

Abstract No: ASRS 16

**ENHANCEMENT OF THE PHOTOCURRENT DENSITY IN DYE –
SENSITIZED SOLAR CELLS USING SINGLE-WALLED CARBON
NANOTUBES**

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A new generation of solar cells is now on the rise based on interpenetrating networks built from sensitized nanocrystalline oxides with dyes and conducting electrolytes. The dye-sensitized solar cells (DSSCs) which works on the principle of plant photosynthesis, have entered public view and garnered intense focus for more than two decades since its demonstration by Michael Grätzel and Brian O'Regan in 1991, in which DSSC can be created from low to medium – purity materials through low cost process. This work focuses on improving the performance of DSSC by incorporating single-walled carbon nanotubes with the metal oxide layer. The TiO₂ substrates coated on the Fluorine doped Tin Oxide (FTO) were dipped in the SWNT solution prepared in Tetrahydrofuran, before dipped into the dye Solution. Optical and electrical characterizations were carried for the SWNT incorporated for DSSC as well as its control. The overall power conversion efficiency of SWNT incorporated DSSC was significantly enhanced compared to the control cell most possibly due to the charge carrier generation, enhanced path for electron transport and reduced recombination aided with SWNT.

Keywords: *Recombination, Single-walled Carbon nanotube, Dye – sensitized solar cell*

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