

Is cobalt molybdate a good electrode material for supercapacitors?

Cobalt molybdate (CoMoO_4) nanomaterials have been regarded as one of the most prospective electrode materials for supercapacitors due to their high theoretical capacitance and excellent electrical conductivity.

Can cobalt molybdate be used as a supercapacitor and photo catalyst?

The present manuscript deals with one photosynthesis of cobalt molybdate for multifunctional application as supercapacitor and photo catalyst. The cobalt molybdate is synthesized by various concentration of urea as precursor. Nanostructured transition metal has been synthesized by hydrothermal method from spent catalyst leach liquor.

Are nickel/cobalt based materials for supercapacitors battery-type?

Herein, we refine the mechanism of energy storage for the nickel/cobalt based materials for supercapacitors and reclassify them into battery-type materials with the corresponding devices named as hybrid supercapacitors.

What is cobalt molybdate (CoMoO_4)?

Recently, cobalt molybdate (CoMoO_4) is attracting ever-growing interest for electrochemical energy storage because of its high theoretical capacity, natural abundance, and environmental friendliness.

Will nickel/cobalt based hybrid supercapacitors be commercialized in large scale?

All in all, we strongly believe that the supercapacitors will have tremendous developments, and the nickel/cobalt based hybrid supercapacitors will be commercialized in large scale, which not only possesses supercapacitors' high power density but batteries' high energy density.

Why are cobalt molybdate materials reversible redox reactions?

Cobalt molybdate materials, a kind of two-element transitional metal oxide, facilitate reversible redox reactions due to their abundant reserves and variable valence states of cobalt and molybdenum ions, and their electrochemical performance is usually better than that of single-component oxides.

With the multifunctional features, the rationally combined core-shell-like CoM NS@CoP/NF electrode exhibited a maximum capacity of 886.8 mA h/cm² at a ...

Binder-free cobalt molybdate nanoflakes grown on nickel foam as a hybrid supercapacitor and electrocatalyst for methanol oxidation reaction. ... Effect of transition metal cations on stability enhancement for molybdate-based hybrid supercapacitor. ACS. Appl. Mater. Interfaces., 9 (2017), pp. 17977-17991, 10.1021/acsami.7b03836.

For example, in the field of electrode materials for supercapacitor, Liu et al. demonstrated that CoMoO_4

nanorods (NRs) had a high capacity of 286 F g^{-1} at a current density of 5 mA cm^{-2} [24]; Guo and co-authors developed a CoMoO_4 nanoplate arrays on Ni foam via hydrothermal method, which exhibited a capacity of 1.26 F cm^{-2} at 4 mA cm^{-2} [25].

Abstract Cobalt molybdate (CoMoO_4) nanoparticles were synthesized via a sonochemical method based on the reaction between cobalt(II) nitrate hexahydrate and ammonium heptamolybdate tetrahydrate in water without adding surfactant, capping agent or template. The structural, morphological and optical properties of as-obtained products were

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In this endeavor, cobalt molybdate dihydrate materials were synthesized by CTAB assisted hydrothermal method and this material was utilized as electrode materials for supercapacitor application.

In this work, we report a supercapacitor electrode material based on nano-flower like cobalt molybdate decorated on porous activated carbon derived from waste onion peels ($\text{v-CoMoO}_4\text{-POAC}$). The obtained POAC exhibits highly porous structure and after the hydrothermal treatment with salts of cobalt and molybdenum, we observed a uniform distribution of v-cobalt ...

A simple and green approach for the preparation of cobalt molybdate/polyaniline ($\text{CoMoO}_4/\text{PANI}$) composite via in-situ polymerization method has been reported. The growth of PANI conductive layer on the surface of plate-like CoMoO_4 nanostructures has been confirmed by XRD, FT-IR, Raman and FE-SEM techniques. The prepared $\text{CoMoO}_4/\text{PANI}$ composite ...

Nickel-doped cobalt molybdate nanorods with excellent cycle stability for aqueous asymmetric supercapacitor. Author links open overlay panel Xiaodan Zhang a, Luchao Yue a, ... In addition, a hybrid supercapacitor ($\text{CuCo}_2\text{O}_4/\text{CuO HCs//AC HSC}$) was assembled using the $\text{CuCo}_2\text{O}_4/\text{CuO HCs}$ as positive electrode and activated carbon ...

Designing binder-free and core-shell-like electrode materials with synergistic effects has attracted widespread attention for the development of high energy density hybrid supercapacitors (HSCs). Herein, binder-free cobalt molybdate nanosheet-laminated cobalt phosphate micropetals on nickel foam (CoM NS@CoP/NF) were facilely prepared for use as an effective battery-type electrode ...

Metal molybdate compounds have attracted considerable attentions for their applications in supercapacitors. Herein, we demonstrate the controllable synthesis of cobalt molybdate (CoMoO_4) nanoarrays on nickel foam (NF). The synthesis mechanism and the influencing factors of the morphology and electrochemical properties of CoMoO_4 were ...

In this study, transition metal sulfide composites were synthesized through a cost-effective and simple

hydrothermal method, intended for use as electrode materials in ...

Boosting the performance of cobalt molybdate nanorods by introducing nanoflake-like cobalt boride to form a heterostructure for aqueous hybrid supercapacitors. ... Supercapacitors have gained considerable attention due to their high power density, fine cycle property, rapid charge and discharge characteristics [5], [7], [8]. They can also be ...

The high retain capacitances of samples show the fine long-cycle stability after 1000 charge-discharge cycles at current density of 8 A g⁻¹. The single-phase CoMoO₄ was prepared via a facile hydrothermal method coupled with calcination treatment at 400 °C. The structures, morphologies, and electrochemical properties of samples with different ...

In this present work, cobalt molybdate (CoMoO₄) nanorod shaped electrocatalysts synthesized by microwave combustion technique and the characters of sample were examined by PXRD, FT-IR, SEM associated with EDX, HR-TEM, UV-vis absorption, PL, VSM analysis, Raman spectroscopy and XPS. The electrochemical performance was studied by CV analysis, GCD ...

Hydrous forms of cobalt molybdate binary metal oxide nanoaggregates were synthesized via a simple chemical co-precipitation technique. The subsequent heat treatment at 400 °C converted the sample into anhydrous cobalt molybdate (CoMoO₄) with mesoporous nanostructure. The anhydrous cobalt molybdate possess surface area and pore volume of ...

Herein, we demonstrate an effective strategy of creating phosphorus-containing cobalt molybdate (CoMoO₄) with oxygen vacancies (P-CoMoO_{4-x}) on nickel foam for use as ...

Flower-like zinc molybdate (ZnMoO₄) has been prepared by using a facile hydrothermal method. The ZnMoO₄ nanoflowers are characterized by X-ray diffraction, Raman spectroscopy, X-ray photoelectron spectroscopy, transmission electron microscopy and scanning electron microscope techniques. The as-prepared material is evaluated as electrode materials ...

The present manuscript deals with one photosynthesis of cobalt molybdate for multifunctional application as supercapacitor and photo catalyst. The cobalt molybdate is synthesized by various concentration of urea as precursor. Nanostructured transition metal has been synthesized by hydrothermal method from spent catalyst leach liquor. Different physico ...

Mixed molybdates of cobalt and nickel with compositional formulae Co_{1-x}Ni_xMoO₄ (where x = 0, 0.2, 0.4, 0.5, 0.6, 0.8 and 1.0) have been synthesized by microwave-assisted co-precipitation method and examined as electrocatalysts for oxidation of methanol and water and as supercapacitors in 1.0 M KOH. Cyclic (CV) and linear sweep (LSV) voltammetries and ...

Metal molybdate compounds have attracted considerable attentions for their applications in supercapacitors.

Herein, we demonstrate the controllable synthesis of cobalt ...

In this work, a straightforward hydrothermal method is employed to fabricate free-standing nickel molybdate (NMO) with a rod-like nanostructure, onto which 2D nanosheets of ...

Cobalt molybdate (CoMoO_4) nanomaterials have been regarded as one of the most prospective electrode materials for supercapacitors due to their high theoretical capacitance and excellent electrical conductivity.

Carbon materials are the first materials to be used to make supercapacitor electrodes because of their low price, ... Rahman et.al fabricated a kind of supercapacitors using Cobalt oxide (Co_2O_3), ammonium peroxydisulfate (APS) and PANI composite material [152]. This supercapacitor provided highest capacitance of 249 F/g, Ed of 31 Wh/kg and ...

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