

Magnetic photovoltaic bracket

What is bulk photovoltaic effect (bpve)?

The bulk photovoltaic effect (BPVE) rectifies light into the dc current in a single-phase material and attracts the interest to design high-efficiency solar cells beyond the pn junction paradigm. Because it is a hot electron effect, the BPVE surpasses the thermodynamic Shockley-Queisser limit to generate above-band-gap photovoltage.

Does a magnetic photogalvanic effect induce a giant bpve?

While the guiding principle for BPVE materials is to break the crystal centrosymmetry, here we propose a magnetic photogalvanic effect (MPGE) that introduces the magnetism as a key ingredient and induces a giant BPVE. The MPGE emerges from the magnetism-induced asymmetry of the carrier velocity in the band structure.

Can a magnetic photogalvanic effect generate a photocurrent?

This phenomenon, called magnetic photogalvanic effect (MPGE), can generate a photocurrent even upon the linearly polarized light. But it cannot be described by the shift current that applies to non-magnetic systems.

Can bpve be used for solar energy conversion in ferroelectric perovskites?

The induced open-circuit voltages can be much larger than the band gap. Thus, the BPVE displayed a promising potential in the solar energy conversion in ferroelectric perovskites 8,9,10 and triggered the interest for the application of solar cells 11 beyond the p - n junction design and more recently also the application of photodetectors 12.

How does MPGe emerge in a layered magnetic insulator?

The MPGE emerges from the magnetism-induced asymmetry of the carrier velocity in the band structure. We demonstrate the MPGE in a layered magnetic insulator CrI₃, with much larger photoconductivity than any previously reported results. The photocurrent can be reversed and switched by controllable magnetic transitions.

Its main business includes various photovoltaic fixed ground mounting structure, distributed mounting structure, tracking photovoltaic mounting structure, building mounting structure, and distributed power station development, etc. It is one of ...

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