

Enhanced Performance of Först Resonance Energy Transfer System for Dye-sensitized Solar Cells

김영락, Nguyen Thi Hai, 정주희, 이도경¹, 김재홍*

영남대학교; ¹대구가톨릭대학교

(jaehkim@ynu.ac.kr*)

Dye-sensitized solar cells (DSSCs) have attracted considerable attention on account of their high solar energy-to-conversion efficiencies and low cost processes compared to conventional p-n junction solar cells. Many researchers have focused on the nanostructured TiO₂ photoelectrodes and photosensitizers to enhance the photovoltaic performances of DSSC because it plays a key role in the enhancement of light-to-electricity conversion efficiency. Especially, chemical and physical surface treatments of the TiO₂ film have been used to improve the surface state of the film and the cell performance. In this paper, we added small amounts of the organic fluorescence materials in the photoelectrode in order to increase the light harvesting performance of photosensitizers. The structure of fluorescence materials was chosen carefully to emit the fluorescence that should be absorbed in photosensitizers effectively to enhance photovoltaic performance of DSSCs. Considering this point, we doped different amounts of organic fluorescence materials on TiO₂ photoelectrode to prove their light harvesting effect in DSSC to enhance the conversion efficiency of DSSCs.