New metal indium for solar glass

What is a copper indium gallium selenide (CIGS) solar cell?
South Korean researchers have fabricated a copper indium gallium selenide (CIGS) solar cell with a 90 um-thick UTG provided by South Korea's Unique Technology Integral. The device uses a cadmium-free buffer layer made of zinc oxide and magnesium oxide, instead of cadmium sulfide.

Why is indium a good material for glass?
Beyond sound,indium exhibits an unusual affinity for glass surfaces. Like gallium,it possesses the rare ability to "wet" glass-- spreading across surfaces and adhering where most metals would bead up. This property proves critical in applications requiring intimate contact between metal and substrate.

Can indium tin oxide films be used in tandem solar cells?
This work focuses on the optimization of indium tin oxide (ITO) and indium zinc oxide (IZO) films for use in perovskite-silicon tandem solar cells (Fig. 1). While ITO is the industry standard, the use of IZO as the top-TCO material is becoming more popular due to the increase in charge-carrier mobility when compared with traditional ITO films.

What is indium tin oxide (ITO)?
Around 70% of global indium uses flow into producing indium tin oxide (ITO), the invisible foundation that transforms glass into responsive touchscreens and efficient solar cells. Engineers call it an "alloy vitamin" because microscopic quantities transform entire material properties, turning ordinary metals into high-performance components.

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IntroduCtIon Thin film solar cells and modules on the basis of copper indium gallium diselenide (CIGS) and copper indium disulfide (CIS) are in the phase of commercialization [1, ...

However, most efficient and stable perovskite solar cells contain lead in the perovskite absorber layer, along with indium and silver in their electrodes. This study ...

The concentration of indium, vital for recycling, was meticulously analyzed using ICP-MS and validated through microscopic ...

Cu(In,Ga)Se2 (CIGSe) solar cells have significantly progressed in associated flexible photovoltaic technologies. Recently, ultra-thin glass (UTG) has ...

This paper focuses on the goal of improving the overall device efficiency of perovskite-silicon tandem solar cells by optimization of the top transparent conductive oxide ...

Indium tin oxide (ITO) is a well-known n-type degenerate semiconductor. Herein, mesoporous

ITO is utilized as a photocathode material for p-type dye-sensitized solar cells in ...

Highly solar transparent and low-emissivity glass based on hydrogen-doped indium oxide Zhen Huang b, Erqi Yang a b Show more Add to Mendeley

New plasma coating technology could see the phase-out of rare earth metal indium that is used in smartphone glass and dimmable windows, which is predicted to run out in 10 ...

Around 70% of global indium uses flow into producing indium tin oxide (ITO), the invisible foundation that transforms glass into responsive touchscreens and efficient solar ...

Flexible organic photovoltaic cells (OPVs) attract high interest for solar energy. They are based on organic films sandwiched between two electrodes, one of them being ...

Abstract Colloidal indium phosphide (InP) quantum dots (QDs) have emerged as a compelling class of heavy metal-free nanomaterials due to their low toxicity and size-tunable ...

In this article, InP quantum dots (QDs) are synthesized with a green methodology. The preparation of the InP QDs is demonstrated by varying the ratios of the precursors used ...

In this work, indium sulfide (In 2 S 3)-based planar heterojunction OPSCs were proposed and simulated with the SCAPS (a Solar Cell Capacitance Simulator)-1D programme.

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