

Are boron-based nanomaterials a non-toxic material for solar energy conversion?

Boron-based nanomaterials are emerging as non-toxic, earth-abundant (photo)electrocatalyst materials in solar energy conversion for the production of solar hydrogen fuel and environmental remediation.

What is boron carbon oxynitride (BCNO)?

Boron carbon oxynitride (BCNO) is a quaternary semiconductor with electronic, optical, and physicochemical properties that can be tuned by varying the composition of boron, nitrogen, carbon, and oxygen. However, the relationship between BCNO's structure and -photocatalytic activity relationship has yet to be explored.

What is the tunable composition of boron carbon oxynitride films?

Matsoso BJ, Ranganathan K, Mutuma BK, Leretholi T, Jones G, Coville NJ (2017) Synthesis and characterization of boron carbon oxynitride films with tunable composition using methane, boric acid and ammonia. *New J Chem* 41:9497-9504

Can boron be incorporated into graphene-based materials without a dopant?

Additionally, the incorporation of boron into graphene-based materials [11,20], CN [21,96], and carbon nanotubes has also exhibited enhanced performance compared to their pristine material without a dopant due to multiple synergistic effects.

Solar power offers exciting potential as a clean and endless energy source. Yet scaling it will require more efficient and durable products for harnessing the sun's power. Discover how boron ...

Boron plays an integral role in the efficiency of solar panels: Without it, photovoltaic cells would not be able to convert light into electricity as efficiently. What are photovoltaics? A photovoltaic ...

Research into boron-carbon compounds suggests they could serve as effective light-harvesting materials in organic solar cells. Ultimately, the unique properties of boron present ...

High-performance boron emitters for tunnel oxide passivating contact solar cells enabled by multi-layer PECVD-deposited boron source structures

Discover the role of boron in enhancing solar energy efficiency and supporting a low-carbon future. Learn how borates contribute to sustainable energy solutions.

Boron is a superior photon absorber to silicon because it can transfer electrons between atoms via resonance vibrations. Additionally, boron-based solar cells have a higher conversion rate ...

The incorporation of a Luminescent down-shifting (LDS) layer has emerged as a compelling approach for augmenting the light absorption sensitivity and power conversion efficiency ...

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Boron in solar panels is becoming more important in energy provision for advanced and developing countries. Over the past several decades, solar cell efficiency has steadily increased. ...

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