Knowledge Transfer Office
香港城市大學
City University of Hong Kong

Prestressed and High Efficiency Solar Cell

Energy & Environment

Energy Conservation/Generation/Management/Storage (Battery)

Opportunity

According to an analysis report on the solar cell industry, the National Energy Administration released statistics on the power industry in 2018. China's total electricity consumption reached 6,844.9 billion kilowatt-hours, year-on-year growth of 8.5%. Based on a market research released by Technavio, the global solar cell market is expected to grow at a compound annual growth rate of 16% in 2016-2020. The market is expected to continue to dominate, thanks to an increase in the number of smart solar projects and support from U.S. government solar subsidies. By 2020, 20% of Europe's energy consumption will come from renewable sources. The countries in the Middle East and Africa have frequent power cuts and grid problems because of unstable power supplies, which are being overcome by adopting in solar cell systems. Therefore, the solar cell market has a huge space for development, and there are opportunities to apply new techniques in this solar cell.

Technology

Residual stresses in solar cells are caused by the external environment such as alternations of temperature difference, cosmic rays, wind and rain erosion, and so on, which seriously affect the photoelectric conversion performance and service life of solar cells. This patent supplies the preparation technology of prestressed method to overcome the residual stressed disadvantage in crystal silicon solar cells, copper indium gallium selenide solar cells, cadmium telluride solar cells, gallium arsenide solar cell, quantum dot solar celis, organic solar cells, sensitized solar cells, and perovskite solar cells. The preparation process of prestress is induced into the solar cell, which changed the key material structure of the crystal lattice, improved the light absorption ability and photoelectric conversion performance, and reduced the influence of the stress generated in the service project on the performance and service life of the solar cell.

Advantages

- higher efficiencies
- Longer service life abilities
- Controllable cooling treatment

Applications

- Solar cell

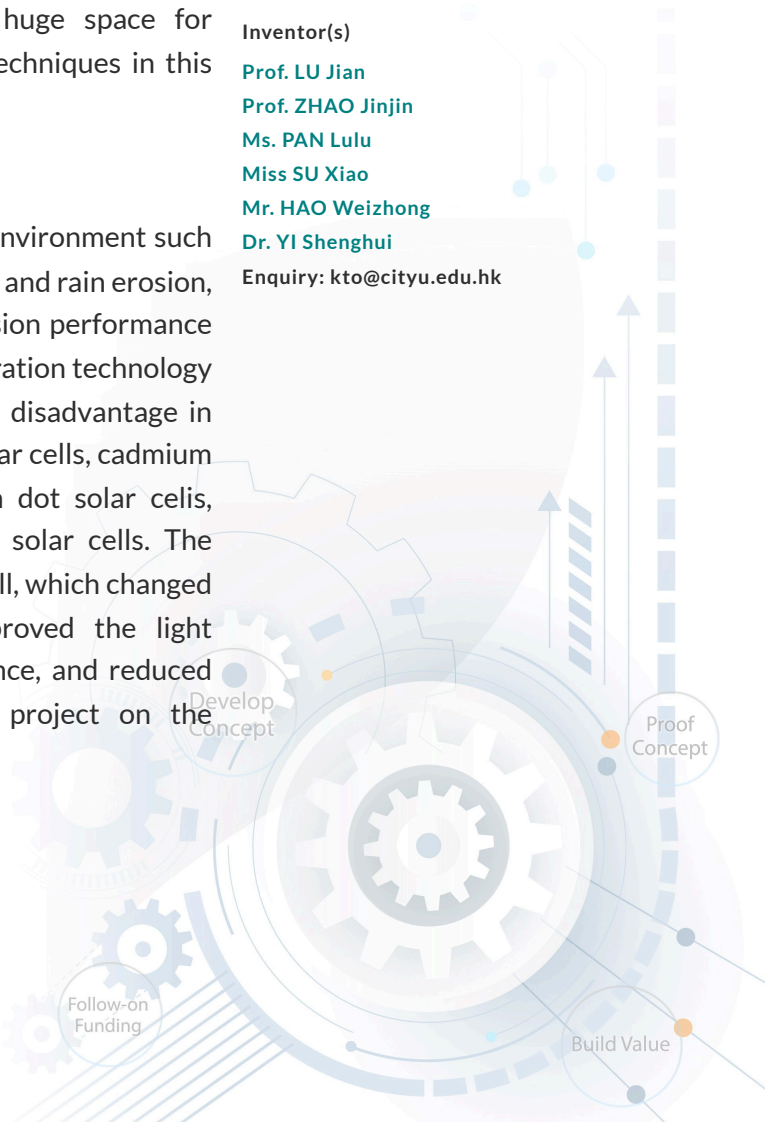
IP Status
Patent filed

Technology Readiness Level (TRL) ? 3

Inventor(s)

Prof. LU Jian
Prof. ZHAO Jinjin
Ms. PAN Lulu
Miss SU Xiao
Mr. HAO Weizhong
Dr. YI Shenghui

Enquiry: kto@cityu.edu.hk



- Novel typed perovskite solar cell