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# Free-Standing, Layered Graphene Monoliths for Long-Life Supercapacitor

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**ABSTRACT:** Fabricating free-standing film/paper or 3D material without additive binder is of great importance to maintain its original architectures and properties. Here, we for the first time introduce a simple, facile approach to fabricate a free-standing, layered N-doping reduced graphene oxide (NRGO) monolith for supercapacitor, firstly mixing graphene oxide (GO) with urea, and lastly taking a short-term flame bath. It is found that urea is a key sacrificial grasper, which can effectively prevent reduced GO (RGO) sheets from being peeled off in flame bath. Moreover, 3.5-7.0 at% of N elements are successfully introduced into RGO skeleton. These structural characteristics are translated into high specific capacitance ( $323.7 \text{ F g}^{-1}$  at  $1 \text{ A g}^{-1}$ , higher than RGO powder ( $252.1 \text{ F g}^{-1}$  at  $1 \text{ A g}^{-1}$ )).

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