

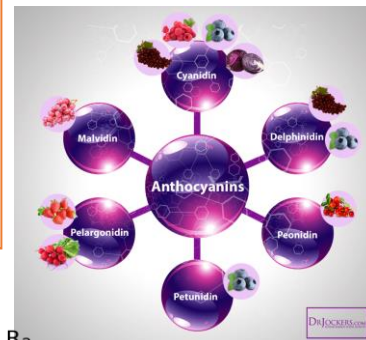
Photovoltaic efficiency of anthocyanins in dye-sensitized solar cells (DSSCs)

Marina Llabrés, Yaroslava Kulchenko, Jan Pieter Thie, Nikolai Skrypnikov, Rob van Haren

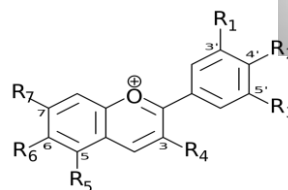
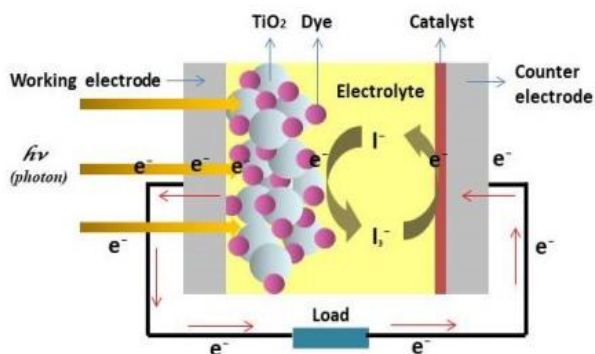
^aHanze University of Applied Sciences, Zernikeplein 11, 9747 AS, Groningen, the Netherlands

Introduction

The increasing energetic demand leads to predict that fossil fuels will become extinct in a few decades. Finding sufficient supplies of alternative energy for the future is, therefore, one of society's most daunting challenges. Fortunately, sunlight provides the most abundant carbon-neutral energy source, which far exceeds human needs even in the most aggressive scenarios. As a result, developing new strategies to harvest solar energy, efficiently with low cost, represents an important challenge.



Photovoltaic energy is one of the most attractive sources of renewable energy, since allow to convert directly luminous energy in electrical energy:



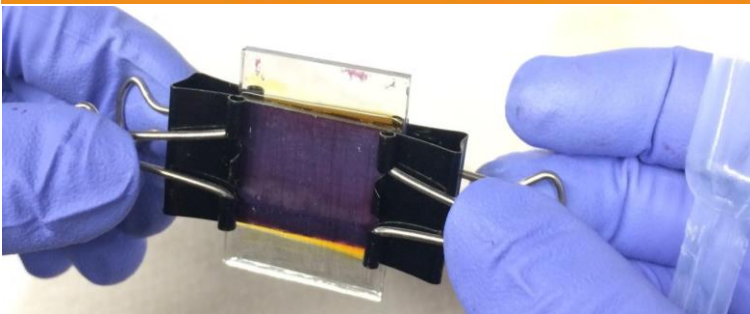
Sources of anthocyanins:



The silicon-based solar cells, which are commercialized now, have some restrictions owed to his economic and environmental cost. Instead, the dye-sensitized solar cells are constructed by low cost materials, easy to obtain and manipulate and besides are nontoxic for the environment. On the other hand, they have some disadvantages: they have lower power conversion efficiency (PCE) and lower stability than that of traditional silicon-based solar cells.

Aims of the project:

- Improve solar cells efficiency and stability.
- Find affordable sources and materials.
- Reduce environmental effect of manufacturing.



Extraction

Purification

Concentration

Stabilization

Application