

Supporting Information

Hybrid graphene/cadmium-free ZnSe/ZnS quantum dots phototransistors for UV detection

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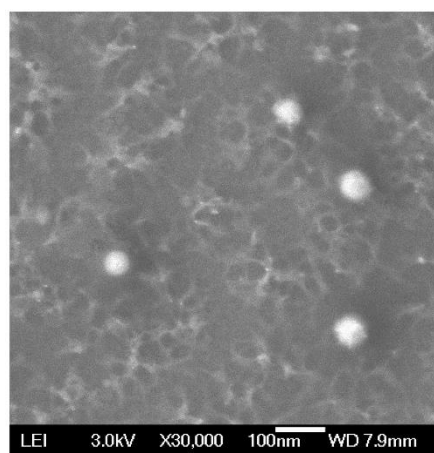


Figure S1. The SEM of ZnSe/ZnS QDs on the graphene channel.

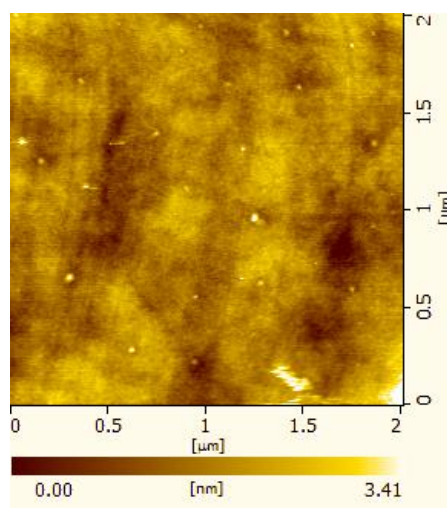


Figure S2. AFM image of ZnSe/ZnS quantum dots spin-coated on the SiO₂ substrate.

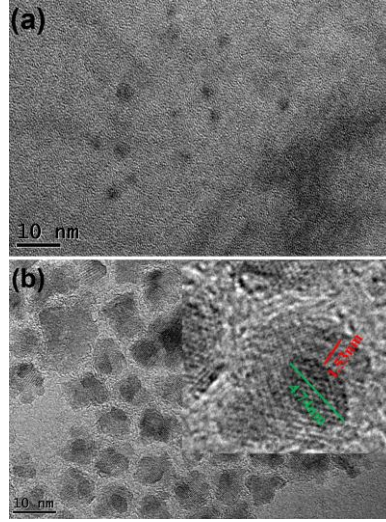


Figure S3. The TEM image of pure ZnSe QDs (a) and ZnSe/ZnS core-shell QDs (b). The inset of (b) is a single QD with core size of ~ 4.74 nm and shell size of ~ 1.53 nm.

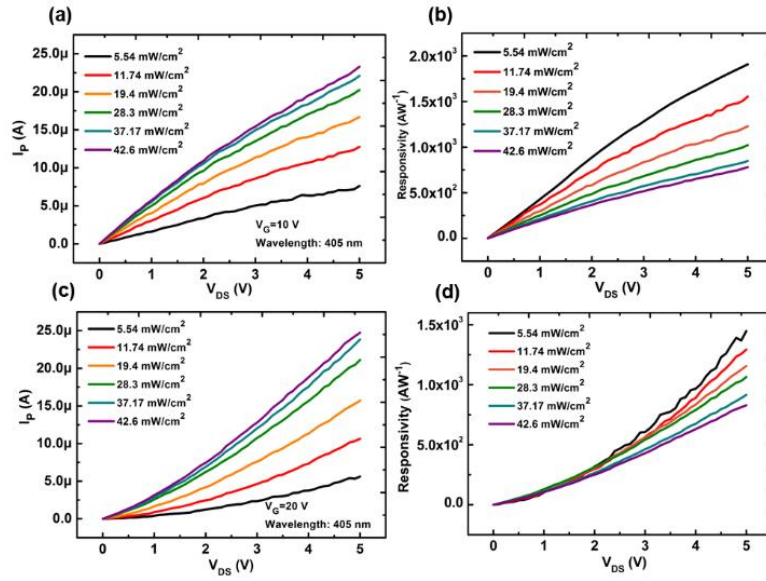


Figure S4. The photocurrent as a function of applied V_{DS} under the different light irradiances with V_G of 10 V (a) and 20 V (c); The responsivity of such graphene/QDs photodetectors calculated from (a) with a maximum value of 1964 AW^{-1} (b) and calculated from (c) with a maximum value of 1448 AW^{-1} (d).

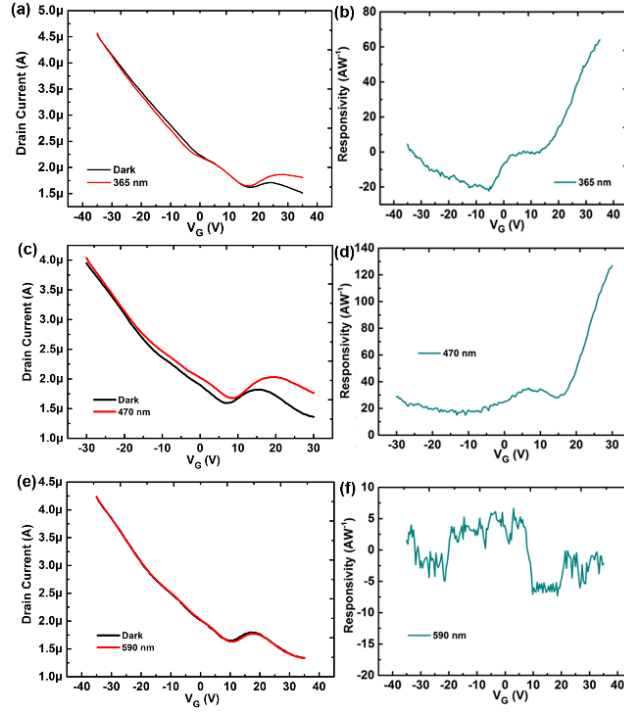


Figure S5. The transfer curves of graphene/QDs photodetectors decorated with ZnSe/ZnS quantum dots under the illumination with the wavelength of 365 nm (a), 470 nm (c) and 590 nm (e). The responsivity as a function of V_G with the maximum value of 64 AW^{-1} under the 365 nm light (b), 127 AW^{-1} under the 470 nm light (d) and 6 AW^{-1} under the 590 nm light (f).

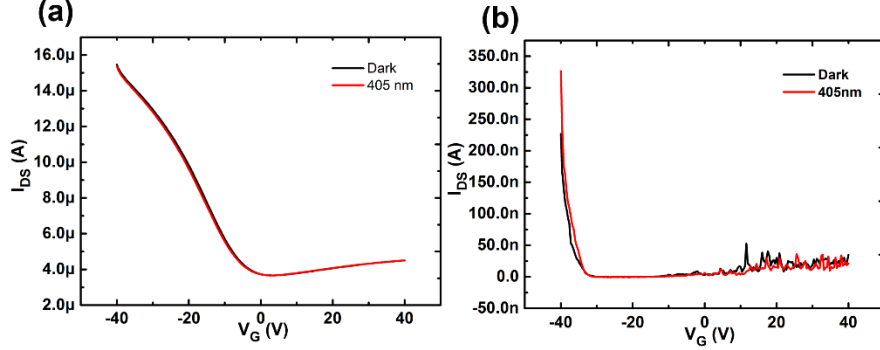


Figure S6. The transfer curves of pure graphene-based FETs (a) and pure QDs-based FETs (b) in the dark and under the illumination with the wavelength of 405 nm and irradiance of 11.74 mW/cm^2 .