Heterojunction battery detection

How do heterojunctions affect electronic structure and electric field distribution?
The research of heterojunctions pays more attention to the effects brought by the intrinsic feature of the building blocks (e. g., band structures, alignment styles, semiconductor types, carrier concentration, and Fermi level difference) on the electronic structure and electric field distribution of whole materials.

Are heterointerfaces beneficial to the performance of heterojunction anodes?
The features of heterointerfaces are beneficialto the performances of heterojunction anodes in Li +/Na +batteries,in terms of enhanced reaction kinetics,significant pseudocapacitance effects with superior rate property,increased active sites and excellent structural stability.

What are heterojunctions used for?
Generally,heterojunctions have been widely used in the fields of semiconductor electronics and optoelectronic devicesin the past period. Besides,chemical vapor deposition (CVD) and mechanical exfoliation are the classic methods for heterojunction preparation.

Are metal compound-based heterojunctions a candidate anode for lithium/sodium-ion batteries?
In recent years, metal compound-based heterojunctions have received increasing attention from researchers as a candidate anode for lithium/sodium-ion batteries, because heterojunction anodes possess unique interfaces, robust architectures, and synergistic effects, thus promoting Li/Na ions storage and accelerating ions/electrons transport.

Can heterojunctions guide the future energy storage?
Meanwhile, synthesis routes, characterization and calculation methods, as well as electrochemical performances of heterostructures are roundly reviewed. Furthermore, prospects and potential directions of heterojunctions are proposed, aiming to guide the future energy storage.

Which spectrophotometry is used to characterize cose heterojunction?
The Mott-Schottky curve and UV-visible spectrophotometryare also used to characterize the Co/CoSe heterojunction by Li et al. 27 The p-type nature of CoSe semiconductor is revealed by the negative slope of Mott-Schottky curve,and the UV-vis results show a bandgap of 1.08 eV for CoSe.

The formation of MXene-SnO 2 heterojunction enhances the perception of H 2. It can introduce additional electrons on the surface of heterojunction, providing H 2 adsorbs more sites. Two dimensional MXene can effectively adsorb H 2 in the sensing process because of its good conductivity. This work can provide reference for other researchers to ...

The test results show that compared with single SnO 2, MXene-SnO 2 composite sensor has higher response, shorter response/recovery time, stable repeatability and excellent selectivity.

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Semiconductor p-n heterojunction is an emerging route to self-powered, wavelength-distinguishable PEC-PDs. [5, 6, 11, 13] One basic principle of using p-n heterojunction for wavelength distinguishable photodetection is to utilize the polarity of the photocurrent to sense different incident light wavelengths, based on different types of chemical...

These limitations are evident in battery fault detection; specifically, when the initial model estimate deviates significantly, subsequent anomaly detection is affected by the hysteresis effect. As model accuracy decreases, the global stability trend of OLE reduces its sensitivity to anomalous data. To address the aforementioned issues, we use the ILE based on local neighborhoods to replace ...

Here, for the first time we report a one-dimensional Fe 2 O 3 /Cu 2 O type-II heterojunction nanowire photocathode for light-assisted metal-CO 2 batteries. With this new photocathode, a Li-CO 2 battery can achieve an ultralow voltage gap of 0.19 V and a superior round-trip efficiency of 88% after 260 cycles under irradiation of ...

The development of a portable photo-assisted self-powered sensing platform with high sensitivity and selectivity for the detection of low-abundance targets is attractive. Herein, a self-powered sensor with photo-assisted zinc-air battery as a energy conversion device was developed for sensitive detection of gallic acid.The proposed photo-assisted zinc-air battery ...

Photo-assisted Zn-air battery promoted self-powered sensor for selective and sensitive detection of antioxidant gallic acid based on Z-scheme nanoarchitectonics with ...

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Photo-assisted Zn-air battery promoted self-powered sensor for selective and sensitive detection of antioxidant gallic acid based on Z-scheme nanoarchitectonics with heterojunction AgBr/CuBi2O4

Monolayer graphene/Si junctions were found to be excellent weak-signal detectors with photovoltage responsivity exceeding 10 7 V/W and with noise-equivalent-power reaching ~1 pW/Hz 1/2, potentially capable of ...

To achieve spectral imaging, home-building active imaging system was used, where a white light laser source is applied for illumination and our 2D heterojunction device is acting as detection element.

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Our findings indicate that Li 2 O is the product of the photo-assisted lithium-oxygen battery. Under illumination, the battery can be rechargeable for over 1000 hours at 0.05 mA cm -2 with a small polarization gap.

DOI: 10.1016/j.snb.2023.134544 Corpus ID: 261452326; Perylene tetracarboxylic acid (PTA)-based type II heterojunction sensing platform for signal-on photoelectrochemical detection of CEA

Herein, a self-powered sensor with photo-assisted zinc-air battery as a energy conversion device was developed for sensitive detection of gallic acid. The proposed photo-assisted zinc-air battery was constructed based on a AgBr/CuBi 2 O 4 Z-scheme heterojunction with high open circuit voltage (OCV). The outstanding OCV signal benefits from ...

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