

## Supporting Information

### **Rational design of hierarchical MoS<sub>2</sub> nanosheets hollow sphere sandwiched between carbon and TiO<sub>2</sub>@graphite as improved anode for lithium-ion batteries**

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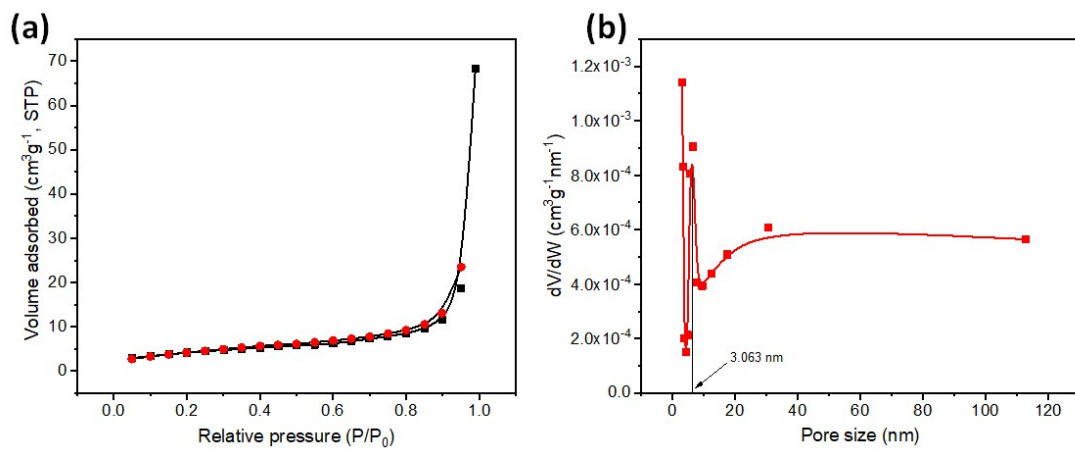
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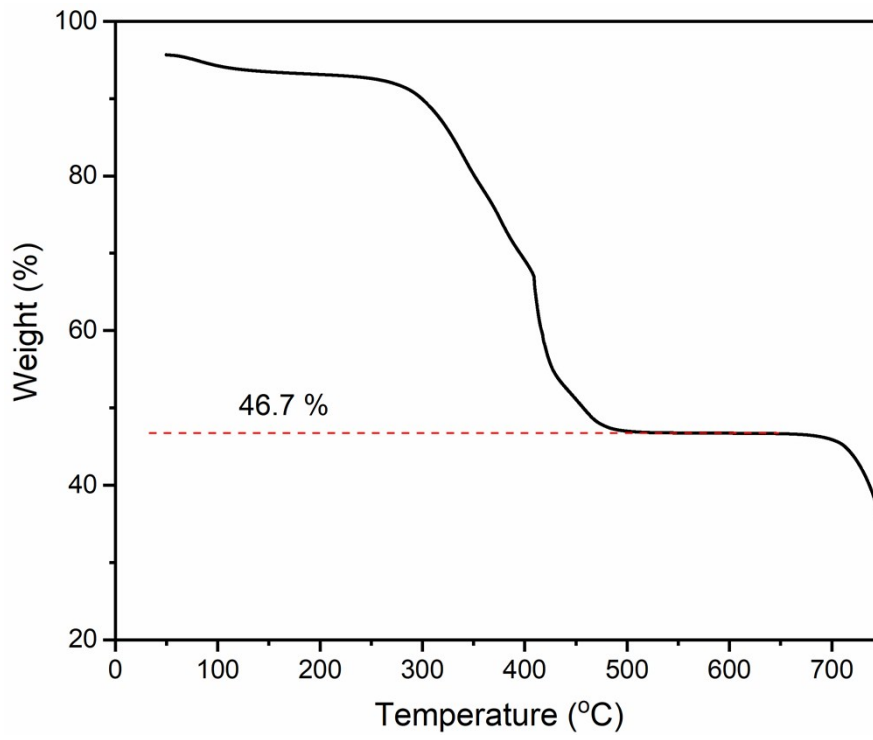
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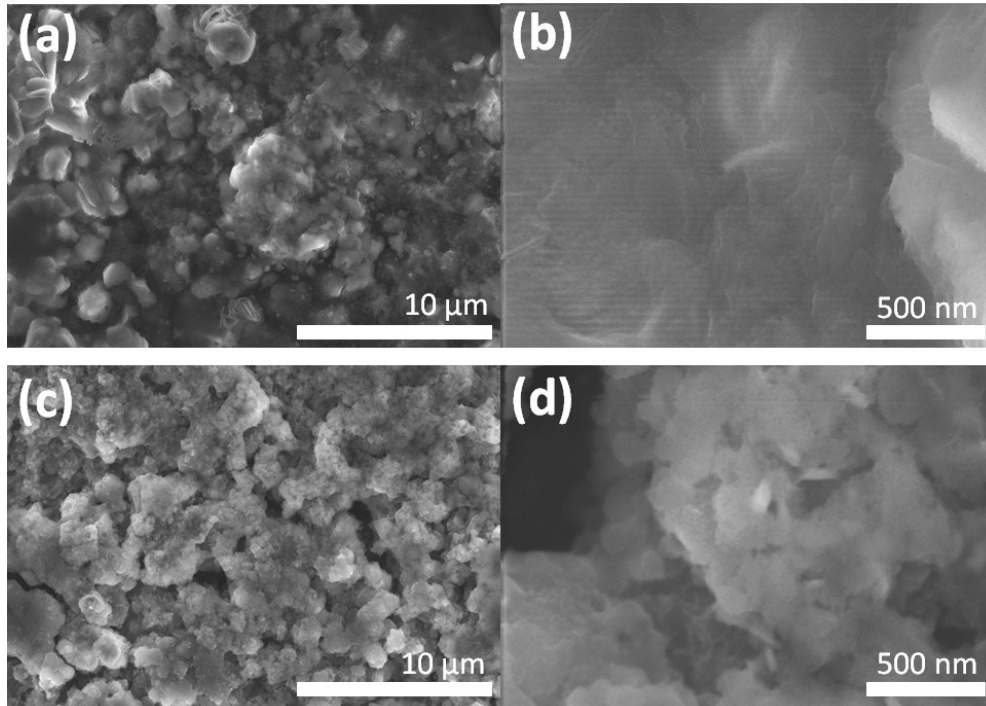
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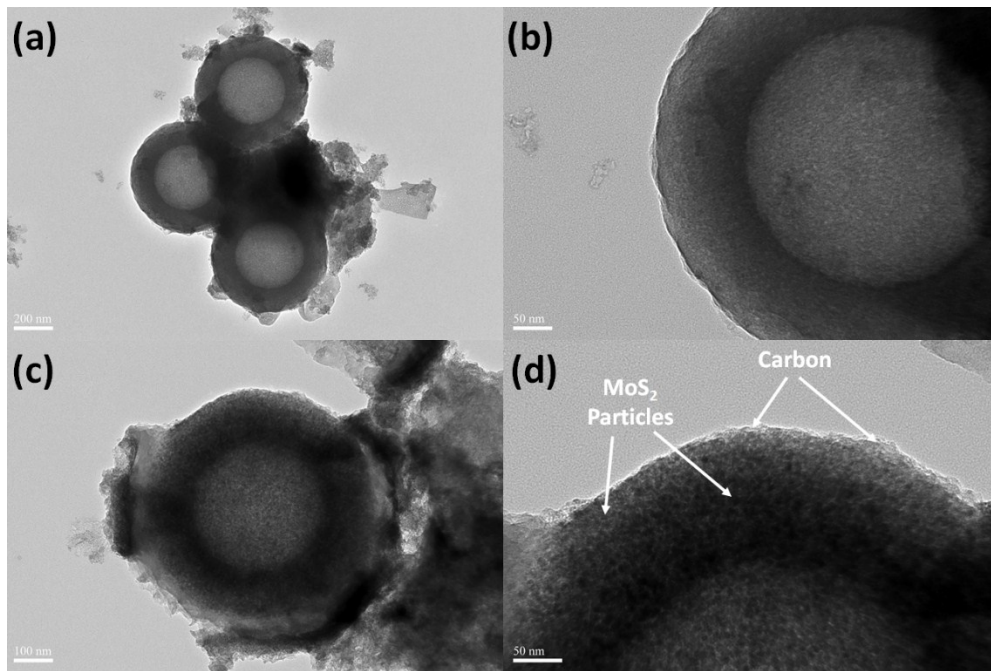
**Figure 1.** (a)  $N_2$  adsorption and desorption isotherms and (b) The pore size distribution of  $TiO_2@G@MoS_2@C$  hollow spheres



**Figure 2.** TGA curve of TiO<sub>2</sub>@G@MoS<sub>2</sub>@C.



**Figure 3.** (a, b) SEM images of  $\text{TiO}_2@\text{G}@\text{MoS}_2$  hollow spheres electrode after 50 cycles. (c, d) SEM images of  $\text{TiO}_2@\text{G}@\text{MoS}_2@\text{C}$  hollow sphere electrode after 100 cycles.



**Figure 4.** (a) TEM images of TiO<sub>2</sub>@G@MoS<sub>2</sub> hollow spheres electrode after 50 cycles. (b) TEM images of TiO<sub>2</sub>@G@MoS<sub>2</sub>@C hollow sphere electrode after 100 cycles. (c) and (d) are higher magnification views of the spheres.