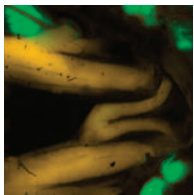


Quarterly Technology Report

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Global Research Project Updates



GE developing fluorescent nerve labeling agent

GE Global Research has been awarded a \$4 million grant from the National Institutes of Health to deliver and optimize a new nerve labeling agent and new optical imaging system.

When completed, the agent and system will help surgeons see delicate nerve endings that are prone to accidental damage during certain procedures, such as prostate surgery. Previously, GE scientists showed that the optical imaging system could be used with a different fluorescent imaging agent to highlight the margins of a tumor, providing surgeons with improved visualization of cancerous tissue. The nerve and tumor margin agents could one day be used together to help surgeons better see tissue that should be removed, while at the same time identifying sensitive areas to avoid, such as nerves.



GE working to reduce the cost of capturing carbon dioxide

GE Global Research has been awarded \$3 million through the DOE's Advanced Research Projects Agency – Energy program, which is supporting revolutionary technologies to capture carbon

dioxide (CO₂) from coal-fired power plants. A GE researcher came across an exciting discovery as part of an earlier DOE-funded project: a certain liquid reacts with CO₂ and turns into a solid powder. The CO₂ in the powder can be more easily separated from the plant's flue gases than gaseous carbon dioxide, which could lead to a much less expensive way to capture CO₂ from coal-fired power plants.



Advanced flight management with FAA

GE Aviation received an award from the Federal Aviation Administration as part of the Continuous Lower Energy, Emission and Noise (CLEEN) program. The program includes a five-year shared investment of up to \$66 million, focused on

developing technologies to meet the 2015 NextGen environmental goals.

GE Global Research is dedicated to developing an advanced flight and air traffic management system that will result in less fuel, emissions, and noise—and less idle runway time for aviation consumers. GE is also developing a combustor for its new engine core that will offer 16% better fuel efficiency than the best engines in the fleet today, and resolve noise challenges in the next generation open rotor or unducted fan engine.



GE to study impact of high solar energy penetration on the grid

GE, along with the Arizona Public Service and three additional partners, recently was awarded a \$3.3 million grant from the U.S. Department of Energy to understand how large amounts of solar energy

can best be integrated into today's grid. GE will leverage its expertise in renewable energy, grid integration, and power electronics for residential, commercial, and industrial applications and complete a full report by 2013.

GE, Nissan to drive smart charging for electric vehicles

GE and Nissan signed a three-year Memorandum of Understanding to explore new technologies that are needed to build a reliable, dynamic, smart-charging infrastructure.

GE and Nissan have outlined two key areas for potential collaborations. The first relates to the integration of electric vehicles with homes and buildings. The second focuses on electric vehicle charging dynamics with the larger electric grid.



DARPA CyberGenome project

GE Global Research was recently awarded a four-year, \$5 million DARPA award for a Cyber Genetics program. In collaboration with Lockheed Martin and the University of California Riverside, GE Global Research is developing a cyber-security system for the detection and diagnosis of irregularities or foreign code in a designated cyberspace.

The program will identify if these irregularities are malicious or benign, and where they came from. This will enable an assessment of the risk of the cyber-attack and determine the appropriate response in order to prepare for the protection of critical assets, such as power plants, aircraft, and smart grid infrastructure.

GE, U.S. Army join forces to assist returning soldiers

GE scientists are conducting a two-year research study at Fort Gordon in Augusta, Georgia to assess soldiers diagnosed with traumatic brain injury and post-traumatic stress disorder. This project will use GE Home Health technologies to help identify symptoms, improve understanding and medical treatments of U.S. veterans. The project was established through a \$2.7 million Congressional initiative awarded and managed by the Department of Defense's Telemedicine and Advanced Technology Research Center.

Featured Technologist

Cristina Tan Hehir, Biochemist, Biosciences Organization



Cristina is part of a multidisciplinary team working on technologies to improve the quality of cancer diagnosis and treatments. Cristina has been a key component to GE's project on nerve labeling agents, which recently was awarded an additional NIH funding grant for further development.

"More than 40 million surgeries are performed in the U.S. each year and unfortunately, despite the skill of a surgeon, there are instances when nerves can be inadvertently damaged during surgery, leaving side effects for years to come," said Cristina.

Cristina and her colleagues are working to provide doctors with surgical guidance safely in real-time.

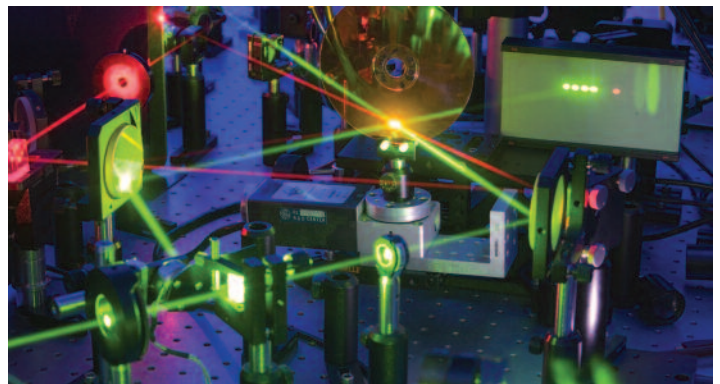
"I believe that this incredible technology will one day make it possible for surgeons to better visualize parts of the anatomy, and improve patient outcomes while enhancing surgical efficiency."

Featured Lab

The Laser & Metrology Systems Laboratory

Over the years, GE has pioneered the use of lasers in manufacturing, ranging from laser hole drilling in aircraft blades to the first use of lasers for surface treatment of blades. The Laser & Metrology Systems Lab continues to drive advancements in manufacturing, metrology, and industrial services. In recent years, GE has developed new applications of the laser that include the measurement of precision parts in production applications, the repair of power generation parts, and the processing of solar panel materials.

2010 marks the 50th anniversary of the invention of the laser. Read more about GE's past, present, and future in laser technology by visiting the "Laser Diode-logues" series on www.edisonsdesk.com.



Did You Know?



The pallophotophone, or "shaking light sound," was a machine invented by GE in 1922 in an early attempt to record audio on film. One of GE's engineers, Russ DeMuth, has spent the past two years on a volunteer project with the

Schenectady Museum in Schenectady, NY, to reinvent the machine and restore historic, long-forgotten audio recordings.

Using parts gathered from his garage and online auctions, Russ was able to bring the 80-year-old recordings to life, and with them, never-before-heard insights to life in the 1920s. Russ and the Schenectady Museum are now in conversation with the National Archives to use this one-of-a-kind pallophotophone to unlock the Archives' collection of never-before-heard 1900s audio films.

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