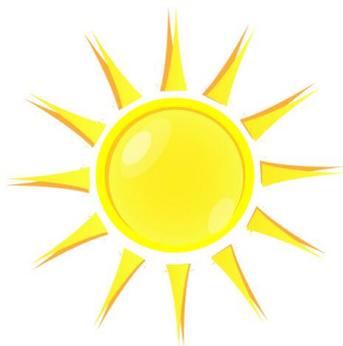
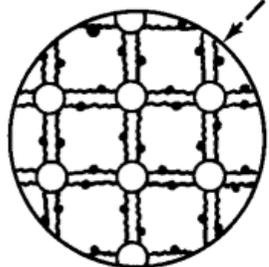
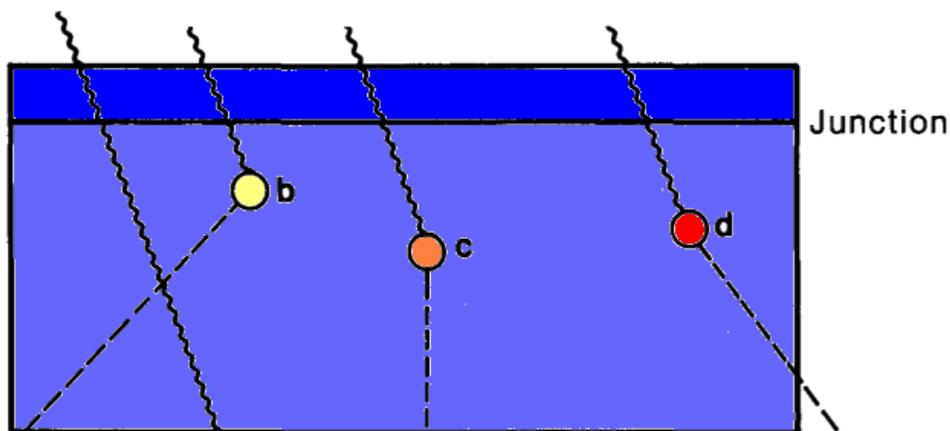


CELLA FOTOVOLTAICA

What happens to light entering a cell? It can go through (a), can be absorbed as heat (b), can generate an electron-hole pair (c), or can generate an electron-hole pair and have excess energy that is lost as heat (d).

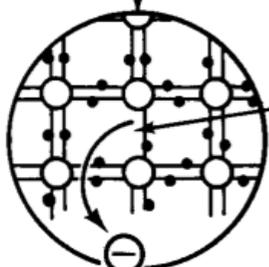


a. Light going right through a solar cell.



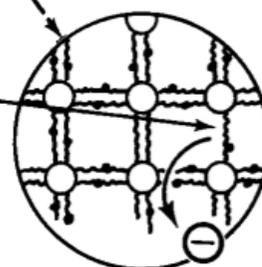
Light

b. The vibrations of the atoms in their bonds caused by the absorption of light is *heat*.



Hole

c. Light at a high enough energy can jar an electron loose from its bond. A hole is a bond lacking an electron. Because nearby bonds will exchange electrons with the incomplete bond, holes are nearly as mobile as free electrons.



d. Light with even greater energy than in (c) frees electrons but also has excess energy that causes atomic vibrations as in (b).



La tipica cella fotovoltaica ha uno spessore complessivo compreso tra 0,25 e 0,35 mm ed è costituita da silicio mono o policristallino. Essa, generalmente di forma quadrata, misura solitamente 125x125 mm e produce, con un irraggiamento di 1 kW/mq ad una temperatura di 25°C, una corrente compresa tra i 3 e i 4 A e una tensione di circa 0,5 V, con una potenza corrispondente di 1,5 - 2 Wp.

Poiché la potenza di una cella fotovoltaica varia al variare della sua temperatura e della radiazione, per poter fare dei confronti sono state definite delle condizioni standard alle quali fa riferimento il cosiddetto watt di picco (Wp), relativo alla potenza fornita dalla cella alla temperatura di 25°C sotto una radiazione di 1.000 W/mq.