Developing monolithic electrodes with high capacitor performance remains a challenge in energy storage field. KOH is applied to chemically activated commercial melamine sponges, and it can prepare monolithic N-/O-doped carbon sponge (NOCS) electrodes.

Moreover, KOH activation is also efficient for generating micropores and small mesopores into the framework of various structured carbons, such as carbon fibers (CFs), carbon nanofibers (CNFs), CNTs, templated porous carbons (TPCs), carbide-derived carbons (CDCs), carbon aerogels (CAs), and graphene.

In this feature article, we will cover recent research progress since 2007 on the synthesis of KOH-activated carbons for hydrogen and electrical energy storage (supercapacitors and lithium???sulfur batteries).

KOH ACTIVATION OF CARBON BASED MATERIALS FOR ENERGY STORAGE

In this study, the effects of KOH/biomass ratios (1:8 to 1:1) and temperatures (400???800 ?C) on biomass pyrolysis were investigated. The KOH chemical activation mechanism was explored by revealing the evolution mechanisms of the gaseous product, bio-oil, biochar, and KOH, based on experiments and quantum calculations.

The carbonized PAF-1 derivatives formed by high-temperature KOH activation showed a unique bimodal microporous structure located at 0.6 nm and 1.2 nm and high surface area. These robust

Following the introduction to KOH activation mechanisms and processing technologies, the characteristics and performance of KOH-activated carbons as well as their relationships are summarized and discussed through the extensive analysis of the literature

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When preparing porous carbon materials from biomass for supercapacitor use, the use of activators can significantly increase the specific surface area of carbon materials, enhance pore structures, introduce more heteroatoms, promote the generation of various functional groups, and play a crucial role in the capacitance performance of biomass-der