Crystalline silicon battery technology patent

When did c-Si cells become patentable?
The technical analysis further shows two main shifts in the patenting focus,first in 1974 from the purification of mono-silicon to the thin-film technology of a-Si,and second to the fabrication of c-Si cells since 2005(mainly driven by China).

How is SiO2 used as an anode material for a Li-ion battery?
A composition for use as an anode material for a Li-ion battery is generated by magnesiothermic reductionof a SiO2 constituent in a silicon-containing precursor,where silicon in the precursor is reduced to form a Si/SiO2 composite network with crystalline Si domains embedded within an amorphous SiO2 matrix.

What is the most patented Cell Technology?
In respect of cell technologies (Fig. 10 a),mono-Si ingots form the dominant technology over 1954-1974. However,since 1974,the thin-film technology of amorphous siliconhas become the most patented cell technology. A growth of emerging technologies since 2001 can be noticed.

Who invented c-Si cell technology?
Entitled " Method for manufacturing a semiconductor device " [85],the most influential patent in c-Si cell technologies was assigned to the Japanese company Semiconductor Energy Laboratory Ltd.in 1993. The patent was filed in the Japanese and American patent offices.

What is the current legal status of a silicon wafer patent?
Its current legal status is "Expired - Lifetime". The patent family contains applications to the USPTO,EPO,German,and Japanese patent offices. Technically,the invention has put forward a design of a monitoring apparatus for chemical-mechanical polishing processes of silicon wafers.

What is the current status of concentrating solar receiver patent?
However,the current status of the patent is 'Expired - Fee Related'. Technically,the patent discloses a concentrating solar receiver consisting of a primary parabolic reflector and a highly reflective surface with an extending focal axis from its concave side passing through the focal point of the primary reflector.

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Battery technology developers are obtaining patents for innovations across all parts of the cell and battery to maximise their commercial positions. Continued growth in patenting activity is evident and proving very effective, particularly for start-ups and smaller businesses, where protection for very specific aspects of a battery or cell ...

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As mentioned before, the term amorphous silicon should be construed as comprising proto-crystalline silicon, thus wherein amorphous silicon comprises regions of nano-crystalline silicon in a fraction up to about 30% of the nanostructured silicon thin film layer. Further, the term "silicon" should also be construed as comprising silicon- based materials, i.e., silicon alloys and doped ...

The application discloses a crystalline silicon battery and a photovoltaic power generation assembly thereof, and particularly relates to the field of photovoltaic power generation ...

In the "662 patent, Ohl described a process of forming a silicon ingot using silicon of a high degree of purity, ideally around 99.85%. He formed the ingot by fusing metallic silicon in powdered form in a silica crucible in an ...

Most patents were filed by companies and related to thin-film and crystalline-silicon cells as well as panel encapsulation and supporting structures. The analysis reviews the quantity, quality and technological specialization within countries" patent profiles.

JA Solar Technology has been granted a patent for a crystalline silicon solar cell with a unique design. The cell includes a passivation layer with through holes, allowing the carrier collection layer to contact the substrate. The electrode also passes through an anti-reflection layer for improved efficiency.

A solar cell and crystalline silicon technology, applied in the field of solar cells, can solve problems such as reducing solar cell performance, increasing battery series resistance, and reducing device performance, so as to improve battery performance, increase short-circuit current and open-circuit voltage, and reduce recombination rate. Effect

PV technology is expected to play a crucial role in shifting the economy from fossil fuels to a renewable energy model (T. Kåberger, 2018).Among PV panel types, crystalline silicon-based panels currently dominate the global PV landscape, recognized for their reliability and substantial investment returns (S. Preet, 2021).Researchers have developed alternative ...

[10-12] Thereby, the perovskite/silicon tandem technology promises to reduce the levelized cost of electricity of the market-dominating silicon photovoltaics. Recently, Al-Ashouri et al. reported the current record for a perovskite/silicon tandem solar cell with a monolithic device exhibiting more than 29% PCE and highlighted the route for improvement of PCEs to beyond 30%.

A technology of solar cells and crystalline silicon, applied in the field of solar cells, can solve the problems of low conversion efficiency, lower cell conversion efficiency, increase recombination ...

The Fraunhofer Institute for Solar Energy Systems ISE and SCHOTT Solar AG have agreed on the transfer of

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111 patent families in the field of crystalline silicon photovoltaics. With this transfer, both partners ensure that comprehensive know-how in the photovoltaic sector remains in Europe. "We have established an important milestone for keeping this future ...

A composition for use as an anode material for a Li-ion battery is generated by magnesiothermic reduction of a SiO2 constituent in a silicon-containing precursor, where silicon in the precursor is reduced to form a Si/SiO2 composite network with crystalline Si domains embedded within an amorphous SiO2 matrix. In some embodiments, the precursor ...

The application discloses a crystalline silicon battery and a photovoltaic power generation assembly thereof, and particularly relates to the field of photovoltaic power generation equipment,...

The invention provides an improving method of a solar cell, adopting a substrate and ion, wherein corrosion process and plating process are combined in a single process; the heavy doping layer...

JA Solar Technology has been granted a patent for a crystalline silicon solar cell with a unique design. The cell includes a passivation layer with through holes, allowing the ...

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