

### Synergistically enhanced activity of g-C<sub>3</sub>N<sub>4</sub> quantum dots /graphene hydrogel composites for symmetric supercapacitors

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We report a facile method to assemble hierarchical and interconnected reduced graphene oxide hydrogel/g-C<sub>3</sub>N<sub>4</sub> QDs (GH-CN) composites by dispersion of presynthesized g-C<sub>3</sub>N<sub>4</sub> QDs in graphene oxide (GO) precursor solution by a hydrothermal reaction. The results demonstrated that the addition of g-C<sub>3</sub>N<sub>4</sub> QDs into graphene hydrogel improved the electrochemical performance distinctly, because the nitrogen-riched quantum dots embedded in graphene hydrogel which has high theoretically surface area, the quantum dots can provide more active sites for faradic reactions, then promote ion diffusion. The transport capability at the electrode/electrolyte interface and enhance the faradic reaction and electron transfer, leading to the observed increased capacitance. The assembled SSC exhibited a high energy density, excellent flexibility and good capacitance retention. These results demonstrate the potential GH-CN as a next-generation electrode material for energy storage system.