

Additive Carbon Dots Nanocrystals for Enhancement of the Efficiency of Dye-Sensitized Solar Cell in Energy Applications Technology

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Abstract : The need for solar energy is constantly increasing and it is widely available on the earth's surface. Photovoltaic technology is one of the most capable of all viable energy technology and is seen as a promising approach to the control era as it is readily available and has zero carbon emissions. Inexpensive and versatile solar cells have achieved the conversion efficiency and long life of dye-sensitized solar cells, improving the conversion efficiency from the sun to electricity. DSSCs have received a lot of attention for Various potential commercial uses, such as mobile devices and portable electronic devices, as well as integrated solar cell modules. The systematic reviews were used to show the critical impact of additive C-dots in the Dye-Sensitized solar cell for energy application technology. This research focuses on the following methods to synthesize nanoparticles such as facile, polyol, calcination, and hydrothermal technique. In addition to these, there are additives C-dots by the Hydrothermal method. This study deals with the progressive development of DSSC in photovoltaic technology. The applications of single and heterojunction structure technology devices were used (ZnO, NiO, SnO₂, and NiO/ZnO/N719) and applied some additives C-dots (ZnO/C-dots /N719, NiO/C-dots /N719, SnO₂ /C-dots /N719 and NiO/ZnO/C-dots/N719) and the effects of C-dots were reviewed. More than all, the technology of DSSC with C-dots enhances efficiency. Finally, recommendations have been made for future research on the application of DSSC with the use of these additives.

Keywords : dye-sensitized solar cells, heterojunction's structure, carbon dot, conversion efficiency

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