Amorphous silicon thin film battery power generation technology

Do amorphous porous silicon films maintain high capacity during cycling?
Here we report enhanced cycling performances achieved using nanostructured silicon films and inorganic solid electrolyte and show that amorphous porous silicon films maintain high capacity upon cycling(2962 mAh g -1 and 2.19 mAh cm -2 after 100 cycles).

Is amorphous silicon a good anode material for lithium-ion batteries?
(American Chemical Society) Amorphous silicon is a promising high-capacity anode materialfor the next generation of lithium-ion batteries. However,the enormous vol. expansion of the active material during lithiation up to 400% (V/V0) is held responsible for capacity fading during cycling.

What materials are used in 3D Thin film batteries?
This shows the importance of obtaining a large specific capacity with an enlarged surface area and using high-rate performance electrode materials. Therefore,silicon and tinare also widely used in 3D thin film batteries. As early as 2011,a honeycomb 3D silicon anode material was designed by Notten's group .

Are Si y thin films anode materials of high-capacity lithium-ion batteries?
Li, H.; Bai, H.; Tao, Z.; Chen, J. Si-Y multi-layer thin films as anode materials of high-capacity lithium-ion batteries. J.

Are amorphous Si anode films cyclable?
Previous work has shown that amorphous Si anode films with thickness of up to 0.3 µm display high capacity and good cyclability(for instance,in our previous work 7,8,1st discharge capacity >3000 mAh g -1 and a capacity retention of ~85% after 100 cycles) in solid electrolytes 7,8,9,10.

What is amorphous silicon?
Journal of Physical Chemistry C (2014),118 (18),9395-9399 CODEN: JPCCCK; ISSN: 1932-7447. (American Chemical Society) Amorphous silicon is a promising high-capacity anode material for the next generation of lithium-ion batteries.

In this article, simulation results of novel and facilitated heterostructures of the Second Generation (2G) Thin-film Solar Cells (TFSCs): hydrogenated amorphous Silicon (a-Si:H), Cadmium ...

The main objective of this chapter is to expose some thoughts on how the amorphous silicon technology benefits of large area fabrication can be extended to the ...

Amorphous silicon/carbon (a-Si@C) composites were prepared through an environmentally friendly liquid-phase carbon coating strategy using water as solvent to improve ...

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Thin-film Si solar cells offer several inherent advantages compared to other photovoltaic technologies such as (i) the use of abundant and recyclable materials [1, 2], (ii) the ...

Here we report enhanced cycling performances achieved using nanostructured silicon films and inorganic solid electrolyte and show that amorphous porous silicon films ...

With optimized deposition condition, the LiSiON thin film exhibits a high ionic conductivity of 6.3×10-6 S?cm-1 at room temperature and a wide voltage window over 5 V, ...

The most common solar PV technology, crystalline silicon (c-Si) cells, is frequently mentioned when discussing solar energy materials. Thin film solar cells are a ...

Sputter-deposited amorphous silicon thin films on metallic copper current collectors are widely studied as lithium-ion anode systems. Electrochemical results indicate ...

Conventional amorphous silicon thin-film solar cells are prepared by a gas decomposition method, with the substrate temperature of only 200-300 °C. ... It can be ...

In this work, p-i-n hydrogenated amorphous silicon germanium (a-SiGe:H) thin film solar cells were fabricated by using double p-type silicon oxide (p-SiOx) layers, and the power conversion ...

Thin-film solar cells are a type of solar cell made by depositing one or more thin layers (thin films or TFs) of photovoltaic material onto a substrate, such as glass, plastic or metal. Thin-film solar cells are typically a few nanometers to a few ...

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