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Abstract

Sunlight is a limitless form of renewable and clean energy which is amply accessible. Economic consumption of solar energy can boundlessly fulfil the energy demand. The cost reduction of solar photovoltaics has attracted many researchers over the last many years. Different next generation solar cells including silicon, thin films, dye sensitized, organic and perovskite solar cells have been developed. Dye-sensitized solar cells (DSSCs) are acknowledged as third generation solar cell technology because of their environmental friendliness, cost effectiveness, simple fabrication and capability to be manufactured on huge substrates. In this work, the effect of chenodeoxycholic acid (CDCA) in N719 dye solution as a co-adsorbent and low cost additive was investigated. The cells were fabricated with and without the addition of CDCA. Absorption spectrum of dyes and current density -voltage curves will be presented and trend will be explained for understanding. Comparison of the parameters showed that co-adsorbent additive significantly improved the photovoltage open circuit (Voc), photocurrent density (Jsc) and the solar energy power conversion efficiency (Ƞ). The impedance spectroscopy of cells are also depicted, compared and discussed in the paper.

Keywords: Chenodeoxycholic acid, N719, low cost performance efficiency of DSSC, DSSCs, CV measurement of DSSC