

# Inorganic compound solar photovoltaic materials

What are some emerging inorganic photovoltaic materials?

This review summarizes some emerging inorganic photovoltaic materials including Cu (In,Ga)Se<sub>2</sub> (CIGSe), kesterite Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> (CZTSSe), CdTe, Sb<sub>2</sub>Se<sub>3</sub> and inorganic perovskite CsPb(I<sub>1-x</sub>Br<sub>x</sub>)<sub>3</sub>. The materials features, development history and performance enhancements for each of solar cells are discussed in detail.

What are inorganic photovoltaic absorber materials?

Absorber materials, evolution of device development, and current challenges and key strategies for performance enhancement are detailed. This review summarizes some emerging inorganic photovoltaic materials including Cu (In,Ga)Se<sub>2</sub> (CIGSe), kesterite Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> (CZTSSe), CdTe, Sb<sub>2</sub>Se<sub>3</sub> and inorganic perovskite CsPb(I<sub>1-x</sub>Br<sub>x</sub>)<sub>3</sub>.

What materials are used to make photovoltaic cells?

The inorganic semiconductor materials used to make photovoltaic cells include crystalline, multicrystalline, amorphous, and microcrystalline Si, the III-V compounds and alloys, CdTe, and the chalcopyrite compound, copper indium gallium diselenide (CIGS).

What is a thin-film solar cell?

Nowadays, a variety of high-performance solar cells are constantly emerging. Thin-film solar cells made from inorganic materials have constituted one of the major categories of solar cells showing potential in the fast growing photovoltaic (PV) market.

What are photovoltaic materials?

Photovoltaic materials are semiconducting materials which can absorb light and generate electricity. They are one of the determinants of the performances of SCs.

Are inorganic CsPbI<sub>3</sub> solar cells a promising future?

Interestingly, the organic additive although took part in the film formation escaped the inorganic perovskite system post-fabrication. These significant improvements alongside the reporting of certified results, indicate a promising future for inorganic CsPbI<sub>3</sub> solar cells.

7.1.3 Challenges Facing PSCs. PSCs have gained high efficiency comparable with commercialized silicon solar cells; however, this novel PV technology still faces ...

To the best of our knowledge, the report on the ML prediction of inorganic solar cell materials with a wide variety of structures is very limited, although some works focused on ...

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This review focuses on state-of-the-art research and development in the areas of flexible and stretchable inorganic solar cells, explains the principles behind the main ...

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Metal halide perovskites (MHPs) are a class of materials with the chemical formula of  $ABX_3$ , where A, B, and X represent monovalent organic/inorganic cations, divalent ...

Using machine learning (ML) and density functional theory calculations, we report four promising inorganic photovoltaic materials-- $Ba_4Te_{12}Ge_4$ ,  $Ba_8P_8Ge_4$ ,  $Sr_8P_8Sn_4$ , and ...

In order to provide an overall grasp of and insight into the future direction of inorganic thin-film solar cell development, we review key emerging and representative inorganic photovoltaic ...

Due to their promising applications in low-cost, flexible and high-efficiency photovoltaics, there has been a booming exploration of thin-film solar cells using new absorber materials such as ...

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This Discussion will focus on the next generation of inorganic thin-film solar cells based on Earth abundant non-toxic materials. The meeting is for all researchers working on inorganic materials for thin-film photovoltaics including established ...

According to different PV materials, SCs can be mainly classified into three categories: the first one is silicon-based SCs, including monocrystalline silicon, polycrystalline ...

So far, the highest efficiency solar cells have been fabricated using Si for terrestrial solar modules . Inorganic semiconductor materials used in photovoltaic include ...

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This review summarizes some emerging inorganic photovoltaic materials including  $Cu(In,Ga)Se_2$  (CIGSe), kesterite  $Cu_2ZnSn(S,Se)_4$  (CZTSSe), CdTe,  $Sb_2Se_3$  ...

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Combining machine learning techniques and density functional theory calculations, Feng et al. predict four potential inorganic photovoltaic materials--Ba<sub>4</sub>Te<sub>12</sub>Ge<sub>4</sub>, Ba<sub>8</sub>P<sub>8</sub>Ge<sub>4</sub>, Sr<sub>8</sub>P<sub>8</sub>Sn<sub>4</sub>, and Y<sub>4</sub>Te<sub>4</sub>Se<sub>2</sub>--with power ...

The inorganic semiconductor materials used in the most conventional p-n structured photovoltaic cells are comprised of crystalline, multicrystalline, amorphous, and ...

Abstract The efficient conversion of solar energy to electricity for human utilization heavily relies on the development of solar cells. Nowadays, a variety of high-performance solar cells are ...

The search for low cost photovoltaics has led researchers to organic materials as possible candidates. The discovery of organic materials which have both conducting and ...

Researchers in the United States have identified zintl-phosphide (BaCd<sub>2</sub>P<sub>2</sub>) as a new potential high efficiency absorber material for thin-film PV applications among 40,000 ...

Web: <https://centrifugalslurrypump.es>