

A brief review on photoanode, electrolyte, and photocathode materials for dye-sensitized solar cell based on natural dye photosensitizers

Abstract

The dye-sensitized solar cell is a promising alternative for a new generation of photovoltaic devices due to its lightweight, flexibility, low cost, environmentally friendly materials. One important aspect of the DSSC is the potential of using dyes found in flowers, leaves, and fruits to be used as they are cheap and easily attained. However, the photovoltaic performances of dye-sensitized solar cells are greatly dependent on the CR which can be attributed to dye molecular size, semiconductor nanostructures properties, interaction between the semiconductor and dye, semiconductor/dye/electrolyte resistance, and dye aggregation (Narayan 2012). This paper briefly reviews recent developments in DSSC using natural dye photosensitizers, photoanode materials, various phases of the electrolytes, and nonmetal photocathode materials.