

Awardees of DST-Lockheed Martin India Innovation Growth Programme 2009

Technology No. 443
Technology Name Complete Recycling of Beverage Cartons
Innovator Name Mr Tushar Shah
Technology Description:

The technology, Complete Recycling of Beverage Cartons, is an innovation, which recycles 100% of the materials used in aseptic beverage cartons: paper, polyethylene (plastic), and aluminum. The high quality paper is converted to pulp and used as input for various paper products. The remaining polyethylene and aluminum is heated and pressed into durable roofing sheets. A part of the polyethylene and aluminum laminate is also used in a catalytic thermolysis process to reverse the polymers into liquid hydrocarbon fuels that can be further converted into bunker oil or diesel. The aluminum recovered from this process can be further converted onto poly-aluminum chloride for water treatment applications or for use in paints or fireworks. The significance of the technology is that it has conquered the recycling of a challenging multiple product laminate, and is making useful products out of post-consumer waste.

Technology No. 535
Technology Name Latent Metonymical Analysis and Indexing (LMai)
Innovator Name Mr Syed Yasin
Technology Description:

The technology, LMAI, is a software tool that can be used to help large-scale text search engines produce dramatically better results on searches. The tool is not a search engine itself, but an algorithm to supplement existing search engines. The tool is a form of technology called Latent Semantic Indexing (LSI) which is a new, but heavily researched software technology. This technology, by providing contextually related words, will significantly improve the search result accuracy of search engines on these less common words. The technology has been fully developed and tested in conjunction with web search engines like Google, and enterprise solutions like IBM's OmniFind engine. In fact, the inventors have completed an extensive case study of how their solution can improve the results of OmniFind. The inventors have applied for a PCT patent on their invention.

Technology No. 563
Technology Name Cost effective technology for the mass production of Bacillus thuringiensis (Bt) biopesticide
Innovator Name Dr M. Mohan
Technology Description:

The technology, Cost Effective Production of Bacilusthuringiensis (Bt) Biopesticide, produces insecticidal spore-crystal proteins from Bacillus thuringiensis(Bt) bacterium. These spore-crystal proteins are toxic to insects, which primarily include caterpillars of the Lepidoptera order. These insects affect many vegetable, cotton, rice, oil seeds, pulses and other plants.

Bt products are found to be safe for use in the environment and with mammals. The EPA (environmental protection agency) has not found any human health hazards related to using Bt. In fact the EPA has found Bt safe enough that it has exempted Bt from food residue tolerances, groundwater restrictions, endangered species labeling and special review requirements. Bt is often used near lakes, rivers and dwellings, and has no known effect on wildlife such as mammals, birds, and fish.

Technology No. 584
Technology Name ECM Analog Technology
Innovator Name Dr Aroop Kumar Dutta
Technology Description:

The technology, ECM Analog Technology, is a cell-interactive biomaterial for three dimensional cell cultures in a natural tissue-like condition to create artificial living tissues/organs of human and animal origin. ECM Analog biomaterial technology offers complete customization of biological (cell interactivity) and engineered properties simultaneously for the manufacturing process. This technology is a collection of methods used to create a 3D scaffold or a cell-scaffold construct which includes a gel-like substance, providing the structural support needed as an environment for 3D cell growth. This level of structure is not needed for 2D or "monolayer" cell growth. It can be used for rapid prototyping and manufacturing of live tissues for research, diagnostic and therapeutic applications. The innovator holds various trademarks protected in India. Also, there are patent applications pending in India & in the US.

Technology No. 623
Technology Name Interferential Non Invasive Pacer
Innovator Name Mr Narayanan Lakshmanan
Technology Description:

The technology, Interferential Non-Invasive Pacer was designed as an improvement to existing temporary pacers. This technology improves cardiac output, eliminates discomfort that is normally present when using temporary pacing. One of the most important aspects of the invention is that stimulates the myocardium in isolation; hence, it is a novel technique for pacing the heart non-invasively. For IP protection, the inventor has filed a PCT application and an India application.

Technology No. 632
Technology Name Nano coatings on coronary Stent systems
Innovator Name Prof Sundar Manoharan
Technology Description:

The technology, NanoPolymer Coating on Coronary Stent, was developed at the Indian Institute of Technology in Kanpur, India by Dr. Sundar Manoharan and the Sri Ramachandra Medical College in Chennai, India by Dr. T.R. Muralitharan. This technology provides a nano coating of a preferred polymer on coronary stents. The coated stent provides an inert surface for arterial walls to heal and prevents the occurrence of thrombosis (clotting) and restenosis (renarrowing) of the artery. This can provide the patient improved recovery time with minimal use of drugs. This technology is still in a prototype stage that is proceeding to validation. Sample stents have been processed using a pulse electron deposition (PED) method. Minor development is required prior to commencing animal studies at the medical college.

Technology No. 667
Technology Name LAMP based Diagnostics
Innovator Name Dr Shesheer Kumar
Technology Description:

The innovator has the reagents, which are specifically designed based on DNA sequences of several isolates which improve the specificity, but also feels he might have created a new technology platform, differentiated from LAMP, which would be both a key value component of the reagents but also might be the key technology innovation. At a minimum, this technology is a reagent and instrument for measuring molecular diagnostics. It provides cost effective confirmatory molecular tests for infections, cancers and genetic disease in animals, plants and humans. This technology is used in the confirmation of clinical, veterinary and plant diseases by testing presence of specific DNA or RNA pertaining to that specific causative agent. This technology uses low cost devices both for carrying out (reaction) and detection (results). It is a stand alone product but can be utilized with other immuno diagnostics. The innovator has specifically targeted five infections, HCV/HIV/HBV/ Malaria and TB.

Technology No. 689
Technology Name Sensor Array Based Wide Frame Digital Diagnostic X-Ray Imager
Innovator Name Mr Karthikeyan Jawahar
Technology Description:

The technology, a Sensor Array Based Digital X-Ray Imager, is an electronic device with supporting software that converts x-rays directly into digital images. By going digital, costly film and processing chemicals are eliminated and the images can be stored cheaply and indefinitely, and zoomed-in for better diagnosis. The system is a plug-and-play device drastically reducing the time needed for installation and requires 25% lesser radiation. The skill required of the operator is also reduced. A half size prototype has been produced and tested considerably. The inventor has successfully taken over 2000 images of animate and inanimate objects. They are now developing the full size prototype and are finishing the software, which handles the image formatting, file compression and encryption, as well as the graphic user interface. This is expected to be finished by July of 2009.

Technology No. 727
Technology Name E-waste to the best
Innovator Name Mr B K Soni

Technology Description:

The technology is E-Waste to the Best. This technology has two different but related applications. The basis for the E-waste solution is a shredder that was developed as a data destruction solution that can be delivered via a mobile platform. This data disposal shredder can process up to 100 disks in an hour with 100% assurance of data security post processing. The other application of this technology is in the processing of E-Waste. The technology process is a combination of steps that include manual separation of electronics (like a computer) into sub-components, shredding of parts and then automated separation of materials such as metal through magnets and other processes.

Technology No. 737
Technology Name V-One Mobile, Peer-to-Peer Communication Session Initiation In Mobile Devices
Innovator Name Mr Gopi Kumar Bulusu

Technology Description:

The subject technology, V-One Mobile peer-to-peer communication session initiation in mobile devices, is a middleware platform created by **Sankyha Technologies Private Limited** and **Mr. Gopi Bulusu**. The technology was developed with the end-consumers in mind, allowing individuals to create an interface between two specific "smart phone" (Internet capable) handsets allowing for real-time, interactive gaming to occur without the use of a third party hosting site. The software platform creates opportunity for peer-to-peer communication and provides developers the ability to build games specifically for the interfacing platform. Thus, these software platforms are essential for games to be published and downloaded. The U.S. market for mobile game downloads in 2008 totaled \$845 million. While the market for mobile game downloads and associated platforms is an emerging market, new technology entrants like V-One Mobile are faced with an extremely competitive market space with significant barriers to entry where developers are constantly introducing new innovations and the service carriers in the U.S. controlling a majority of the middleware platforms introduced in the United States.

Technology No. 755
Technology Name Heart Sound Analyzer
Innovator Name Dr Goutam Saha

Technology Description:

The technology, the Heart Sound Analyzer, is a device and software package that gives a computer assisted analysis of heart sounds for facilitating diagnosis of heart disorders. The device attaches to a normal stethoscope and to a computer and the patient's signal is displayed on the computer screen in audio and visual format. The device also has a library of audio files of common heart problems to which the physician can compare the patient's signal and help correctly diagnose the problem, if any. The device can also "diagnose" the problem on its own for the physician and will show a "confidence factor" in that recommendation. A prototype has been produced and has been tested in the lab.

Technology No. 788
Technology Name World First water pollution free starch/sago plant
Innovator Name Mr. Natarajan Rayar

Technology Description:

The technology, a Starch Processing Plant, is a new industrial water free process for starch processing operations. The innovator has innovated with the arrangement and sequencing of existing components used in starch processing operations. The result is an industrial starch processing operation which produces dried powder starch without the need for utilizing water for running the operation. This newly developed operation will solve the problem of pollution as it does not use water for grindings. A second benefit is that this new design reduces the power requirements for running the process. The new process requires 1/3 of the input power required by the design of present operations. A demonstration plant has been built which can produce 4.5 tons of starch a day. This plant is operational and successful.

Technology No. 789
Technology Name WiLT
Innovator Name Dr Sondur Lakshmipathi

Technology Description:

The technology is a dual-core radio chip for use in 4G wireless devices, such as cell phones and femtocell products. Femtocells are micro cellular base stations that can be used in the home to allow multiple cellular signals to share one connection. The chip creates the ability to switch back and forth between LTE cellular and WiFi network signals, thereby allowing the consumer to offload cellular traffic to the lower-cost WiFi network. This can reduce cellular costs for both consumers and providers, and can reduce the amount of cellular bandwidth needed as consumers continue to use more data and video-rich applications on their smart phones. It also provides the ability for carriers to migrate to 4G networks in a more controlled and cost-effective way. A provisional patent has been filed in India, and a patent search is planned for the US.

Technology No. 808
Technology Name Bio-Diesel Production by catalysis from Algae
Innovator Name Mr T.Raghavendra Rao

Technology Description:

The technology, Process for Converting Bio-Diesel from Algae is a catalyst process for converting algae to bio-fuel. The process involves pyrolysis and a catalytic reaction. The innovation of this technology is the catalyst developed for the direct conversion of Algae to Bio-Diesel. The catalyst is a heterogeneous catalyst, which is not mixed with the Bio-Oil, whereas in conventional process the catalyst is added to the Bio-Oil. Two unique advancements are the direct conversion of algae to fuel without hydrogenation and the capability of this innovation to feed wet or dry algae directly into the process

Technology No. 830
Technology Name Micro-Wind Turbine with Remote Online Monitoring
Innovator Name Mr. Vinayak D Manmadkar

Technology Description:

Suvarna Urja Wind Power Pvt. Ltd is focused on development of innovative and low cost solutions for harnessing clean renewable energy. It has invented the wind technology of highest performance called as the 'Micro-Wind Turbine with Remote Online Monitoring' for home and business applications. This technology seeks to resolve problem of acute shortage of power in rural/ semi-urban areas. The innovators of the technology are Mr. Vinayak D. Manmadkar and Mr. Parag Kulkarni.

The main features of this Windmill technology are:-

- Energy converter, stand-alone system, which harness clean source of energy – Wind.
- Designed for dual function, that is, Electrical Power System and Direct Electrical Water Pumping System.
- Create a smart local power system, which minimizes load on grid and State Electricity Boards.
- Provided with novel safety and protection systems, and this technology can be scaled to meet the needs of end-users.