

Dye-sensitized solar cell module

Due to the high consumption of energy and limited reserves of conventional energy, e.g., oil, natural gas and coal, there will be increasing demand for renewable energy such as solar energy. The cost of present silicon-based solar cells is still very high, which hinders the large-scale application of solar cells. Dye-sensitized solar cell, a promising third generation solar cells, is attracting much attention due to its simple and environmentally-friendly preparation process as well as relatively low cost to produce.

Abstract

To achieve high light-to-energy conversion efficiency and stability of large-size dye-sensitized solar cell module. This invention provides a new design of large-size dye-sensitized solar cell module, which can improve both light-to-energy conversion efficiency and stability.

It is a network pattern of grid electrodes and a completely overlapping cell structure. In this design, all sealing points own the same structure. The sealing points at both longitudinal lines and lateral lines own an upper grid line, a lower grid line and a sealing line. In addition, the structure is rigid since it doesn't matter if there is a rupture in the network grid lines. All the electrons will be collected and transferred through the grid lines.

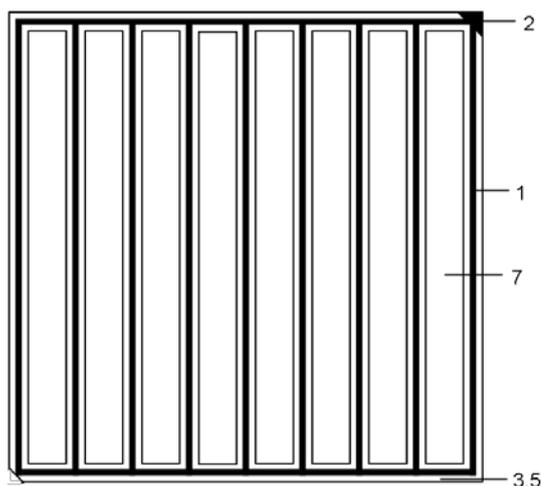


Fig 1: a network silver line for grid electrodes and connecting electrodes

Benefits

- ✓ Third generation solar cells
- ✓ Environmental-friendly.

Potential Application

- This invention improve both light-to-energy conversion efficiency and stability

Intellectual Property

- Singapore patent application filed: 201100614-5

Commercialisation Opportunities

- ✓ Ready for commercialization
- ✓ Available for licensing
- ✓ Accepting business plans from interested parties

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Competitive Advantage

- Reduces the resistance of dye-sensitized solar cell module and thus increases the light-to-energy conversion efficiency.
- It is more stable since it has a network pattern.
- It can achieve higher-quality of sealing.
- It can be easily assembled.
- An increase aperture ratio of dye-sensitized solar cell and thus further increase the light-to-energy conversion efficiency.

Dye-sensitized solar cell will become a competitive PV technology starting with consumer indoor products like calculators, watches, clock-works, followed by off-grid solar home system for lighting, radio and TV and grid-connected (power) PV. Separately, dye-sensitized solar cell will enable new types of PV applications to be developed due to its very specific character. This will for instance occur in the field of building integrated PV for which it can be combined with other functions, such as smart windows in the so-called tandem application.

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