

# An Aggregate Model of Hybrid Fibre Optics and Nanotechnology based Solar Cells based Power System

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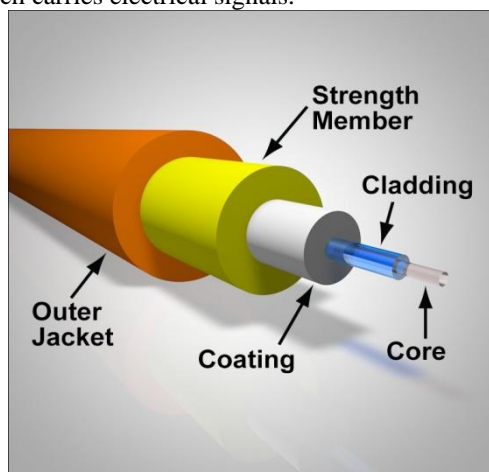
## Abstract

The paper discusses about the advanced fibre optic system and the nanotechnology based solar cells. Normally the fibre optics carry only binary signals that is 0's and 1's where this signals are used to carry data from the source to the destination but in our purposed system the fibre optic cable can be able to carry both data and power signals. And the nanotechnology is interfaced with the solar cells in order to reduce the cost of the solar cells panel developing and these two techniques are too applied in the power system of commercial and domestic places.

**Keywords** — Optic system, nanotechnology, solar cells, fibre optics, binary signals.

## I. INTRODUCTION

Hybrid fibre optical system is one of the major advanced systems where the cable in the previous stage will able to carry only data from one point to the other point but in the cases it deals with the carrying of the power signals in the fibre optics cable there are some possibilities are available to carry power source also this advanced hybrid fibre optics cable is able to carry the signals quickly so it could as fast when it is compared to the copper wire which carries electrical signals.

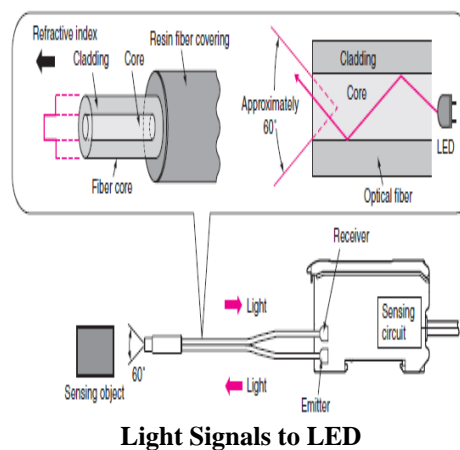


Fibre Optic Cable

The figure 1 shows the ordinary fibre optic cable it similarly requires outer jacket, strength member, coating, cladding and core but the hybrid will be consists of converter and solar cells is to be built in efficient manner such as honey comb structure also by semi conducting nanowires which would produce more power when comparing existing.

## II. HYBRID FIBRE OPTIC CABLE

The hybrid fibre optic cable is the most advanced cable where it can be able to carry the binary and power signals such that the cable will carry only the light signals instead of that the cable is made to carry both light and electrical signals in the same wire itself by help of sensors in the fibre optic cable so this would bring the power to home quickly. A converter is placed in the fibre optic cable where it has the capabilities of converting of light energy into the electrical energy.



The main source of the fibre optics is produced and this may be transformed into step index or graded index. Above figure 2 states that the light travels at 60° inside the fibre optic cable and the finally the led source light is produced. Therefore the electrical signals inside the cable do not able to carry the voltage in large amount. Hence this would be able to carry only small amount of sufficient energy in the cable and the energy will be more effective when compared to other sources.

### III. COMPONENTS

#### A. Converter

Converter is the system which would main component of the fibre optic cable and these works with the laser diode and the light energy is to be converted in the form of photovoltaic cells and further electrical energy is produced.

#### B. Glass Tube

The glass tube is the communication channel where it should produced with the high quality of materials and the date or power which inside the tube will never should be get lost so the design of the glass tube is to be very strong.

#### C. POF

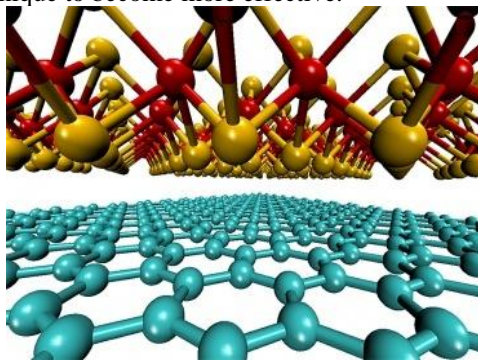
POF is the term defined as the power of the fibre where this is one the main source component which is to be control the electrical voltage which is passed over the cable system and it should be analysed frequently because of no data or power loss should be occurred.

#### D. Controller

The Controller is the component which would controls all the systems that is to be converting of light energy into electrical energy and passing of signals in the form of step index or graded index system and there should not be increase of high pressure or fault should not be obtained in the glass tube or also there should not be any breakage also obtained.

### IV. NANOTECHNOLOGY IN SOLAR CELLS

Now a day's solar energy become the most familiar in the field of power systems as this solar energy are renewable resources there are various applications are under development in the way to produce more solar cells and convert this energy into electrical energy and also our system contains with solar cells where this panel can be able to track where the sunrise and sunset. This technique will be able to collect as much of sun light as needed some of the nanotechnology particles are added with this technique to become more effective.



Graphene and molybdenum disulfide in Solar Cells

The solar cell which is composed of the 3D Graphene Structure where it can be able to receive more amount of energy from the panels and able to achieve 7.6% form sunlight to electrical energy. In the figure 3 shows that the solar cells can be combined with the combination of graphene and molybdenum disulphide to form a thick solar sheets. Also the other method to make the advanced solar cells it is combination of graphene of zinc oxide.

### V. EXPERIMENTAL VIEW

The Solar cells of Nanotechnology is to obtain the solar energy form the maximum level to the sunlight further more amount of solar energy is to be converted into electrical energy where this energy is to flow over the hybrid fibre optic cable and these cables can only carry low level of electrical energy from the solar backup battery.

And the future works of this proposed system is to reduce the fibre optic glass as well as make the entire system to carry the large amount of electrical sources and main aim to achieve the solar energy completely form the sun and produce 100% renewable resources current to the power system of the smart home.

### VI. SMART HOME POWER SYSTEM

Hence these two main techniques of the proposed system are going to be involved with the smart home technology. Where this concept deals mainly power producing and the power communication cable are the advanced system are described.

### VII. CONCLUSION

Thus the aggregate model of the hybrid fibre optics and solar cells based power system are to be applied in the smart home technology where this would the takes the smart home technology to the advanced level. As the future work is to increase the power input in the cable as well as to enlarge the income input of the nanotechnology based solar cells.

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