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Technical and Economic Analysis of Water Turbines in the Water Energy Resources Using Nanotechnology

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Abstract: Increasing world population and water resources to be declining. So the world may in future be faced with the problem of water shortage. Increased water consumption and lack of effect from that pollution is aggravated because the water is as one of the health concerns become a major global society. Diseases caused water pollution and perhaps thousands of daily kills tens of thousands. Ability to recycle water, access to appropriate sources for a variety of uses creates. Thus, filter water using NM filters, a huge change in recycling and reuse of industrial and agricultural water sets. Physical filters can nm pores of the bacteria, viruses aqD even small units of protein to one hundred percent screening. With the ions to the electrical Separation pages by Large, capacitor attracts heavy materials and salts can be attracted. Study of world activities, including running programs and programs available on future research and industrial centers, show that treatment areas in one of the areas of nanotechnology applications is the water industry aqD utilizing its water treatment costs will be reduced greatly. In addition, the possibility of using renewable energy and water to facilitate other applications give.

Key words: Water · Energy · Environment · Pollution · Optimization · Nano · Technical

INTRODUCTION

Opportunities Related to Energy and Environmental Technology, Nanotechnology

In the following you can see the opportunities related to energy and environmental technologies include nanotechnology:

- Production of various materials and High energy products production no dangerous products.
- Nano technology products from simple and abundant elements such as carbon.
- Need less material (because the nano materials are stronger and thinner).
- Protection of resources through the production of miniature.
- Saving energy and preventing waste, reducing the size and weight of products.
- NM using filters to increase water recovery systems available.
- Using biological Sensor Nano to rapid diagnosis and complete water pollution.
- Reduction of energy consumption.
- Renewable energy (with higher productivity).
- Reduce resource consumption in production or consumption phase.
- Application of environmental cleaning programs.
- Reducing the environmental impact automobile industry.
- Improve the recycling process[1-6].

Optimization in Water Resources Using Nano

Using the Following Methods We Can Use from the Nanotechnology Sector for Improving water

Filtration Nanol: New technologies, the possibility of production into the water Filtered Nano provide mass scale. Treated water by a nano-filtration as the value of refined mineral water. Using nano-filter, minerals required for human health and the residual water and harmful toxic substances, it is deleted. Nano filtration between a useful method of reverse osmosis and ultra filtration methods is. Ultra-filtration due to the higher amount of mineral and alkaline pollutants to limit and reverse osmosis method of production due to excessive product purity and high prices are having defects[1-6].

Use of carbon nano-tubes can effectively remove pollutants from water micro-and nano-scale and delete Hydrocarbons is heavy crude oil. Use of carbon nano-

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tubes made easy cleaning filters cause increased strength, ability to reuse the heat resistance is. These filters have very good accuracy in different applications, for example able size 25 nano meter size as well as larger pathogens such as E. Coil and

Staphylococci bacteria, can remove water. Nano filtration advantages such as low cost, control and reduce the amount of pollutant in water treatment.

Nano-tubular Membrane: Membranes with cavities made of carbon nano-tubes; it is possible that cheaper gas and liquid separation are provided. Currently, most available membranes made of polymer materials are not suitable for high temperature applications. Membranes of this type can not balance between the input accepted membrane and capability can make its selection, i.e. high input selection can be done to reduce lead and vice versa, but using carbon nano tubes can these two apparently conflicting with the matter together and good choice with the ability to provide high input. Manufacturing methods are the membranes so that micro-electro mechanical systems (MEMS) are compatible.

The new membranes with smaller cavities and the density and the possibility of very high flow Password each cavity, In terms of climate, Transition Instructions the current polycarbonate membranes are much better. The membranes improved water uses are frequent.

Membrane separation method of sweetening water, salt water on hot plates with thin membrane called the nano-pore cavity shed. The cavities are so small that they can only password to steam and water, liquid, salts and other minerals stay behind the membrane.

The other chamber of the cold water that the steam passing cool aqD will become liquid again. Tool in this method is used, include rectangular device with a set of fiber membranes, such as empty as the liquid flows in the cross. Thousands of these membranes to form tubes in the hair, then package them to put inside a box. In the middle, those thousands of empty pipe is like hair. The membranes of the tube wall with the Nano small hole comprise.

Nano Particles Water to Help: Lanthanum phosphate nano particles will absorb water from the environment. To utilizing these nano particles in the pond and swimming pool can be effectively destroyed the existing phosphate and thus to prevent the growth of algae. Nano-powders can be suitable as a tool for clean contaminated soils and groundwater can be used. Oxidized iron nano particles cause crackup compounds and pollutants such as Triglyceride chlorine ethylene, Carbon tetra chloride aqD the PCB, the compounds of carbon with their very low degree of poisoning formats. To destroy most heavy metals in the water, catalyst treatment method is not suitable options, so instead polymers the absorption method or use particle additives. Arsenic is a common toxic pollutant, which normally forms aqD human wastewater pollution is water. This material consumption increased bladder and bowel cancer is. Statistics of the world arsenic poisoning is very high in many developing countries like Bangladesh more than 10 to 20 percent of its population are suffering from arsenic poisoning, is considered a health disaster. Often due to emission of arsenic is devoted to Third World countries. Thus urgency is felt, as the new technologies could be heavy metal pollutants such as arsenic from drinking water eliminated. For the above problem can be magnetic nano-crystals as the main core to use the new treatment system.

Iron mineral surfaces not only have strong willingness to absorb arsenic, but also can easily select the appropriate size of the magnetic particles through the magnetic separation of the water removed. Nano particles of iron in the mass absorption efficiency are arsenic. In fact, not only the arsenic absorption capacity is higher, but also as soon as they sit next to this article nano particles are difficult to separate. Considering all these results show that effective gravitational magnetic nano particles for arsenic, especially in low pH are irreversible absorption properties of a suitable repository for collecting pollutant provide[1-6].

Industrial Effluent Treatment Plant: Industrial waste detergent, BIO oxygen-rich chemical and chemical active material that should be removed from the water treatment processes. Another material that is found in many waste materials, including oil-insoluble oils and grease is. The presence of this material refining process will trouble the water. One of the economic methods for treatment of these materials, micro-filtration systems combined is nano-filtration. This micro-filtration system for the scour of particles such as oils and grease and nano-filtration is used to remove detergents.

Sewage Treatment: Last stage of water purification, remove organisms is very small. We as a matter of chlorine disinfectants are used, but in this case, even after the treatment the many organic compounds are present in water. Chlorine living below will remove the water, but reacts with organic pollutants, toxic products aqD inseparability of production that can not be eliminated

from water. Transfer the materials to the environment and their use in agriculture and other industries can cause serious health problems.

Nano-catalyst to help sewage can replace the third stage of light treatment, i.e. to be disinfected with chlorine and organic compounds of fine living to simultaneously remove the waste into a suitable water source. Organism's normally small, large organic compounds are smaller, but because the biological analysis of these compounds is non-vulnerable, we have to use some kind of analysis we are energy. The energy from sunlight, ultraviolet radiation is the light and with catalysts used.

Energy production from the reaction catalyst light-cell organisms can be killed following the analysis of compounds to inseparability. This process due to the possible reuse of catalysts light, very affordable. Homogeneous catalyst particles in either solution or dispersed membrane structures on the sediment are given, can we make sure the pollutant chemical analysis. Effect of adding different metals are known to improve catalyst activity and the removal of even more chlorine ethylene (TCE) from Groundwater is used. Gold and Pd nano particles, very effective catalysts for TCE water contamination are removed. TCE removed with Pd advantage is clear as well, but somehow this method is expensive. Utilizing nanotechnology with the number of atoms can be in contact with TCE molecules and therefore the efficiency of the catalyst increased several times common catalysts. TCE solvent oil bleaching of common metals and electronic parts, one of the common toxic organic materials in water and in 60 percent of industrial waste as there is contamination. Contact with the body and cause harm to the liver cancer is. Biological catalysts of chemical catalysts to act much faster, but are very expensive. One of the advantages Pd catalyst for TCE analysis is that Pd, this matter directly to non-toxic ethane Article formats. While common catalyst such as iron, the transition to some toxic substances such as chloride and converted Pencil colored[1-6].

Nano titanium crystals with high specific surface (more than 250 m^2/g) to remove organic aromatics are produced. Materials under ultraviolet radiation, light oxidation ability of many molecules acquire.

The cobalt 60 (C60) catalyst is very good optical performance of hundreds of Titanium in the market. Free radical production by cobalt 60 (C60) dense water provides the possibility of pollutant analysis.

Mercury Bleaching Water: Nano-pore of the ceramic layers with one thiol (SH), is significant factors for mercury-bleaching water can be used. Organize themselves its single thiol layers on the silica pore (Thiol-SAMMS) can be applied sewage is stone coal power plants. The plant source of mercury pollution is known. Using the following layered silica material with average pore size of the nano-cavities 5.6 m and specific surface 900 m2 / g and adding the thiol alkaline single-layered ceramic to the cavities, it can be made active.

Table 1: Companies active in the field of nanotechnology applications in the optimization of water resources.

Current Executive Features	Main activity field	Country	Company Name	Title
Manufacturer of water treatment technologies, powerful filters and metal oxide nano-powders	Products based on nanotechnology	U.S.A	Argonide	1
Construction and characterization of nano filter with a feature - such as water hardness sequestrationof calcium, magnesium, bacteria, viruses and organic compounds B - Separation of organic pesticide and pollution under the ground surface	Systems and water treatment equipment	U.S.A	RainDance Water Systems	2
A - RS-S product for separating calcium B - ISF92 for production of iron treatment	Designer and manufacturer of water purification systems and air	Netherlands	Lenntech Water Sluchtbehandeling Holding B. V	3
Filtration to the nano-filtration	Manufacturer moving systems improve water quality	U.S.A	GE Water and Process Technologies	4
Produce membranes Thin Film, CTA / CAB, ultra filter Asyvn, nano-filtration and micro filtration (such as manufacturing and nano-filters NF3 namely NF9)	Systems and components manufacturer of reverse osmosis membranes	U.S.A	Applied Membranes	5
Water treatment systems including ion exchange resins and reverse osmosis membranes (eg FILMTEC)	Chemical products, agriculture, chemical and services in various industries	U.S.A	Dow Chemical Company	6

Access to a technology that in addition to mercury, select Gray, high absorption capacity aqD absorption Kinetic appropriate will lead to sustainable waste production, one needs immediate treatment in the field of mercury. Not only the efficiency of mercury, conventional methods, this method is lower, but these methods lead to large amounts of waste are produced. New material in addition to clean coal power plants, sewage treatment plant can stone radioactive waste, production and use battery Dental School is also used [1-6].

Companies Active in the Field of Nanotechnology Applications in the Optimization of Water Resources: This company is a major activity filters nano nano sensors and then determine which materials and particles in the water used (Table 1). Companies active in nanotechnology have been able to the following:

- The 300 billion dollars in annual sales development for the semiconductor industry and $ 900 million for the integrated circuits during the next 10 to 15 years.
- Health care, life expectancy, quality aqD human physical abilities increase.
- Almost half of pharmaceutical products in 10 to 15 years will be reliant on nano technology, which, to 180 billion dollars in cash will flow.
- With the possibility of using nano-structured catalysts in Petro Chemical Industries are predicted this knowledge; the annual $ 100 billion during the 10 to 15 years affect the future.

CONCLUSION

Nanotechnology cause for agricultural development will be a huge population and economic ways for better bleaching Filtration and salt water and ways to optimize the use of renewable energies sources such as water, to provide energy. For example, using the Nano can be 10 times less than the method of reverse osmosis, water, sea salt, bleaching can be. Expected used in nanotechnology to human needs and with less rare materials reduce pollutants, provide a healthier environment. For example, studies show that during 10 to 15 years, light from nanotechnology development, global energy consumption reduced to 10 percent, saving $ 100 billion annually and reduce air pollution amount to 200 million tons of carbon.

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