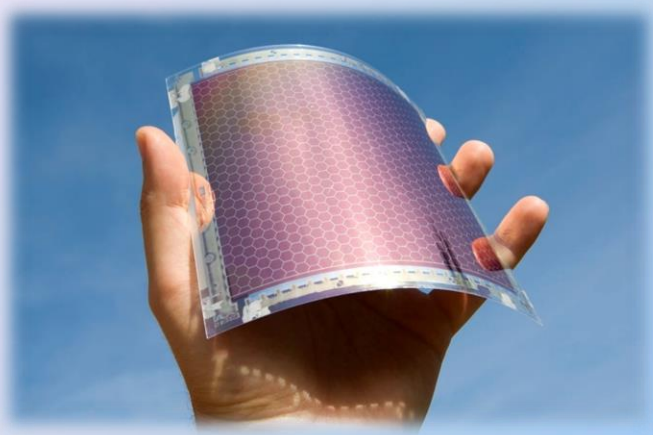

Solar Panels
Silicon and organic

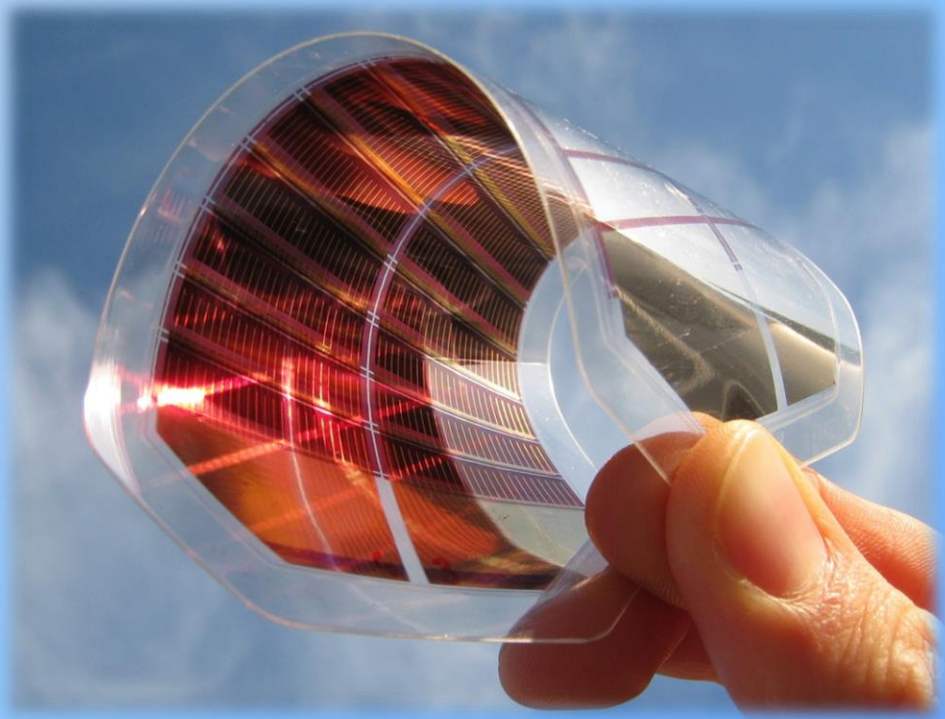
Made by 3^C

Liceo Scientifico Statale Niccolò Copernico

2015/2016

Organic Solar Cell - Introduction





Organic Solar Cell - Functioning

An **organic solar cell** (or **plastic solar cell**) is a type of photovoltaic that uses organic electronics, a branch of electronics that deals with conductive organic polymers or small organic molecules. The purpose is the light absorption and charge transport to produce electricity from sunlight by the photovoltaic effectcells.

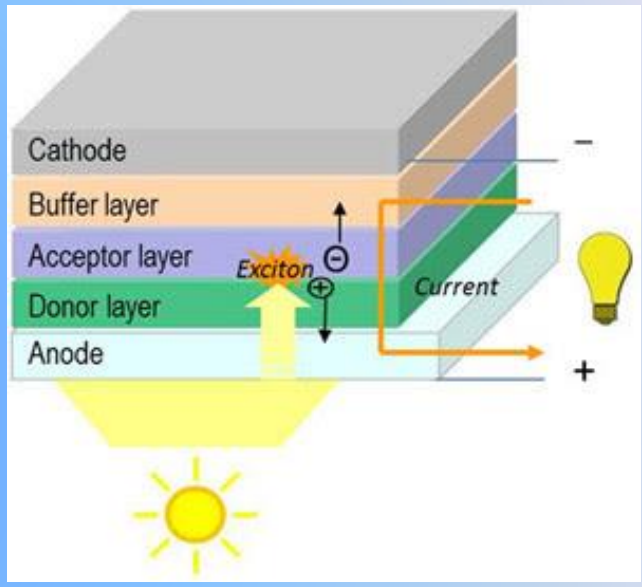


Figure 1 depicts a typical bilayer organic photovoltaic device.

Adapted from: https://en.wikipedia.org/wiki/Organic_solar_cell

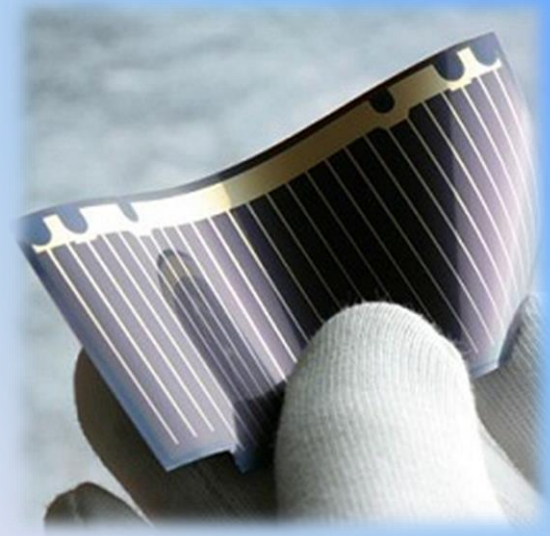
Organic Solar Cell -Applications

The potential advantages of polymer solar cells are numerous including flexibility, processability, low material cost, and independence on scarce resources. The flexibility is an advantage and it is a feature allowing the solar cells to be incorporated into applications where flexibility is an advantage. For example solar panels that can be rolled out onto a roof or other surfaces are one option.

Adapted from: http://plasticphotovoltaics.org/lc/lc-polymersolarcells/lc-pol-why.html

Organic Solar Cell- characteristics

- Cost: 2 €/Wp or less
- Efficiency: 10%-12%
- Burden: weightless being plastic sheets
- Duration: about 3 years



Silicon Solar Cell - Introduction

Silicon Solar Cell - Functioning

A solar cell, or photovoltaic cell is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical pheno menon.
This type of solar cells uses the silicon.
We use silicon for solar cells because we're good at making silicon devices, not necessarily because silicon is the best material for solar cells.

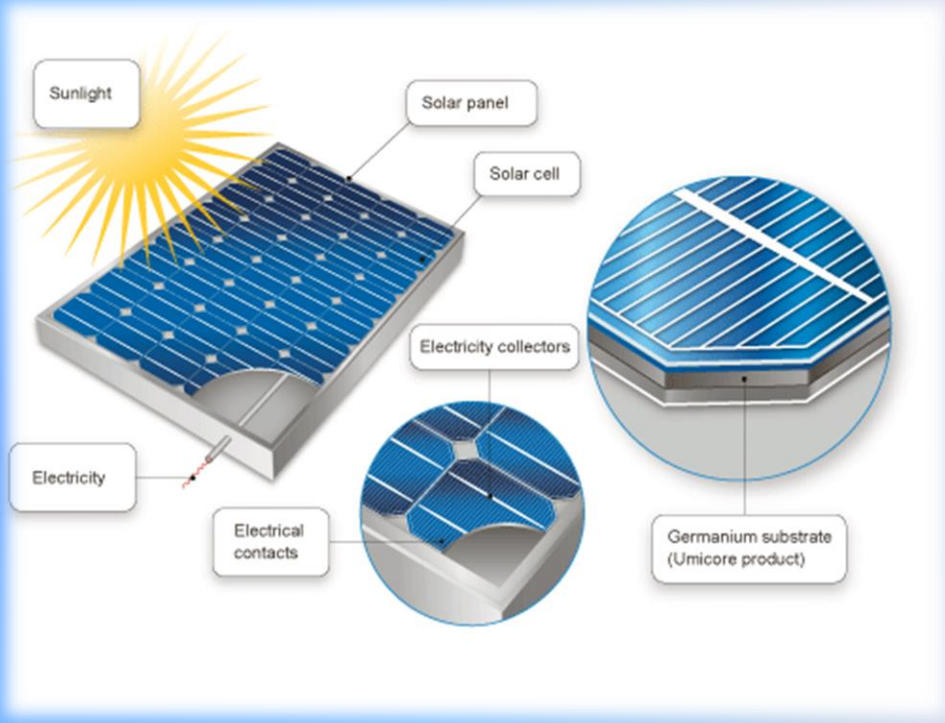
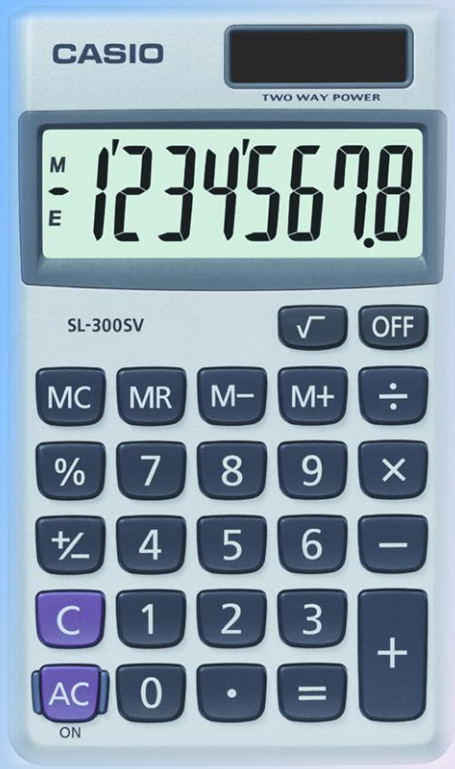


Figure 2 depicts a typical silicon photovoltaic device

Adapted from: https://en.wikipedia.org/wiki/Solar_cell

Silicon Solar Cell – Applications

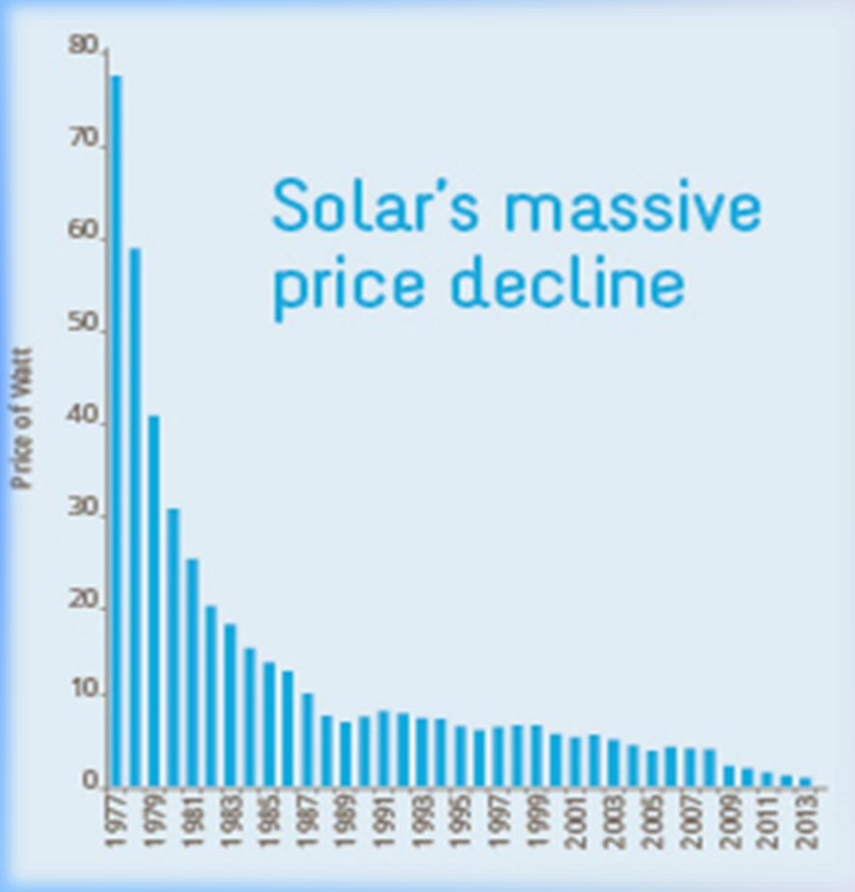
Crystalline silicon photovoltaics developed from the microelectronic technology industry. Furthermore they're adorning your calculator or orbiting our planet on satellites, they rely on the photoelectric effect: the ability of matter to emit electrons when being hit by a light source.



Adapted from: http://www.physics.org/article-questions.asp?id=51

Silicon Solar Cell – Characteristics

- Cost: 1$/Watt
- Efficiency: 14% - 20%
- Burden: silicon tetrachloride is recycled
- Duration: over 20 years



Conclusion