

## Laser waste destruction and co-generation of power

A German consulting firm offers to arrange the technology of laser waste destruction and co-generation of power from its United States (US)-based client company. The US-based technology supplier company is a multi-faceted high-temperature materials processing, energy production, and recycling company. It specializes in system design, manufacturing, management, and operation of the company's proprietary Laser Waste Destruction System (LWD) which are used in processing both liquid and solid waste streams. The company's "Thermal Energy Production Systems" (TEP) incorporate the use of co-generation technology for generating economic electric power on an environmentally friendly basis. Both systems have application designs which will accommodate the energy production and waste stream disposition needs of a small factory or a large municipal user.

### Area of Application

Waste treatment, waste utilization: processing of solid wastes and liquid wastes from medium and large factories; hospital wastes, waste from markets/supermarkets; municipal wastes; sludge processing.

### Advantages

The system has considerable environmental advantages compared with incinerators: zero NOx & zero dioxine emissions; complete destruction of waste; zero bottom ash; metals are turned into useful by-products; energy from wastes: the electricity produced is used to power the processing plant and excess energy is sold to local power companies at fair market rates. Co-generation reduces operating costs and makes the system a profit-center; heat is recovered to power co-generation plant 5–50 mw; flexible size and configuration; both stationary installation and mobile units are available; automatic control and continuous monitoring; easy maintenance; low manpower required; prefabricated and easily installed everywhere; low capital investment; low operating costs; and turn-key financing/installation/operation.

### Environmental Aspects

Waste utilization

### Development Status

Fully commercialized

### Transfer Terms

- Joint venture
- Technology licensing
- Equipment supply

### Contact

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# TECHNOLOGY OFFERS

## Continuous room-temperature biodiesel production

Our partner, a Hungarian Institute has developed a novel continuous process for the room-temperature production of biodiesel. The main advantage of this technology is the avoidance of soap formation which so far cause many problems during biodiesel production (emulsion formation, washing problems, slow phase splitting, etc.). They are interested in a license agreement or selling of production equipments.

### Area of Application

Biofuel production plants, fuel mixing firms

### Advantages

- Room temperature process, energy saving
- Avoidance of soap formation, thus many other problems do not occur, like: Problems during emulsion formation; Washing problems; Slow phase splitting
- Continuous production technology in a simple apparatus (tube reactor)
- Cheap catalyst removing (KHSO<sub>4</sub> or H<sub>2</sub>SO<sub>4</sub>) by recyclization of catalyst-removing KHSO<sub>4</sub> (acid) with regenerable ion-exchangers
- The byproducts (K<sub>2</sub>SO<sub>4</sub>, glycerol, or methanol) can be used as rapeseed production fertilizer or starting material for biogas production
- No water in glycerol phase
- Low methanol and potassium content in the raw ester phase

### Environmental Aspects

- Cleaner production
- Energy efficiency

### Development Status

Pilot plant

### Legal Protection

Patent

### Technical Specifications

Vegetable oil methyl esters are generally produced at 60°C in the presence of 1% KOH/NaOMe catalyst with stirring for 15–60 min.

### Transfer Terms

- Technical services
- Technology licensing
- Equipment supply

### Target Countries

World-wide

### For the above two offers, Contact

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## Novel transducer matrix for biosensors

The principal objective of the present invention is to provide a process for the synthesis of nanostructured conducting polymer (NSCPs) by using structure directing agents. In addition, this invention also provides a process to develop a nanostructured conducting polymer with high electrical conductivity. Another objective of the present invention is to use the synthesized nanostructured conducting polymers as a transduction matrix for the development of biosensor. Yet another objective of the present invention is to provide a method for the development of optical biosensor by using synthesized nanostructured conducting polymers as a transduction matrix.

### Area of Application

An optical glucose biosensor has a potential application in the testing of biological samples.

### Environmental Aspects

Environment-friendly

### Development Status

Laboratory model

### Legal Protection

Patent

### Transfer Terms

- Consultancy
- Technical services
- Technology licensing

## Plant biomass-based metal sorption column

The present invention provides a process for developing a plant biomass-based biosorption column for the removal of metal ions. The biomaterial comprising of leaves of *Jatropha* is immobilized on a modified silica gel. The silica gel is modified with cationic polymers for improving the binding of the biomaterial, porosity of the column, and to maintain uniform flow rate. The biosorption column may have possible application in the removal of specific ions from contaminated sites or wastewater. The prepared biosorbent column is very cheap, recyclable, and can be used for selective sorption of Cr (VI) and Cu (II) ions from synthetic multi-elemental water samples

### Area of Application

The prepared biosorbent can be used for purification of water in terms of heavy metals.

### Advantages

The prepared biosorbent column is very cheap, recyclable, and can be used for selective sorption of Cr (VI) and Cu (II) ions from synthetic multi-elemental water samples.

### Environmental Aspects

Environment-friendly

### Development Status

Laboratory model

### Legal Protection

Patent

### Transfer Terms

- Consultancy
- Technical services
- Technology licensing

### For the above two offers, Contact

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## Nanogold-loaded carbon bullets as gene carriers

National Chemical Laboratory (NCL) scientists have developed a process for the preparation of carbon-embedded nanogold particles with sharp edges which can be used as gene carriers. The bullets are sharp enough to penetrate hard material, with less damage (a comparatively lower force of 0.1–0.2 nN required for penetration) and can be delivered with a convenient delivery gun. Intracellular gold particles (biogenic) synthesized by a fungus in situ are embedded on a carbonaceous matrix.

### Area of Application

- Gene therapy/improved gene delivery for research and other applications
- DNA-based immunization, to study gene function and its regulation, to establish various disease models, metal ion removal, fuel cells, anti-bacterial applications, catalysis

### Advantages

- Preparation process is very simple and easy to implement
- The carbon matrix forms 95% of the carrier reducing the amount of gold needed and the plasmid used per transformation
- Advantages of usage of gold particles- High DNA packing density, better transformation efficiency, low nuclease degradation, being in nano scale, higher surface area is obtained- more gene cargo handled
- Advantages of usage of carbon support- Inert and less damage causing- wound caused due to penetration healed faster, better piercing capacity, for example, can effectively pierce hard plant cell walls, less force required to penetrate the plasma membrane as compared to silver nano needles

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## **Development Status**

Laboratory model

## **Legal Protection**

Patent

## **Transfer Terms**

Technology licensing

## **Contact**

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India

## **Dengue tetravalent vaccine**

The technology describes a novel recombinant envelop domain-III-based tetravalent protein which elicits protective immune responses against each of the four serotypes of dengue virus, DEN-1, DEN-2, DEN-3, and DEN-4. Hence it is capable of inhibiting the infectivity of each dengue virus serotype which is responsible for different form of dengue fever. The technology further suggests a process for the preparation of this tetravalent protein which involves codon optimizing the sequence, followed by cloning, transforming, and purifying the novel recombinant tetravalent protein. This technology has been tested on mice.

## **Area of Application**

Medical industry

## **Advantages**

- It is a tetravalent vaccine against four different serotypes of dengue virus, i.e., DEN-1, DEN-2, DEN-3, and DEN-4.
- Effective against different types of dengue serotypes.
- It inhibits the infectivity of each dengue virus serotype.
- Cost-effective option in comparison to existing treatments.

## **Development Status**

Laboratory model

## **Transfer Terms**

Technology licensing

## **Contact**

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## **Zero-head hydro turbine**

An Indian entrepreneur has developed the zero-head water turbine which generates electric energy from moving water and simultaneously pumps the water for irrigation or other like purposes. He has designed two variants of turbine and pump models. Initially he had developed a water turbine using bamboo for harnessing the flow energy from the river to pump water to his land way back in 1998–1999. And later with the assistance from GIAN-NE, a voluntary organization working in the field of development of grass root innovations, he has developed another version of the same turbine.

## **Area of Application**

Areas where electric power supply is not available

## **Advantages**

- Novelty lies in its portability and the fact that there is no need for a dam. Economically, it is a better as construction and installation cost is minimal as compared to hydro-electric, steam, or any other power plant.
- The maintenance cost is also quite low compared to the conventional hydroelectric power plant.
- Its efficiency is greater than 50%. It can be set up anywhere be it plains or mountains.
- The turbine has a very high potential in rural areas where electric power supply is not available.

## **Environmental Aspects**

Energy efficiency

## **Development Status**

Commercial prototype

## **Legal Protection**

Patent

## **Transfer Terms**

Consultancy

## **Contact**

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## **Dehydrated fruits by freeze-drying technique**

Thai government organization offers technology for fruit dehydration by freeze-drying technique. Freeze-drying is a process in which water in the sample is frozen at very low temperature

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(between  $-20^{\circ}\text{C}$  and  $-40^{\circ}\text{C}$ ) and then sublimed under vacuum and low temperature (below  $-50^{\circ}\text{C}$ ). This technique was applied to produce various kinds of dehydrated fruits, namely jack fruit, rambutan, lychee, longan, and durian.

To stop the enzymatic reaction, the fruits are initially dripped in the solution of 0.1–0.2% sodium metabisulphite and 0.1% citric acid for 30 minutes. Some types of fruits may also require to go through a blanching process. Then fruits are dried in a freeze dryer under appropriate conditions, i.e., temperature, pressure, and time. Final products produced by this technique are porous and light with reminiscent flavor. They have appearance similar to fresh fruits, especially after reconstitution.

## **Area of Application**

Dehydration of various types of fruits. In addition to the fruits listed above, the technique can be applied to other fruits as well by applying specific conditions to different fruits.

## **Advantages**

The advantage of freeze-drying technique compared to other drying techniques are: good physical appearance; chemical stability; biological activity; and product recovery and reproducibility

## **Development Status**

Commercial prototype

## **Transfer Terms**

Consultancy

## **Contact**

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## **Kitozan biofertilizer**

We are 5 years' experience to produce Kitozan which we helped people to save environment and produce organic fruits and vegetable to feed people. which low cost and fast result. We had more than 3 million user in Thailand.

## **Area of Application**

Biotechnology

## **Advantages**

- It can be used with any chemical and fertilizer.
- It can mix with water and feed for animal.
- It can change bad soil to be good soil also.

## **Environmental Aspects**

- Cleaner production
- Waste utilization
- Energy efficiency
- Systems integration

## **Development Status**

Fully commercialized

## **Legal Protection**

- Trade Mark
- Copy right

## **Transfer Terms**

Turnkey

## **Target Countries**

Worldwide

## **Contact**

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## **Medicines Patent Pool**

The Medicines Patent Pool (MPP) is a United Nations-backed public health organization working to increase access to, and facilitate the development of, life-saving medicines for low- and middle-income countries. Through its innovative business model, MPP partners with civil society, governments, international organizations, industry, patient groups and other stakeholders, to prioritize and license needed medicines and pool intellectual property to encourage generic manufacture and the development of new formulations.

MPP's mandate is to accelerate access to affordable quality treatments for people living with HIV, hepatitis C and tuberculosis, as well as HIV-associated co-morbidities. Since 2018, MPP has expanded its mandate to other patented essential medicines on the World Health Organization (WHO)'s Model List of Essential Medicines (EML) as well as medicines with strong potential for future inclusion on the EML.

For more information, access:

<https://medicinespatentpool.org/>