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Generation of Solar Energy using Photo Voltaic Cell

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Abstract: Energy plays a vital role in economic development and growth. With the rapid growth of development and the drive to expand the economy, society demands more electricity production. Solar energy is the most abundance form of energy available in nature. Solar cells can be made cost effective and efficient by driving developments in many different deposition technologies, including dipping, plating, thick film deposition and thin film deposition. Basically, in order for solar energy to work efficiently and supply energy to a building, a very large amount of space is required, in the form of rooftops, in order to setup solar panels; these solar panel space requirements are a large impediment to practical usage.

Keyword: Transparent solar Sell TPV, Transparent photo voltaic ,NT-TiO2 Nanotube titanium dioxide,

I. INTRODUCTION

In recent years, the floodgates of research focusing on clean renewable energy have been opened by scientists who consider solar energy to be the most abundant source of energy that can satisfy society demands, which stem from continual economic development. Solar energy is at least utilized in 4 different ways in our daily lives, and this ranges from heating water to producing electricity. Photovoltaic (PV) technologies are at the top of the list of applications which uses solar power, and forecast reports for the world's solar photo- voltaic electricity supplies state that in the next 12 years, PV technologies will deliver approximately 345 GW and 1081 GW by 2020 and 2030, respectively. Photovoltaic cell is a device which converts sunlight into electricity using semiconductor materials.

A. Photo Voltaic Principles

In a PV cell the semiconductor material absorbs the photon, and it displaces the electrons to make pairs of holes and holes, which are directed in one direction, make the present. Semiconductors are doped to be P-n junction with a potential DFF Irene, which will drive a vertical flow ow through the cell on one side, so it can be cut in the form of electricity. DFF user length is one of the important factors that is the capability of FFI EC FFI of a solar cell. Photons should have equal energy capacity (HV) of energy band interval (Egap) of semiconducting material. In essence, a photovoltaic cell is a device that converts sunlight into electricity using semiconductor material, This is the same work principle as a semiconductor diode

Semiconductor materials such as silicon have the property to remove electrons when the sunlight is absorbed; PV cell then directs the electrons in one direction

B. Dye-Sensitized Solar Cells (DSSC) Operational Principal

Since O'Regan and Grätzell reported the creation of DSSC in 1991, with the honesty of E-FFI 7 to 8%, it became a promising energy generating device. DSSC is convenient for low cost, low cost, and high power-to-conversion e-FFI efficiency. These qualities attract attention of scientists and researchers.

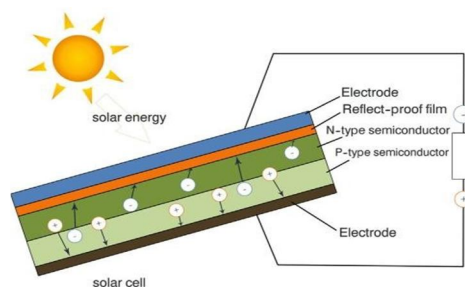


Fig. 1.3 Schematic overview of a dye- sensitized solar cell operational principle.

II. IMPLEMENTATION OF TRANSPARENT SOLAR CELL TECHNOLOGIES

Sun light is available for free everywhere, but the guarantee of using this light for solar power is restricted to solar farms and rooftop panels. Recently, transparent solar cells caught the attention of scientists due to their variety of possible applications in our daily lives. Transparent solar cells are already in use for these applications in some countries, while others are for the far future, once their efficiency is improved. Transparent solar cells can transform crowded cities from exclusively power

A. Transparent solar cell Technologies

There are approximately nine technologies that apply to the fabrication of transparent solar cells, and they are a focal point of current research due to market demand and the potential applications of transparent solar cells (TSC). The centers of research that report some success with TSC are in Japan, Germany, the USA, and India. It should be noted that 90% of these technologies use an FTO or ITO conductor on glass

B. Thin film Photovoltaics (TPVs)

Thin film photovoltaics (TPVs) are one of the most prolific technologies in TSC and achieved via different methods. Some of these methods depend on the fabrication of the material and pastes to accomplish transparency, and others depend on the deposition method of pastes on FTO glass.

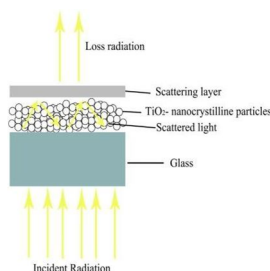


Fig.2. 3. Schematic diagrams of light-scattering

III. CONCLUSION

Transparent solar cells are very challenging devices to fabricate and have the potential to be used for a large number of applications. The challenge lies in the fact that transparency intrinsically conflicts with the concept of photonic absorption. The photovoltaic principle is to absorb photons and convert these to power, while transparency means to let through as many photons as possible. However, TPV is a very desirable technology, especially for architects, as well as equipment and automotive designers. Nevertheless, in regard to defining the required transparency, this varies by application. For example, a 50% optical transmission in some buildings could be desirable; on the other hand, mobile screen applications would require more than 80% transmission. This paper has reviewed nine technologies towards TSCs that have achieved transmissions of more than 20% through different attempts and methods that have been developed to achieve high transparency with the maximum possible efficiency.

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