Structure Engineered Graphene Quantum Dots for Advanced Planar Micro-Supercapacitors

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The fabrication of micro-supercapacitors is essential for future microelectronics and flexible devices. But the relative low energy density has significantly impeded its wider applications. We have reported a micro-supercapacitors constructed with capacitor-type N-GQDs as negative electrode and battery-type MoS_2-QDs as positive electrode display outstanding electrochemical performance compared to other reported micro-supercapacitors, including a high energy density, an excellent rate capability, a fast frequency response capability, and a long-term cycling stability. The study presented here provides a new insight for the construction of high-performance MSCs, and, more importantly, offers a new reference in designing other high-performance energy storage devices based on 2D materials QDs.

REFERENCES

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FIGURES

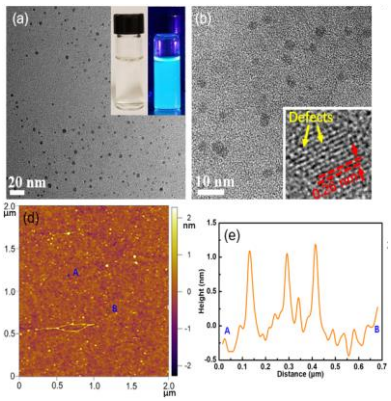

Figure 1: TEM and AFM characterizations of graphene quantum dots.

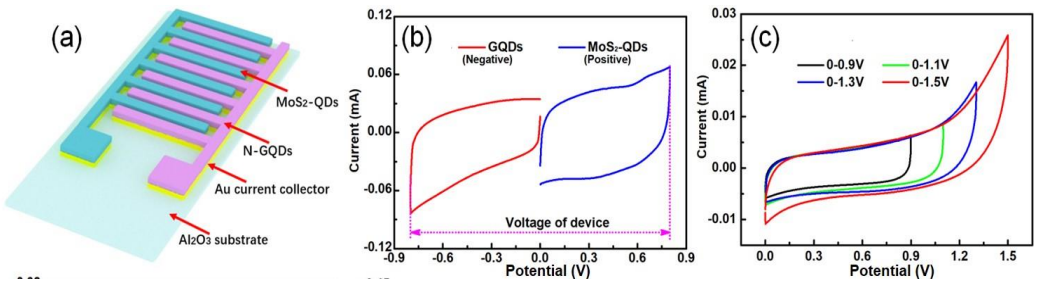

Figure 2: Illustration of asymmetric mico-supercapacitor and its performance.