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**New type multifunction porous aerogels for supercapacitors and absorbents based on
cellulose nanofibers and graphene**

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Abstract

In this paper, we reported a facile and eco-friendly approach for the synthesis of new type multifunction cellulose nanofibers-graphene aerogel (CGA) by hydrothermal processing, freeze-drying and carbonization. Then we explored its energy and environmental applications as supercapacitors electrode and absorbents. The results showed that the prepared CGA possessed highly porous and interconnected three-dimensional nanostructure provided efficient migration of electrolyte ions and electrons, and thus the aerogels exhibited superb electrochemical performance. The specific capacitances can reached 300 F/g at scan rate of 5 mV/s. In addition, the CGA showed excellent adsorption capacity for bisphenol A, which reached 481.1 mg/g. The excellent electrochemical performance and adsorption capacities showed the CGA to be a high-performance and promising material for supercapacitors and adsorbents.

Keywords: Cellulose nanofibers, graphene, aerogels, supercapacitors, absorbents;

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