

The Investigation of Energy Acceptors and Donors in Förster Resonance Energy Transfer System for Quasi-Solid State Dye-sensitized Solar Cells

_____, _____, _____, _____*

(jaehkim@ynu.ac.kr*)

Various energy transfer processes have attracted extensive interest in biology and supramolecular chemistry. The Förster resonance energy transfer (FRET) has been investigated to enhance the photovoltaic performance of solar concentrators or dye-sensitized Solar Cells (DSSCs). The fluorescence materials could absorb high-energy photons and transfer their energy to the sensitizing dyes via FRET process in DSSCs. Thus, the injection of electrons from the sensitizing dyes into the conduction band of photoelectrode could be enhanced by the energy transfer from the fluorescence material. Several kinds of FRET have been reported to improve the photovoltaic performance of sensitizers. In this paper, we add organic fluorescence materials on the photoelectrode and/or quasi-solid state electrolyte in order to increase the light harvesting performance of photosensitizer. The structure of the fluorescence materials is chosen carefully to emit the fluorescence that should be absorbed in sensitizers effectively to enhance photovoltaic performance of DSSCs.