Solar Cell with Organic Dye

De Jesus Montoya, Carlos
Toribio Valdes, Juan
Careaga Careaga, Carlos

The sun's energy is essential to the existence of life on the planet, it is also a resource to power to become transformed into electrical energy by plates directly receiving sunlight, and this phenomenon is called the photovoltaic effect. To learn from nature with regard to one of the oldest phenomena that have occurred in the face of the earth, as it is photosynthesis, is that researchers have developed models that mimic the processes of absorption of sunlight by the green plants. In this paper the construction of solar cells sensitized with natural dyes is described and an analysis of photovoltaic and electrochemical process, the operation tries to imitate the way to capture solar energy as plants do, in order to replace cells made with silicon, and get clean energy at lower cost; all, based on the technical Grätzel solar cells based on doped titanium dioxide. According to the results obtained in the construction of the solar cell and the electrical responses generated Photoelectrochemical measurements of their properties, one can conclude that these cells mimic natural photosynthesis of plants in their process of light absorption and electron transfer. On the other hand, have similarities in terms of a linear dependence on the solar cell array with increasing solar energy and its photoelectrochemical conversion and cheaper manufacturing costs in mass and minimum waste production in organic semiconductors replacing the traditional silicon, introducing efficiencies up to 11% (similar to those of silicon).

Awards Won: