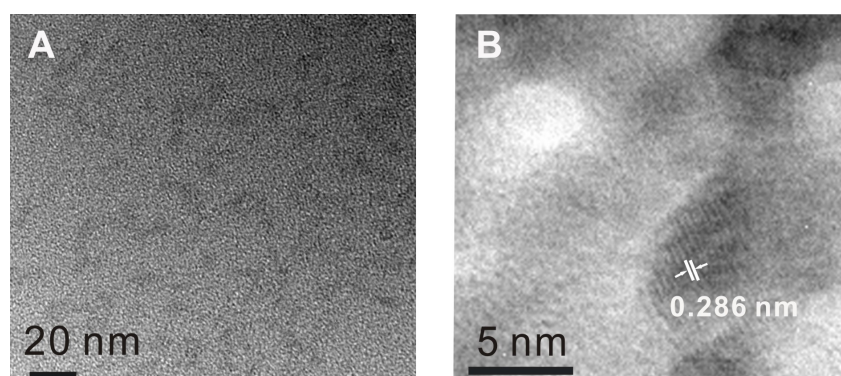


Fig. S1 TEM micrograph of ZnO QDs at low resolution (A) and high resolution (B).

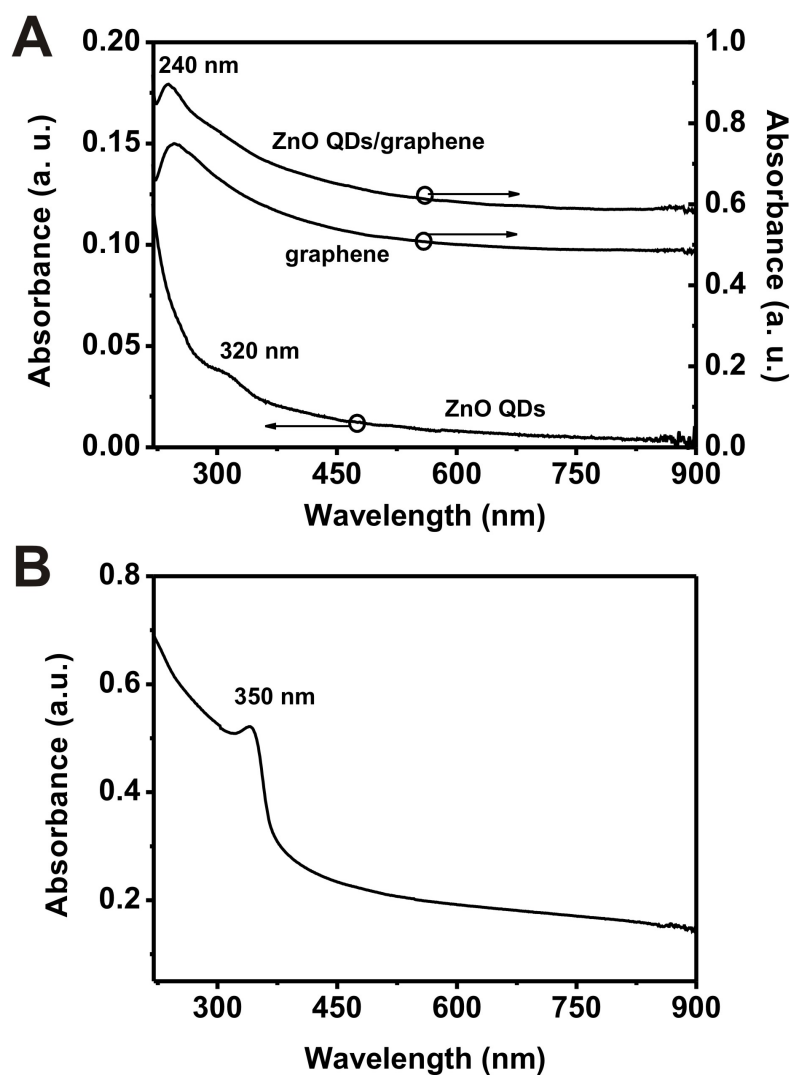


Fig. S2 (A) UV-Vis spectra of ZnO QDs, graphene and ZnO QDs/graphene composite in methanol/ water solution. (B) UV-Vis spectra of ZnO nanorods on quartz substrates.

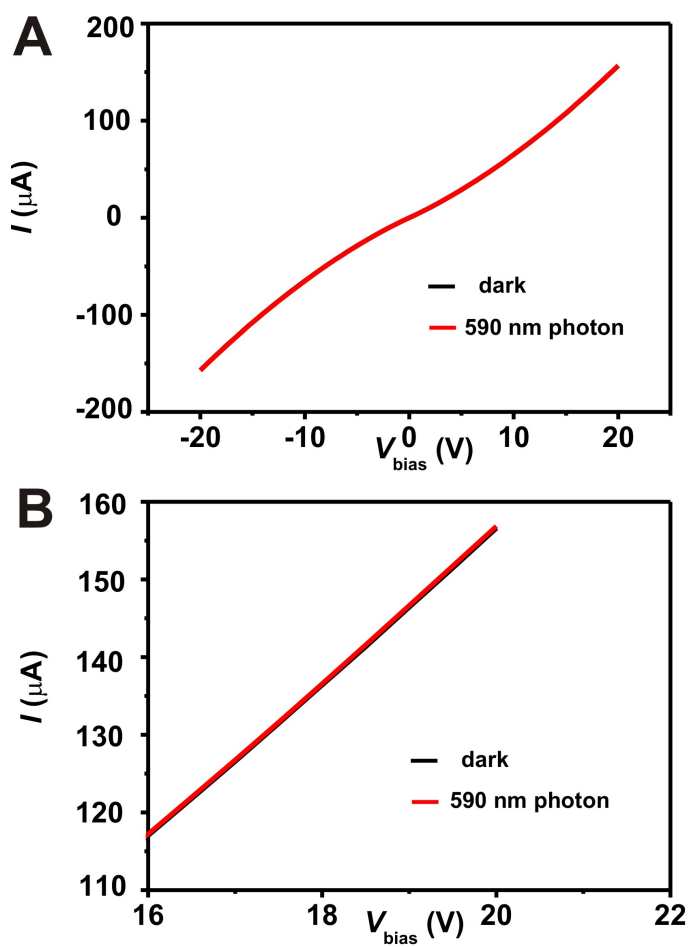


Fig. S3 (A) Current versus voltage curves for ZnO QDs/graphene hybrid under dark and $108.5 \mu\text{W}/\text{cm}^2$ 590 nm photon radiation, (B) enlarged view of (A) with V_{bias} from 16 V to 20 V.

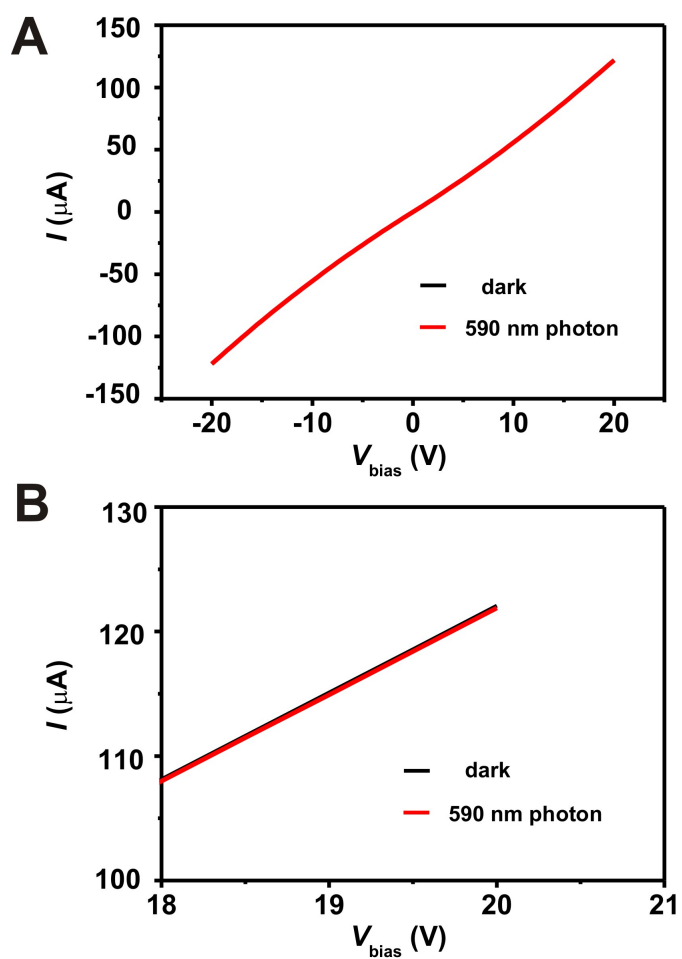


Fig. S4 (A) Current versus voltage curves for SDBS-graphene film under dark and $108.5 \mu\text{W}/\text{cm}^2$ 590 nm photon radiation, (B) enlarged view of (A) with V_{bias} from 18 V to 20 V.

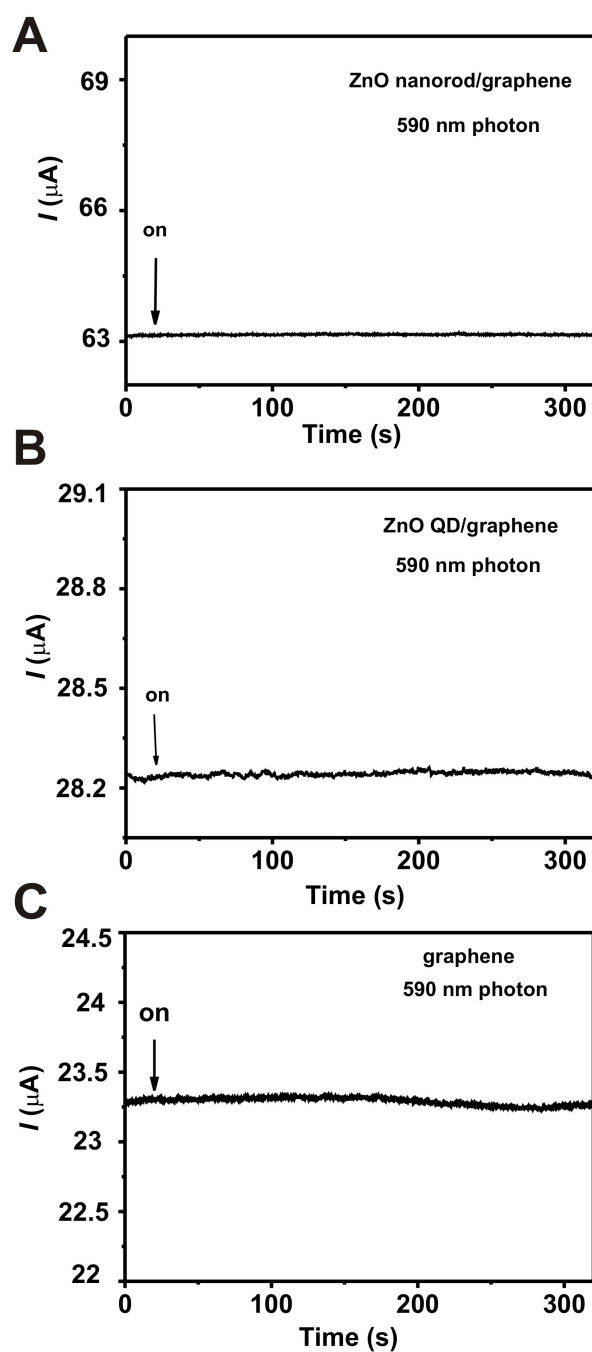


Fig. S5 Time-resolved photoresponses of ZnO nanorod/graphene heterostructure (A), ZnO QD/graphene hybrid (B) and pure SDBS-graphene at $108.5 \mu\text{W}/\text{cm}^2$ 590 nm radiation with V_{bias} of 5 V.

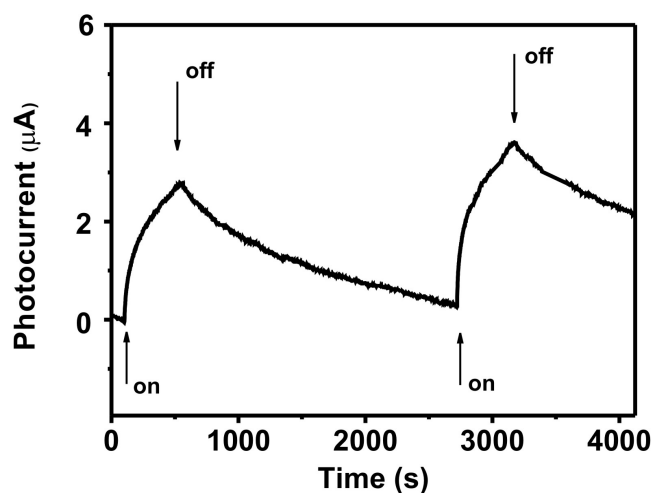


Fig. S6 Time-resolved photoresponses and photocurrent decay of ZnO nanorod/graphene heterostructure at 1.084 mW/cm^2 370 nm radiations with V_{bias} of 5 V. Due to instrumentation limitation for the long time measurements, we only measured ~ 2 cycles. However, it is clear that the photoresponse behavior of ZnO nanorod/graphene heterostructure is repeatable and the device will not be damaged under UV radiation.

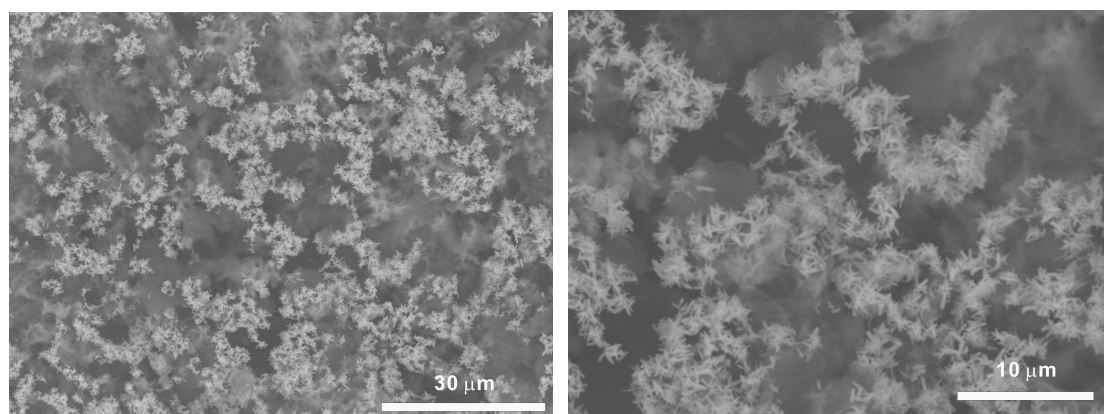


Fig. S7 SEM images of ZnO nanorod/graphene heterostructure device after radiated by long term UV light. No degradation of graphene or damage of device was observed.