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Review Article

Role of Physics and New Insights in Development of Energy System through Nanotechnology

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Abstract

Power systems deliver energy to loads that perform a function in such a way that no barrier of electrical conductivity occurs. The energy productions through nanotechnology based systems are much efficient. They are manufactured through laser ablation and vapor deposition methods. The use of graphene is effective for lading the energy systems as it posses the physical characteristics such as electron mobility, high conductivity. Solar cells that transform the energy coming from the sun into the electrical form as photovoltaic influence greatly infused to this process. Capacitor with combinations of nanotubes also designed that increase the electrode surface area and thus the amount of energy. Nanotechnology technique can be used to produce cheap and high efficient solar cells. Nanocapacitors also working on the basis of the physiochemical properties of both the electrode and the electrolyte materials. Nanotechnology can be utilized in the productions of various electrical and commercial appliances.

Keywords: Power systems, energy, conductivity, grapheme, physical characteristics electron mobility.

INTRODUCTION

Carbon based nanotubes are used for the energy systems because of the chirality nature and appropriate bending proprieties. They are widely employed for the preparations of nanomaterials for solar cells that can generate a power. These nanotechnology based advances for the energy systems leads to the efficient way to fabrications of solar tubes. One of such example is the graphene thin films that have been engineered and prepared as fine layer. Those materials are of particular interest in the field of solar energy owing to their low cost and simplicity of fabrication that allows the fine and smooth flow of materials to the energy systems [1-4]. Power systems deliver energy to loads that perform a function in such a way that no barrier of electrical conductivity occurs. They have different applications for renewable energy productions in different sectors such as wind, hydro and wave energy that needed to the engineering and thermal processing of designing of wires that can be used for energy systems [5-6].

Organic and inorganic materials with principally nano based energy systems have several advances over the traditional devices for large generation of energy for turbines that are high cost and causes the noise pollution. While on the other hand, nanocarrier devices that carried out the safe delivery of materials to the mechanicals sections in order to prevent the severe defects of nanowires that are hollow tubes with spheres. They are manufactured through laser ablation and vapor deposition methods. Apart from the carbon based wires, Au or Ag NPs, metal oxides ZnO NPs, and semiconductors such as silicon and ceramics have great demand according to the industrializations. These smaller particles have possessed excellent conductivity; thermal resistance allows control over material properties using process parameters including laser tuning and multi-target precursors. These advances have made progress in the development of energy systems exotically for rapid flow of nanomaterial's to the target area [3, 6, 7].

Energy based systems follow the reactions carried in the metallic wires that composed of different types of NPs that allows the flow of electrical signals to the main target source such as hydropower, wave power, tidal power and geothermal power can be produced FeCl3 as precursor that acting as nontoxic and soluble in nature that catalyzed the nucleation of the minerals [4]. The energy productions through nanotechnology based systems are much efficient while on the other hand, energy productions sources can cause the metallic toxicities' and renders the machinery in such a way that final products contained lots of impurities and hence replaced with advanced systems. It is very fast, virtually the speed of light. To produce other forms of radiant energy. There is need to design the kind of machines working on the nanoparticles based allows the low cost and high products value [8-10].

New Insights in Development of Energy System through Nanotechnology

The use of graphene is effective for lading the energy systems as it possess the physical characteristics such as electron mobility, high conductivity in order to flow the movements of different articles as it important in the 3D system that carried out the storage of energy in appropriate manner. Sometimes, combinations of two or more metals lead to integrated energy systems such as integration of TiO2 with grapheme electron mobility. It also amplifies the high switching speeds, which are achieved because the main charge carriers are involved in extremely low noise values. These advocates the electrical pathways in which, majority of modules commended in such a way that the current variation in these as charge carriers is almost exclusively the majority carriers and the minority carriers [11-13].

Table-1: Shows the role and New Insights in Development of Energy System

System type	Physical Role	Significance	Applications
Energy Power systems	deliver energy to loads that perform a function in such a way that no barrier of electrical conductivity occurs	Large generation of energy for turbine	The engineering and thermal processing of designing of wires
Nanocarrier devices	delivery of materials to the mechanicals sections	in order to prevent the severe defects of nanowires that are hollow tubes with spheres	Development of energy systems exotically for rapid flow of nanomaterial's to the target area.
graphene combinations	electron mobility, high conductivity in order to flow the movements of different articles as it important in the 3D system that carried out the storage of energy in appropriate manner	current variation in these as charge carriers are almost exclusively the majority carriers and the minority carriers	These approaches can be more comprehended to the energy based systems where storage of energy occurs at adequate manner with less consumption and maximum mutilation
Capacitors	source of energy in combinations of metallic designed that are much efficient as compared to the normal batteries	Capacitor with combinations of nanotubes also designed that increase the electrode surface area and thus the amount of energy	The engineering and thermal processing of designing of wires

The carriers are main source of energy balancing devices that linked to the all parts of the energy systems so that compact integration happened for large generation of energy acting as efficient binding sites for TiO2. It also promoted the solar light irradiation, due to high photo catalytic activity of integration of titanium metallic based with grapheme that equally balanced the amount of energy used and the relative contribution of each different source. These approaches can be more comprehended to the energy based systems where storage of energy occurs at adequate manner with less consumption and maximum mutilation [5, 12, 13].

Solar cells that transform the energy coming from the sun into the electrical form as photovoltaic influence greatly infused to this process. This sunlight causes the flow of electrons from the capacitance band to the semiconductor conduction band and connected to the nanocarrier system. While on the other hand, traditionally used energy systems loss of energy cause the environmental pollution. While on the other hand, nano based batteries, which derive electrical energy from chemical reactions helpful for storing the large amounts of energy. This energy can utilized for turbine and guided power systems or other purposes but the utilization is relatively low cost and much efficient to the friendly environment [7, 9, 14].

Capacitors are also source of energy in combinations of metallic designed that are much efficient as compared to the normal batteries. It usually depends on the surface area of the metal used for their designing. Different types of metals are compacted to the inner surface to make fine body. Capacitor with combinations of nanotubes also designed that increase the electrode surface area and thus the amount of energy. Batteries have been replaced with nano capacitors as traditional batteries even high current types are considered low in comparison to rechargeable batteries. Thermal runaway can occur with improper charging [8, 11]. PV solar cell also used for different industrial and commercial purses in order to increase the organic polymer based metals that have been acting also the source of renewable energy sources, as a one option for the production of energy from light at very low cost[15, 16].

Next generation of the solar cells are more reliable that provides the supply of electrical energy to the high demand as fine layer of solar cells is relatively allowed the electrical conductivity in combinations of nanoparticles. Nanotechnology technique can be used to produce cheap and high efficient solar cells. Through the applications of nanotechnology in the field of electrical appliances, charges laptop, cell phone for energy storage for long periods of time [8, 9]. These nanotechnology based solar cells have crystalline nature with excellent structural properties with tuning quantum effects in the short direction but retention of bulk properties, such as rapid carrier transport, in the long. The electrical energy that generated in this way as potential source of electrical engineering repairing parts by designing of metallic parts.

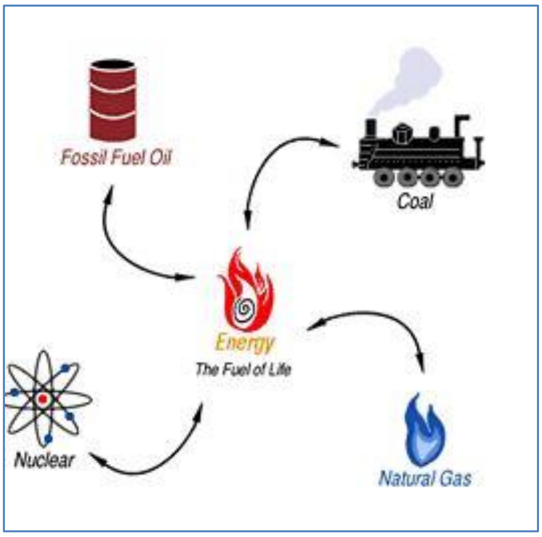

Fig-1: Shows the various types of energy systems and sources

Nano based optical filters are used for the extraction of the heat in order to clear the dust particles from air thus reducing the risk of environmental pollution. These fibers are comparatively much better as compared to the fibers without nanofluids. Hence, the efficiency of the nano based optical filters boosted as compared to the traditional methods used for energy generations purposes. Fullerenes are also sued because of their stability during electrochemical reactions as they can favor the catalyst support materials. They are much efficient as most commercial cells have low thermal efficiency while on the other hand, the efficiency of solar cells enhanced through the nanoparticles with thin layer of nanofluids coated in such as way that thermal efficiency not influenced by the interaction with nanoparticles coating . The fine coating of the nanofluid allows the smooth flow the ions and electrons to the targeted site where catalysis occurs [9, 11, 12].

Storage of energy through batteries is costly and required extensively materials through different instrumentation. While on the other hand, use of nanotechnology to the energy storage is the current interest of research is greatly increasing due to the high demand of efficient low costly materials, long storage of energy also helpful for transportation. While, some of the other irons based batteries such as storage of hydrogen can also be stored on the surfaces of solids or within solids through chemical and physical methods in order to enhance their storage value. Combinations of nanomaterails as piece or thin layer can increase the electrical conductivities and mechanical properties that also increase their overall shelf life [13]. They also serve also thermal based materials with properties of light-emitting diode provide that also helpful for efficient usage of electrical energy. This energy can be utilized or different physical and chemical activities. They have wide range of applications in the conversion, electronics, energy storage and physical and chemical catalysis [14-17]. The occurrence of the chemical and physical reactions can be maintained for smooth running of batteries that can be designed through nanotechnology.

Nanocapacitors are greatly addressed in the fields of engineering and electronics for the manufacturing of various appliances of industrial importance. One the ideal examples are the solar tube, solar lamps, solar panels, solar based electronics that have been made got scientific progress in order to achieve the goals of nanotechnology. Nanocapacitors also working on the basis of the physiochemical properties of both the electrode and the electrolyte materials. The accumulation of more ions causes the flow of electrons that induced the signals to the main tagged phase that swap to the receiver of the solar type but their storage capacity depends on the surface area of electrodes. Any failure in the structural designing of the electrodes leads to poor signals flow that causes the damage to the manufactured appliances. The potential disadvantages include economic disruption health and the environment by releasing the different types of materials pieces in the form of toxic metals that ultimately leads to the environmental pollution. The main advantage is to resist the resistance against heat, temperature, circumstance, opportunity or means, particularly favorable to the maintenance of the designed materials. There is need to design the active materials with high mechanical properties and resist the corrosion effects [18-20].

Renewable resources can be utilized for the production of materials used in the batteries, capacitors, and storage systems. Among of them, hydrogen storage is needed for low cost but due to the environmental releases of chemicals it with nanotechnology and the future of hydrogen production is envisioned towards its direct production from nanotechnology renewable sources. It will ultimately leads to the reducing the problems of electrical, heat and mechanical losses [20-24]. Variety of nanostructured carbon materials with combinations of chemical electrodes can be used for the generation of electricity, the evaporation driven water flow in nanoporous carbon film converts ambient thermal energy into electricity via the water molecules' interaction. But, heavy cost and materials added to the generations of energy in appropriate manner. Heavy mechanical nanophotocatalysis leads to generate a variety of energies such as solar, thermal, wind energy, thermochemical cycles or biomass gasification [25-27].

Many of the novel and advocated nanocapacitors with the manufacturing of an arrangement of nanotubes can be combined with piece of pure metal such as aluminium oxide layer. This nanomaterial's offers the improved ionic transport and electronic conductivity compared with conventional [28-31]. These can be utilized for corrosion protection layers for turbine blades for heavy machinery materials by gaining solar energy from the sun and energy from the wind using turbines with no sunlight and wind also have different applications in parking areas, to charge portable electronic devices and vehicles. The combined piece of metal in the constructed material can helpful for deciding the nature of hollow tubes that have been relocated during the mechanical and physical processes[32-34].

CONCLUSION

Energy systems have different applications in the industrial and physiological processes. As, they are more reliable for next generations technologies because of their potential of storage efficiency, electrical conductivity and thermal properties. Nanotechnology can be utilized in the productions of various electrical and commercial appliances due to increase demand of capacitors, batteries and nanofluids based machineries.

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