

Novel Carbon Materials for DeNO_x and Deionization

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The environmental issues have attracted great attention as the fast development of the industry. Various measures have been taken to control the air and water pollution. The emission of nitrogen oxides (NO_x) originating from the combustion of fossil fuels in the industrial and automotive sources has given rise to a variety of environmental and health-related issues, such as photochemical smog, acid rain, ozone depletion and greenhouse effects. It is quite urgent to deNO_x for air purification. Besides, water scarcity has become one of the most serious global challenges due to the increasing population, the industrial development, and the contamination of freshwater resources. Deionization is an efficient way to get fresh water. Here, novel carbon materials such as mesoporous carbon, carbon nanotubes, graphene and their composites were developed and used for deNO_x and capacitive deionization by us [1-12]. A series of novel carbon materials and their composites have been rationally designed and originally developed by us. The carbon nanotubes based nanocomposites were developed as highly efficient catalysts for NO_x removal with high low-temperature catalytic activity, extensive operating-temperature window, good SO₂-tolerance and enhanced stability. Furthermore, a combination of mesoporous or hierarchically porous carbon and graphene or carbon nanotubes opens a new opportunity to prepare highly accessible surface area and highly conductive carbon materials for capacitive deionization.

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