# Polyaniline capacitor performance

Can polyaniline be used to make a hybrid supercapacitor?
In this study,Polyaniline and its composites were synthesized for the fabrication of supercapacitor,and the electrochemical performance of the supercapacitor cell was evaluated. Asymmetric hybrid supercapacitor was fabricatedby using polyaniline and its various composites as cathode material and activated carbon as anode material.

What are the characteristics of polyaniline based supercapacitors?
Self-assembly, faster ion transport, high durability, increased retention rate, exquisite specific capacitance are some key characteristics of polyaniline based supercapacitors. Renewable energy storage devices are being given their share of importance owing to the depletion of non-renewable fossil fuel reserves.

Is modified polyaniline a promising material as a capacitor?
Our experimental results were further supported by first-principles density functional theory calculations and demonstrate that modified polyaniline is a promising material as a capacitor.

What makes polyaniline a high performance ion?
The key to high-performance lies in the vertical-aligned-structure providing direct path channel for ion faster diffusion and high electrochemical capacitance of polyaniline for ion more accommodation.

How many articles are there in polyaniline supercapacitor synthesis?
More than 170journal articles have been reviewed. Different polyaniline supercapacitor electrodes design,synthesis processes,mechanism and applications is studied. Doping with metal,carbon nanotubes,graphene,and activated carbon results into high performance supercapacitors.

What is the maximum capacitance of Ni-Pani composite?
Ni-PANI composite exhibited maximum capacitance of 336 F/g,energy density of 42 Wh/kg and power density of 31 W/kg. However,Zhang et al. reported capacitance of 160 F/g for Ni-PANI composite [39 ]. Better performance of Ni-PANI composite electrode material containing Co 3 O 4 originated from the synergetic effect of PANI,Ni and Co 3 O 4.

Polyaniline and its various composites were used in the cathode and activated carbon in the anode (positive electrodes) of the asymmetric hybrid supercapacitor. Electrochemical ...

Polyaniline (PANI) as a pseudocapacitive material has very high theoretical capacitance of 2000 F g -1. However, its practical capacitance has been limited by low electrochemical surface area (ESA) and unfavorable wettability toward aqueous electrolytes. This work deals with a strategy wherein the high ESA of PANI has been achieved by the ...

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Polyaniline/graphene (PANI/graphene) composites are the most investigated electrode materials for supercapacitors, owing to their high specific capacitance and excellent rate performance. However, a specific capacitance larger than the theoretical limit of the composite has been frequently reported for PANI/

Owing to the vertical-aligned-structure providing straight and fast ion transport pathchannel, large pseudocapacitance of polyaniline and high electric conductivity, the supercapacitor displays...

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Redox capacitors in the family of SCs are based on conducting polymer (CP) or transition metal oxide electrodes. In this study, symmetric redox capacitors have been fabricated utilizing the CP, polyaniline (PANI) as electrodes and a gel polymer electrolyte (GPE) based on polyvinylidenefluoride (PVdF) as the electrolyte. Investigations have been ...

Polyaniline (PANI) has been widely used for the energy storage applications either as a conducting agent or directly as an electroactive material due to the tunable pseudocapacitive performance owing to its various oxidation states. Although PANI supercapacitors are known for over three decades, immediate attention has been paid just ...

Polyaniline (PANi) as one kind of conducting polymers has been playing a great role in the energy storage and conversion devices besides carbonaceous materials and metallic compounds. Due to high specific capacitance, high flexibility and low cost, PANi has shown great potential in supercapacitor. It alone can be used in fabricating an electrode. However, the ...

The result showed that supercapacitor fabricated using polyaniline (PANI) as cathode material with Al foil as current collector provided highest capacitance of 249 F/g, Energy density of 31 Wh/kg and Power density of 18 W/kg.

Our experimental results were further supported by first-principles density functional theory calculations and demonstrate that modified polyaniline is a promising material as a capacitor. This work reports the enhancement of electrochemical properties of a polyaniline nanofiber with graphene oxide (GO) in weight proportions of 90:10 ...

Different polyaniline supercapacitor electrodes design, synthesis processes, mechanism and applications is studied. Doping with metal, carbon nanotubes, graphene, and activated carbon results into high performance supercapacitors. Relative performance of numerous polyaniline supercapacitors has been summarized.

Relative performance of numerous polyaniline supercapacitors has been summarized. ... Full cell capacitor of this electrode material showed 320 F/g specific capacitance at 0.5 A/g and 83% retention after 1000 cycles.

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Sharma et al. reported a PANI/CNT composite tuned by solvent for supercapacitor application [118]. Well dispersed CNT provides more area ...

The performance of polyaniline-based electrochemical capacitors was evaluated under various experimental conditions. The capacitor consisted of two platinized tantalum foils coated with polyaniline as the active material, a separator, ...

Polyaniline (PAni) is a widely studied conductive polymer that has unique properties such as high conductivity and stability. However, poor solubility and mechanical properties limit its prospective applications. To overcome these limitations, different synthesis methods have been developed and studied. One of these methods is to make the composites ...

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