Photovoltaic Performance of Multi-anchoring sensitizers for the Application of Dye-sensitized Solar Cells

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Since Grätzel et al. reported the first efficient dye-sensitized solar cells (DSSCs) in 1991, they have attracted much attention due to their relatively high power conversion efficiency and potentially low cost production. The standard structure of the DSSC comprises an electrochemical cell composed of sensitizer-adsorbed wide band gap oxide semiconductor electrode such as TiO_2 or ZnO, electrolyte containing I^-/I_3^- redox couples, and Pt-coated counter electrode. The sensitizer dye plays an important role in capturing the photons and generating the electron/hole pair, as well as transferring them to the interface of the semiconductor and the electrolyte, respectively.
In this work, we have studied on the synthesis and characterization of the organic dyes containing different number of electron acceptor moieties in a molecule. The photovoltaic properties of the solar cells composed of organic dye chromophores were measured and evaluated by comparison with that of ruthenium dye (N3).