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QUANTUM DOT ONE-PASS SUN ELEMENT AND ITS ENERGETIC DIAGRAM

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In the 1990s, NREL employee Arthur fine solar radiation was able to obtain a number of electron-hole pairs with quantum dots in narrow-zone semiconductors via short-wave spectrum irradiated Quanta. In 2006, when the PbCc Quantum Dot was illuminated by ultraviolet radiation, a bitty photon was experimentally detected to form seven electrons, and in 2007, a single radiation photon with a wavelength of $\lambda = 0.48$ µm in quantum dot Silicon gave rise to two electrons. Theoretical analysis shows that the utilisation of the long and shortwave portion of the solar radiation spectrum using a Quantum Dot allows the efficiency of QE to reach a close thermodynamic limit (more than 84%). In Si, it is possible to theoretically assess whether 53% efficiency can be achieved for GE quantum dot solar elements. Increasing the efficiency of GE / Si nanogeterostructure-based devices will be possible due to the spatial quantization effect.

In QE, massive quantum dots with a large density N (to increase the absorption coefficient) are necessary, and as far as possible L wide distribution of quantum dots by Measure, which ensures the full use of the solar spectrum.

The application of wide-zone semiconductors as a nanogetereoepitaxial quantum dot matrix material allows the preparation of QE with improved technical and economic characteristics.

The large value of the width of the Forbidden Zone determines whether the QE high working temperature-limit and high temperature stable in which the Eg is created;

1) the presence of the main absorption path, determined by the correct optical transitions, in the III–V straight - zone semiconductor-gich group of sharp kars, leads to the possibility of obtaining a high transformation efficiency of thin - layer QE solar radiation;

2) there is an opportunity to achieve high radiation stability, as well as a significant decrease in the small value of diffusion lengths of non - primary charge carriers characteristic of these MA - terials does not occur when exposed to radiation radiation in these materials;

3) in p–n transitions of wide-zone materials in III-V groups, a large potential barrier provides a large area of linear dependence of the output power of QE on the light current (in the field of large light currents), on the one hand, without basing small current values, on the other hand, it allows you to obtain high efficiency in;

4) in addition to GaAs, it is promising to use gap to obtain a one–pass QE as a wide-zone semiconductor, while to obtain a narrow-zone quantum dot QE, Ge, Inas, GaSb are also necessary for the solid compounds on which they are based (Ga_xSi_{1-x}, InAsP, GaInSb).

GaAs is used as a matrix material in attempts to obtain quantum dot nanogeteroepitaxial structured metal organic compound (MOCVD) high-efficiency QE from the vapor phase through chemical deposition and molecular-light epitaxy methods, while Inas for quantum dots, quantum dot insertion increases but reduces quantum efficiency in QE, in which QE efficiency decreases with increasing quantum dot array.

Solar energy falls on planet Earth and undergoes various modifications, that is, part of it spends the Earth's surface on heating, the other part is absorbed by the plant world, and the third is absorbed by the ocean, sea, rivers, which make up 2/3 of the globe. Some of the solar energy participates in photosynthetic reactions, which are considered important in generating oxygen flow in the atmo - sphere and in bringing organic compounds to the surface. Organic compounds formed by photosynthesis undergo chemical changes in the later stages, and in the latter processes, hydrocarbon is released into raw material resources (oil, coal, natural gas, etc.K) rotates.

Practically, the entire Earth's energy is oriented to the transformation and use of solar energy into different types. The only exceptions are atomic and geothermal power plants. Also wind power is also oriented towards the use of moving air currents caused by uneven heating in the atmosphere. Hydropower plants also use the potential and kinetic energies of water, with natural solar-assisted evaporation. The work activity of elktrstans, which work using the pouring and return of the flow of water in hattoki, is due to the mutual gravitational influence of The Sun, Moon and Earth field. The discharge and return of the water flow is 1 day or half a day (~12 hours, 25 min). The characteristics of year-round flow discharge are also influenced by the mutual arrangement of space objects located in Earth's orbits. In the spring, the forces of attraction between the sun and the Moon are affected in one direction, so that the flows have their maximum intensity. And the minimum intensity occurs in the first and third quarters of the moon, that is, in the perpendicular orientation of the vector of the forces of attraction between the sun and the Moon.

It is worth saying that some solar power plants (tower type QES, etc.k.), in both wind, hydro and current pouring and return-based powerstations, the enrgia is not directly converted to electricity. In these cases, of course, the energy losses are much higher: it is known that the amount of energy reserves (fuel resources) is limited, so it is these solar elements that are based on the direct transformation of the most rational, easy - to-use solar energy into electricity.

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