

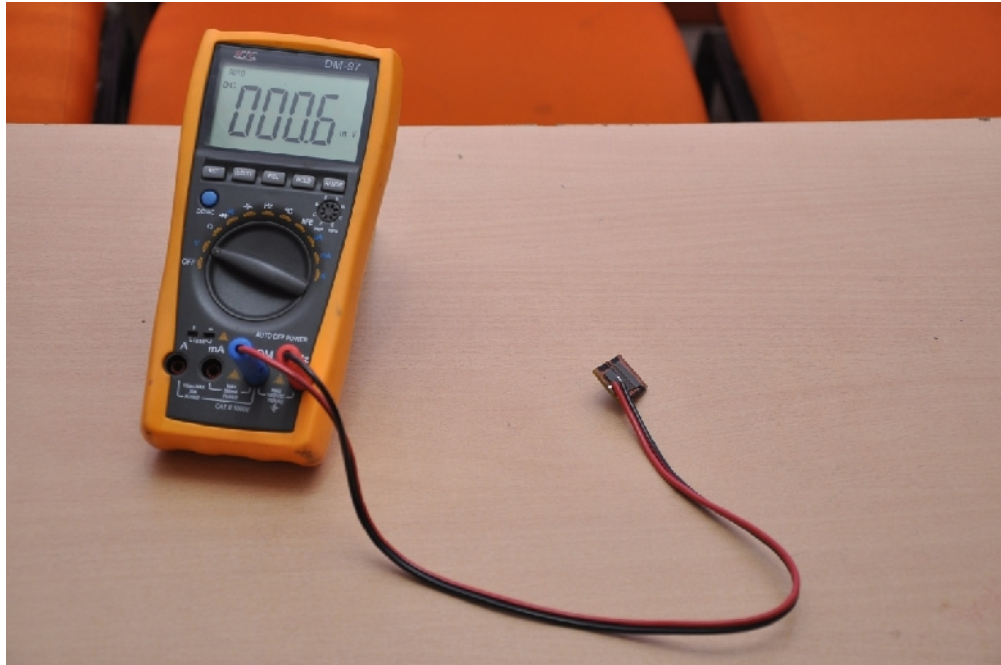
NANO SOLAR CELL WITH CARBON NANO TUBES

Energy is the key input to drive and improve the life cycle. Primarily, it is the gift of the nature to the mankind in various forms. The consumption of the energy is directly proportional to the progress of the mankind. With ever growing population, improvement in the living standard of the humanity, industrialization of the developing countries, the global demand for energy is expected to increase rather significantly in the near future. The primary source of energy is fossil fuel, however the finiteness of fossil fuel reserves and large scale environmental degradation caused by their widespread use, particularly global warming, urban air pollution and acid rain, strongly suggests that harnessing of non-conventional, renewable and environmental friendly energy resources is vital for steering the global energy supplies towards a sustainable path.

Solar energy can play a vital role in narrowing the gap between demand and the supply of the electrical energy. The major hurdle in the usage of the solar cells is there poor efficiency and high cost. The nano solar cells get rid of both the problems, as the nano cells are having high efficiency and fewer costs as compared to the conventional solar cells. The efficiency has been increased by the implementation carbon nano tubes, which provides a hindrance free path the electrons once it gets energy from the photons. As the fundamental property of nano particle is well that, the number of free electrons on the nano particle surface is very high as compared to the micro particles. The reason being the surface area to the volume ratio is more in the case of nano particles.

The tin oxide nano particles were prepared by traditional sol-gel method and the prepared nanoparticles with carbon nanotubes coated over the silica wafer to make PN junction. Finally, with the help of silver paste the electrode contact was taken. The very narrow structure of the nanotube forced the electrons to pass one by one, generating further electrons with the spare energy from the higher energy photons, in a nearly ideal energy conversion process that could be the key to higher efficiency solar panels

The prepared nano solar cell has approximately three times higher efficiency than the conventional solar cells hence it has the potential to replace the conventional solar cells.



**NANO SOLAR CELL DEVELOPED
UNDER VMKVEC – IEDC PROJECT**

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