

*Electronic Supplementary Information*

**Fabrication and properties of high-performance chlorine doped graphene quantum dots based photovoltaic detector**

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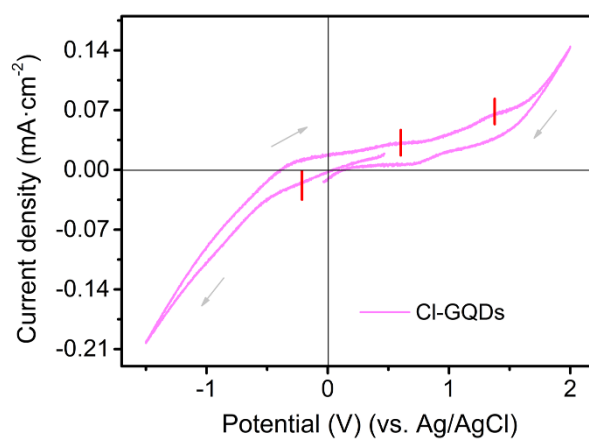


Figure S1. The cyclic voltammety cuve of Cl-GQDs dispersed in N-methylpyrrolidone (NMP) using  $\text{Na}_2\text{SO}_4$  as electrolyte.

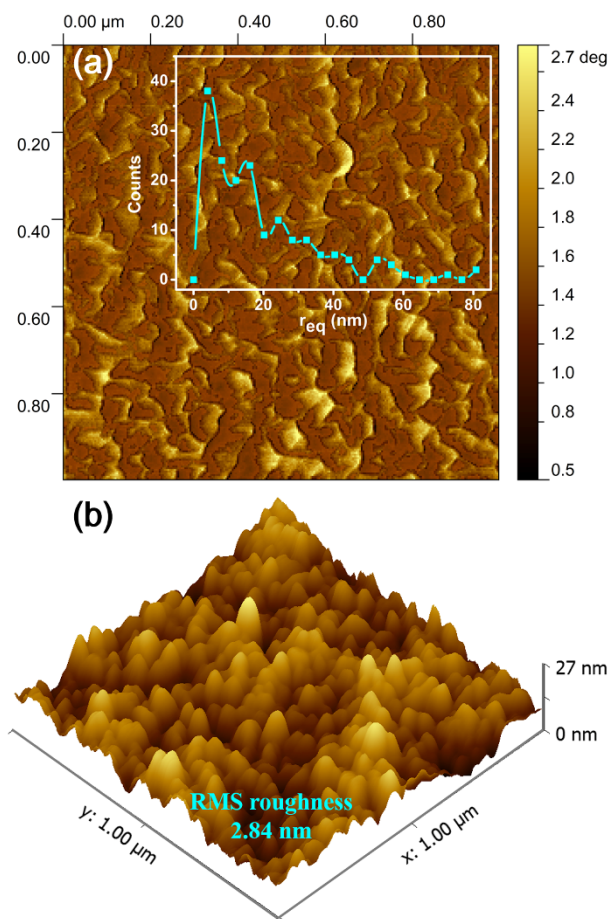


Figure S2. (a) AFM phase image of Al film, inset: size distribution of particles in Al film. (b) The AFM topographic image of Al film with the RMS roughness of 2.84 nm.

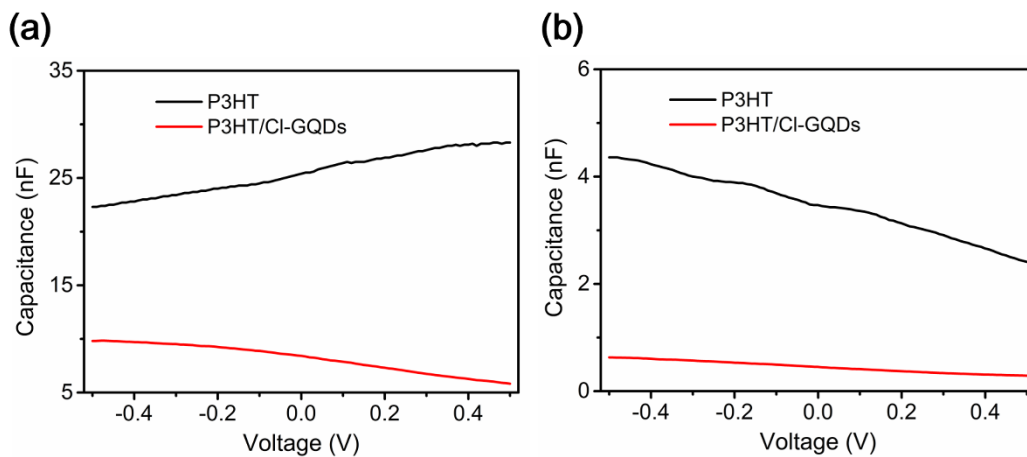


Figure S3. The  $C$ - $V$  curves for P3HT and P3HT/CI-GQDs devices under illumination at various frequencies, (a) 20 kHz, (b) 100 kHz.

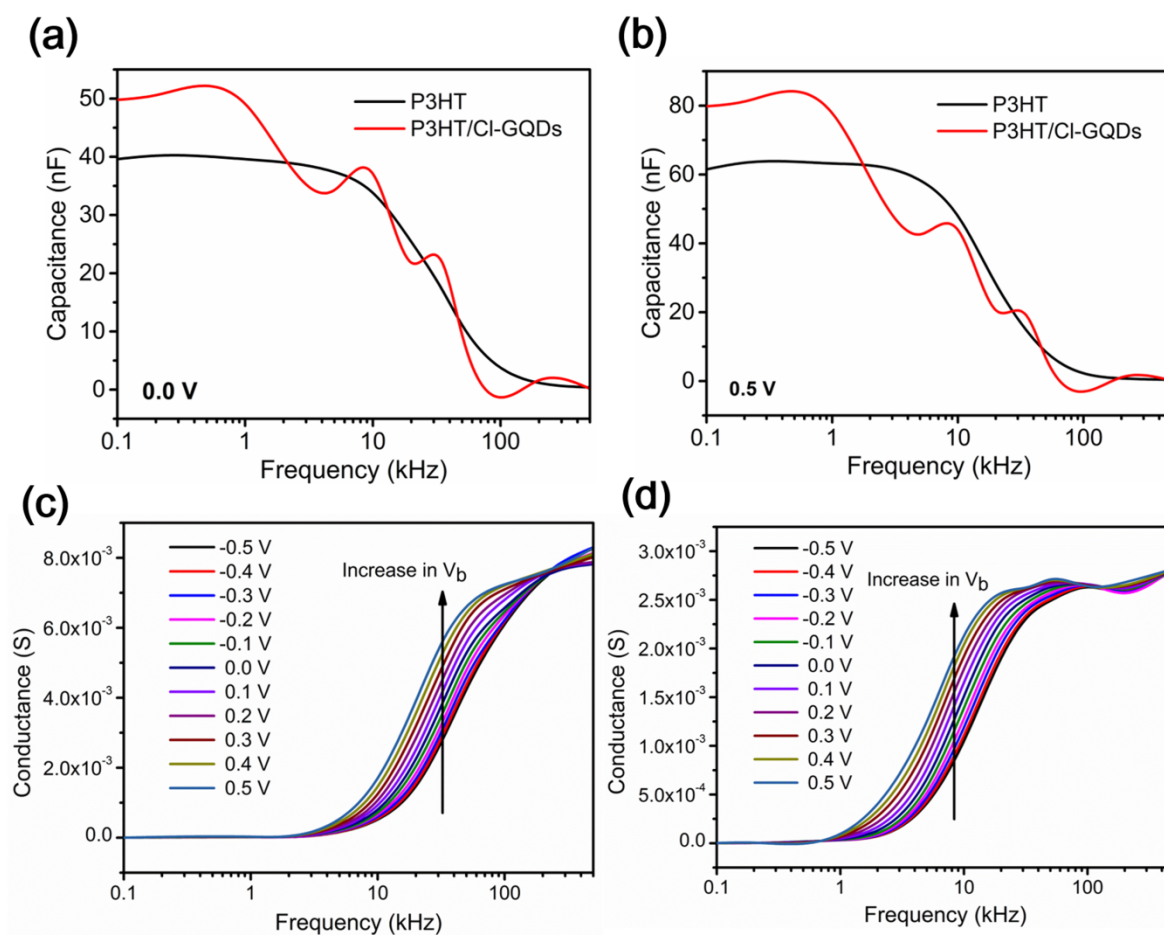


Figure S4. The  $C$ - $f$  characteristics of the P3HT (a) and P3HT/CI-GQDs (b) devices measured at different voltages. The  $G$ - $f$  characteristics of the P3HT (c) and P3HT/CI-GQDs (d) devices measured at different voltages ranging from -0.5 to 0.5 V with a voltage step of 0.1 V.