Science & Technology News from Japan, October 2012

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Message from the Science & Technology Office Tokyo

Having started as Science & Technology Counselor at the Embassy of Switzerland in September of this year, I would like to take this opportunity to thank my predecessor, Dr. Felix Moesner who moved westwards to become the Director of Swissnex Boston. It is not easy to continue in his footsteps and at his pace, but Felix did everything in his power to make my start in Tokyo as easy and efficient as possible. I was also very lucky to find a highly motivated and professional team at the Science & Technology Office Tokyo, as well as a very welcoming and supportive environment at the Embassy of Switzerland. Thank you, Felix, and all the best for your personal and professional future in Boston!

I am happy to receive comments and suggestions by email (matthias.frey@eda.admin.ch) and am open to connect via LinkedIn and XING. I am looking forward to fruitful collaborations, interesting projects, and many benefits for the Swiss STI environment.

With best regards/ douzo yoroshiku onegai itashimasu!
Matthias Frey

Japanese Scientist Awarded With 2012 Nobel Prize In Physiology, Medicine

(October 09, 2012)

The Nobel Assembly at Karolinska Institute decided to award the 2012 Nobel Prize in physiology or medicine jointly to Shinya Yamanaka and John Gurdon for the discovery that mature cells can be reprogrammed to become pluripotent. The organization says the Nobel Prize recognized the two scientists who discovered that mature, specialized cells can be reprogrammed to become immature cells capable of developing into all tissues of the body. It also mentioned that their findings have revolutionized understanding of how cells and organisms develop and thus created new opportunities for studying disease and for developing methods for diagnosis and therapy by reprogramming human cells. Yamanaka is currently a professor at Kyoto University and affiliated with the Gladstone Institute in San Francisco.

New Student Exchange Agreement Between University Of Lucerne And Toyo University

(October 16, 2012)

The University of Lucerne and Toyo University in Tokyo concluded a new student exchange agreement for the Faculty of Culture and Social Sciences to enhance the relationship between the two universities. The agreement will support students who wish to study for a semester or two at the partner institution. Located in central Tokyo, Toyo University is one of the most prestigious universities in the disciplines of humanities and social sciences, which fit well with the academic profile of the University of Lucerne. A university-level Memorandum of Understanding has been signed by the two partners in January. This year marks the 125th anniversary of Toyo University.

1. Science and Technology Policy in Japan

Environment Tax Introduced

(October 01, 2012)

Japan introduced an environment tax to help rein in the use of fossil fuel and combat global warming. The government has estimated that the tax burden for each household will increase by about 1,200 yen in 2016. The introduction of the tax, which will be imposed on fossil fuels, including crude oil and natural gas, is in line with the government's policy of aiming to cut emissions by 25% from 1990 levels by 2020. However, the government's goal was adopted before the nuclear disaster in Fukushima. Japan's biggest business lobby, Keidanren (Japan Business Federation), is still opposed to the introduction of the tax, calling on the government to freeze its plan to further increase the levy in April 2014.

New Science Minister Questions New Energy Strategy

(October 01, 2012)

New science minister Makiko Tanaka, known for her outspokenness, questioned Japan's new energy strategy that aims to phase out nuclear power generation by the 2030's without terminating a long-standing policy to recycle spent fuel. "It is very contradictory," Tanaka told reporters, criticizing the controversial strategy despite becoming a member of the Cabinet. Continuing the spent fuel policy is seen as reflecting the government's consideration of the repercussions on local governments that host related facilities and on the United States, which has close ties with Japan over nuclear businesses.

Government Support For Stem Cells

(October 09, 2012)

The government plans to draw up measures to spur early application of induced pluripotent stem cells, or iPS cells, after Kyoto University professor Shinya Yamanaka was named the winner of the 2012 Nobel Prize for medicine. The Science Ministry plans to extend financial assistance to research institutes such as the Center for iPS Cell Research and Application at Kyoto University, where Yamanaka serves as director. The Trade Ministry, for its part, plans to help develop the equipment used to cultivate iPS cells and evaluate the quality of such cells. The Health Ministry, meanwhile, is drawing up plans for the use of regenerative medicine technology. The ministry will formulate its policy on the production of iPS cells for use in humans by March.

Subsidies For Nobel Prize Laboratory To Be Extended By 10 Years

(October 10, 2012)

The Ministry of Education is moving to fund a decade of research on practical applications for induced pluripotent stem cells. Yamanaka shared this year's Nobel Prize in physiology or medicine for discovering how to reprogram adult cells into stem cells capable of developing into any type of body tissue. He heads Kyoto University's Center for iPS Cell Research and Application (CiRA), one of four institutions participating in a five-year nationally supported project on regenerative medicine. CiRA, the University of Tokyo, Keio University and Riken have received about JPY 10 billion in subsidies for the effort, which is set to end in 2012. The ministry has decided to extend the project to fiscal 2022 and plans to seek JPY 2-3 billion for subsidies each year.

Japanese & Swiss Companies Collaborate To Detect Water Leaks

(October 23, 2012)

NEC Corp., in partnership with a Swiss firm and a British university, will draw on its information technology expertise to develop a cheaper way to detect leaks in water pipes. The Japanese company will partner with Gutermann AG, a global leader in leak detection. The Swiss firm can spot water leaks using vibration sensors attached to underground pipes. The partners will work together on improving the performance of the sensors, lowering costs and developing comprehensive water-loss prevention services. NEC's mass-production technology is expected to cut the price of the sensors by more than half. Its wireless communications systems will be used to collect vibration data from the sensors continuously. The two firms hope to begin offering services by next spring.

2. Education

Language Universities Branching Out

(October 01, 2012)

Language universities are creating new departments to provide comprehensive, interdisciplinary educational programs for students. Under pressure by the universities who are working hard to foster more internationally minded students, simply teaching foreign languages is not enough to help the language specialists stand apart. In response to this trend, language universities are now broadening their focus. This spring, the Tokyo University of Foreign Studies split the faculty into two, setting up a School of Language and Culture Studies and a School of International and Area Studies. Kansai Gaidai University in Osaka Prefecture, has adopted a multidisciplinary approach at its College of International Professional Development that was created in April of last year. The new department teaches more than half the required courses exclusively in English.

Education At University of Tokyo In English

(October 05, 2012)

A total of 515 undergraduate and postgraduate students, including 374 foreigners, attended an entrance ceremony at the University of Tokyo this month. The fresh batch of students included 27 participants in PEAK (Programs in English at Komaba), which the university started offering this autumn. The program, with classes given in English, mainly targets foreign students. Students who have received their education in languages other than Japanese for at least 10 out of 12 years through high school are eligible to apply to the PEAK program, which is offered to about 30 people. Through a scholarship program, some students in the program can be virtually exempt from tuition. A total of 238 students applied for the screening.

Tourism Introduced In Japanese Universities

(October 11, 2012)

Universities in Japan are paying more attention to tourism as a source of jobs for their students these days, with institutions setting up faculties of tourism, while those that already offer such studies provide a broader range of practical training. In early September, Christopher Rees, who heads the Australian Consulate in Osaka, spoke to Japanese university officials at the Australian Embassy about the types of people needed to create a successful tourism industry. The lecture was sponsored by Tamagawa University, which will set up a College of Tourism and Hospitality next April. At Tokai University's Kumamoto Campus in Kyushu, preparations are under way to create a Department of Tourism Management for the academic year starting in the spring.

Fall Enrollment For Talented Students

(October 19, 2012)

Chiba University will introduce fall enrollment for high academic achievers who have yet to finish high school. The system allows students who are at least 17 years old to enter the university if they demonstrate outstanding ability in certain subjects. Chiba University already accepts for April enrollment students who have finished at least two years of high school. The change will allow third-year high school students to enter the university starting with the October term. Beginning the academic year in the autumn will also allow students with high academic standing to graduate in three and a half years. In 1998, Chiba University became the first in Japan to introduce the early-entrance system, having enrolled about 70 students so far.

University Entrance Examination Reform

(October 22, 2012)

Japanese universities are working on reforms to their admissions systems, seeking to overhaul the decades-old, regimented entrance exams. Universities and policy-makers are increasingly realizing that the traditional exam system is not the best way to pick out and cultivate young minds. There is strong sentiment among educators that this system, due to its focus on quick and simple screening, does not accurately assess the academic potential of applicants. The government is aware of this, and is starting to make moves to change the system, such as by placing greater importance on student motivation and potential. In September, the Education Ministry's Central Council for Education began meetings to work on recommendations for admissions reform.

Huge Financial Boost From Nobel Prize

(October 24, 2012)

Kyoto University professor Shinya Yamanaka's recent acceptance of the Nobel Prize has given a significant boost to the prestigious institution's fund-raising efforts for science research. Long before winning the award, Yamanaka has already been well known for his iPS cell research, but he nevertheless had to constantly solicit financial support for

his efforts from various circles. But winning the Nobel Prize changed all that, and Yamanaka now says he will probably be able to devote most of his time and energy to research. The Ministry of Science and Technology has decided to provide a total of 27 billion yen in subsidies over 10 years to support iPS cell research in Japan, with most of the money going to Kyoto University.

University Of Tokyo To Keep Spring Graduation Despite Switch To Fall Enrollment

(October 26, 2012)

The University of Tokyo is considering a new academic schedule in which students who start under the recent change to an autumn-based academic year will still have graduations in the spring. The new schedule would apply to students enrolling from 2014, who would then graduate in three-and-a-half years. The new system, which the university will adopt to fully shift the beginning of the academic year from spring to fall, is consistent with systems generally implemented by universities overseas. This would ensure that University of Tokyo students will have no problems in terms of career starts, which in Japan are concentrated on a spring-based academic year. The university plans to introduce two programs that incoming students would participate in before classes start in September.

3. Life Science / Health Care

Low-Priced Digital Thermometer

(October 01, 2012)

Terumo Corp. is rolling out a lower-priced digital thermometer that provides an accurate reading in about one minute. Predictive thermometers gauge the rate of increase in temperature, enabling faster readings. They typically sell for around 2,000 yen. Thermometers that measure actual body temperature take about 10 minutes for a reading, and are sold for around 1,000 yen. They account for about 40% of the more than 10 billion yen thermometer market. Terumo is pricing its new predictive thermometer at 1,580 yen to encourage users to switch from conventional devices.

Pioneering Information Technology In Medical Institutions

(October 01, 2012)

The government estimates Japan's medical institutions could save 3 trillion yen a year by making better use of electronic records, remote medical services and other types of information and communications technology (ICT). Imizu Municipal Hospital in Toyama Prefecture is a pioneer in this area. In October 2010, it rolled out an Internet-based remote medical service. Each morning, nurses at the hospital check in with stay-at-home patients using high-definition videophones. Sensors mounted on the patients' beds automatically measure patients' heart rates and body temperatures and send the data to the hospital. If there are any abnormal readings, a doctor contacts the patient using the videophone.

New Gastrointestinal Endoscope

(October 03, 2012)

Olympus Corp. announced a new gastrointestinal endoscope system for the domestic market, its first update of the product in a decade. In addition to easily focusing even in the narrow confines of the stomach or intestines, the new endoscope is easy to operate in the numerous intestinal bends. It provides increased precision and sharper images. Gastrointestinal endoscopes are one of Olympus' core products. Olympus controls 70% of the global market in this field, which accounts for more than 20% of group sales. A joint venture with Sony Corp., will develop surgical endoscopes. Olympus President Hiroyuki Sasa says the plan is to use Sony's 4K high-precision display and imaging systems and 3-D technology to create distinctive medical equipment.

Ova Produced From Stem Cells

(October 05, 2012)

Japanese researchers have succeeded in generating ova from artificially derived multipurpose stem cells and using the ova to produce mice offspring through in vitro fertilization for the first time in the world. The achievement by the team of researchers led by Kyoto University professor Michinori Saito is expected to contribute to the study of infertility treatment and the elucidation of biogenetic mechanisms. Saito's group reported last year that it had successfully generated sperm from induced pluripotent stem cells. With the team having successfully created ova, the researchers could in theory produce new life through in vitro fertilization.

Devices For Growing iPS Cells

(October 06, 2012)

Nikon Corp. and Shimadzu Corp. have separately developed equipment that could advance the use of induced pluripotent stem cells in regenerative medicine. While iPS cells hold a great promise for regenerative medicine applications, quality control still presents an obstacle because inferior cells can turn cancerous. Cells are now selected and cultured manually, driving up the cost of treatment to nearly JPY 10 million per patient. Working with the government-backed National Institute of Biomedical Innovation and others, Nikon has developed image-processing technology for evaluating the quality of iPS cells. Shimadzu has collaborated with Osaka University to develop equipment for culturing eye cells created from iPS cells. The device eliminates low-quality cells, leaving only cells fit for use in treatment.

Tsushima Felines Affected By Alzheimer's

(October 06, 2012)

The brains of Tsushima leopard cats contain protein deposits similar to those found in humans afflicted with Alzheimer's disease, according to a study published in the U.S. journal PloS ONE. The finding in the wild cats, which are found on Tsushima Island off Nagasaki Prefecture, is the first time such deposits have been confirmed among animals, according to a team led by James Chambers, an assistant professor of veterinary pathology at the University of Tokyo. The team examined the carcasses of Tsushima leopard cats, an endangered species, that had died of illnesses and other causes. Of the 14 specimens studied, the brains of five showed an accumulation of the unusual protein, according to the study.

New Organism Found In Sea

(October 08, 2012)

Japanese researchers have discovered a previously unknown class of microorganism in the seafloor off Tokyo's Izu Islands that may help shed light on the evolution from simple to complex life forms on Earth. It has been conventionally believed that there are two kinds of organisms: prokaryotes, such as bacteria, whose cells have no nucleus and eukaryotes, living things such as plants and animals whose cells have a nucleus. The newly found organism is considered to be an intermediate between the two. The team that found it, led by Associate Prof. Masashi Yamaguchi of Chiba University's Medical Mycology Research Center, named the unique organism "parakaryote." If the microorganism is confirmed to be a new class of living things, the discovery may provide clues to the mystery of how organisms evolved, the team said.

Cloud Back-Up For Medical Records

(October 09, 2012)

Medical and nursing facilities, which lost patients' medical records in the Great East Japan Earthquake and tsunami last year, are making efforts to protect future data by storing it on the Internet. Because of the loss of the medical records, hospitals and nursing facilities in the disaster-hit regions are trying to store medical records on inland servers so doctors and caregivers can access the records even in the event of a disaster. The storage system utilizes cloud computing. The system has already been put to practical use in disaster-hit areas, and the central government has supported forming cloud computer networks around the country. However, some experts are concerned about personal information leaking.

Start-Ups Tapping iPS Cells In Drug Research

(October 09, 2012)

Induced pluripotent stem cells hold promise in regenerative medicine because they can be grown into various types of cells. But they offer as much potential to revolutionize the way pharmaceutical companies develop their products. Drugmakers usually spend over a decade or more to develop a single treatment, all while running the risk of enormous losses if side effects are found. Using iPS cells to narrow down prospective substances at an early stage is expected to drastically reduce development costs. Some firms, such as Takara Bio Inc. or ReproCell Inc. are already engaged in the business of creating iPS cells for such purposes.

iPS Cell Bank Advertised By Nobel Prize Winner

(October 09, 2012)

By creating an induced pluripotent stem cell bank, the majority of Japan's population will be able to receive rejection-free tissue-engineering treatment in 10 years, according to Nobel Prize winner Shinya Yamanaka. He expressed a strong resolve to press ahead with work to bring iPS cells into practical use, saying he was awarded the prize partly because of expectations of future development. Patients have no problems when transplanted with iPS cells or tissue created from their own cells. But when other people's cells are used in an emergency, rejections occur if the

types of white blood cells do not match. Yamanaka stressed that it is important to create a stock of iPS cells for various types of white blood cells.

Ethics Expert For iPS Center

(October 10, 2012)

Nobel laureate Shinya Yamanaka plans to hire an expert on research ethics for the institute he heads to ensure that the work on his ground-breaking induced pluripotent stem (iPS) cells does not stray outside ethical boundaries. Yamanaka developed the cells that can be transformed into all kinds of cells, a finding that has raised hopes for growing replacement tissue for people crippled by injury or disease. "Society as a whole needs to prepare ethical theories. Otherwise, science and technology will move ahead of ethical aspects," Yamanaka said.

iPS Cells Already Used To Develop New Medicines

(October 10, 2012)

Regenerative medicine is expected to advance significantly thanks to induced pluripotent stem cells (iPS cells) because they can be transformed into the cells of many organs and tissues. A project team led by Masayo Takahashi, of the Laboratory for Retinal Regeneration at the Riken national research institute, plans to study the transplantation of retinal pigment epithelial cells made from iPS cells. The study, which may begin as early as next year, is aimed at patients suffering from age-related maculopathy, the weakening of the eyesight caused by the deterioration of retinal cells. Furthermore, Prof. Hideyuki Okano at Keio University found that marmosets paralyzed in all four limbs were able to walk about six weeks after he transplanted nerve cells created from iPS cells and plans to start clinical trials in the next years.

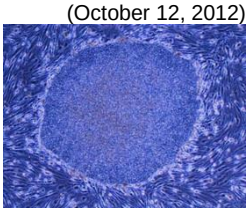
Long-Term Safety Studies For iPS Cells

(October 11, 2012)

The health ministry plans to store induced pluripotent stem (iPS) cells for more than 10 years to investigate possible problems deriving from regenerative medicine. The ministry was prompted to consider safer clinical studies of regenerative medicine, as some scientists have pointed out that transplanting such cells could lead to the formation of cancer due to abnormal genetic activity. The ministry plans to store all iPS cells and other cells used in regenerative medicine to investigate the cause of problems and develop methods to deal with these issues. Besides storing iPS cells, the ministry will keep cells made from iPS cells, such as retina and nerve cells, as well as embryonic cells and stem cells extracted from body fat.

Human Trial For iPS Cells

(October 12, 2012)



Scientists at the Riken Center for Developmental Biology in Kobe plan to use induced pluripotent stem (iPS) cells in a human trial using patients with macular degeneration, a disease in which the retina becomes damaged and results in loss of vision. Companies including Pfizer Inc. are already planning trials of stem cells derived from human embryos, but Riken will be the first to use a technology that mimics the power of embryonic cells while avoiding the ethical controversy that accompanies them. Researchers led by Masayo Takahashi at the Riken center plan to apply Yamanaka's technique to patients' skin cells in the human trial, turning them into stem cells before cultivating them to become a certain type of retinal cell.

Nobel Prize To Drive iPS Cell Patent Licensing

(October 13, 2012)

The company that manages stem cell-related patents on inventions by Nobel Prize winner Shinya Yamanaka and his team at Kyoto University aims to have them licensed to 100 firms in three years' time, up from about 60 now. Located in Kyoto, iPS Academia Japan manages 220 patents, 80% of which are from Kyoto University. The remaining 20% are from other universities and research institutions. Its licensing revenue totaled more than 100 million yen last year. Kyoto University has registered nearly 30 Japanese and foreign patents stemming from Yamanaka's work and has about 90 patent applications pending, nearly half of which are for his inventions. Most of the university's iPS-cell-related patents cover basic aspects, such as how to create the cells.

Needle-Free Vaccine Technology

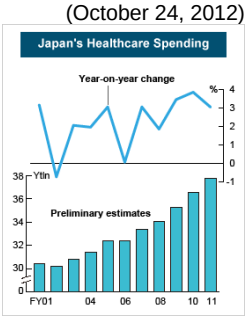
(October 20, 2012)

Researchers at Kyushu University have developed a way to administer influenza vaccinations without needles. Under the new method, the vaccine is absorbed through the skin via an oil containing numerous vaccine-filled microcapsules. The research team, headed by Professor Masahiro Goto, has tested the method successfully on mice and plans to conduct clinical trials on humans as early as 2017 in partnership with the university's faculty of medicine. The

researchers believe the new method can also be used to deliver other types of vaccines as well as to administer insulin for diabetes patients. The Ministry of Science and Technology has helped fund the project.

Costly Technologies Driving Up Medical Expenses

(October 24, 2012)



Medical expenses in Japan have ballooned in recent years, up 3.1% on the year, according to preliminary government estimates. National medical expenses represent the total financial burden born by both patients and various health insurance systems. Although it is plausible for medical expenses to keep rising due to the rapid aging of the population, the biggest factor driving up the figure is increased use of expensive drugs and medical services using cutting-edge technologies. The latest data for fiscal 2011 shows technological sophistication as being the biggest contributor to the rise in medical expenses, pushing the figure up by 2.0 percentage points, followed by the aging of society, at slightly less than 1.5 points. The population decline shaved 0.2 point off the total.

Small Firms Build Deep-Sea Explorer

(October 25, 2012)

A group of small factories in Tokyo is developing a deep-sea survey device to film creatures and collect samples from the seafloor at depths of 8,000 meters in the Japan Trench. The vehicle will contain a video camera, LED lighting equipment and other devices in a glass ball that can withstand deep-sea pressures. After filming creatures and collecting samples from the deep-sea bed, the ball will return to the surface after jettisoning its weight. The group plans to begin exploration in the Japan Trench off the Boso Peninsula of Chiba Prefecture next year. If the exploration proves successful, the companies plan to produce such balls for research institutes and businesses interested in seafloor research.

First iPS Cell Clinical Trials

(October 27, 2012)

The Riken research institute is on track to conduct the first-ever clinical trials on a method of regenerative medicine therapy employing induced pluripotent stem cells, or iPS cells. Masayo Takahashi, project leader of Riken's Laboratory for Retinal Regeneration, is developing a way to use iPS cells to treat macular degeneration, a retinal disease that can lead to severe vision impairment and even blindness. Clinical trials for safety and efficacy could begin in fiscal 2013 if all goes according to plan. Skin cells from the patient will be used to make iPS cells that will then be induced to develop into retinal cells. After a sheet of retinal cells has been cultured, the tissue will replace the damaged retina to restore vision. The procedure will be reviewed by the Riken ethics committee. In her capacity as a doctor, Takahashi is also requesting a review by the surgical ethics committee of the Foundation for Biomedical Research and Innovation in Kobe. This committee will hold a session on Nov. 21 and is expected to review the iPS cell clinical trials at that time. Once both ethics panels approve the clinical trials, the procedure will be reviewed by the Health Ministry. An estimated 700,000 people in Japan alone suffer from age-related macular degeneration.

4. Nano / Micro Technology / Material Science

Japan To Propose International Durability Standard

(October 04, 2012)

The Ministry of Economy, Trade and Industry will team with materials producers to propose an international standard for measuring technology for joining plastics and metals. The partners hope that creating an objective quality assessment system will help promote domestic products abroad. Plastic parts manufacturer Taisei Plas Co., Tosoh Corp., Toray Industries Inc. and Mitsui Chemicals Inc., will submit the proposal later this fiscal year to the International Organization for Standardization. The proposal will cover techniques for evaluating the strength and endurance of plastics and metals when bonded.

Water Purification Technologies

(October 09, 2012)

Taiheiyo Cement Corp. is getting into the water purification business with products it has developed for efficiently removing calcium and phosphorus from wastewater. The company has developed an ion exchange film for removing calcium that otherwise could clog wastewater pipes. The typical way of dealing with calcium is to use chemicals to prevent it from adhering to pipes, but this is expensive because it requires constant use. The new product can be

used for 3-4 years, resulting in drastically lower costs, the company says. In addition, a granular product the company developed can be mixed into wastewater to remove phosphorus, which can then be collected and used in fertilizer.

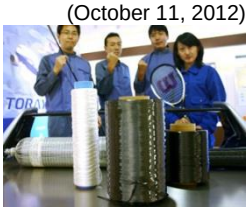
R&D Collaboration For Alternatives To Rare-Earth Magnets

(October 10, 2012)

Japanese companies and others will collaborate to engineer a new motor magnet that does not use rare-earth metals. Ongoing initiatives have concentrated on reducing usage and diversifying suppliers. The focus on motor magnets made without any rare earths suggests that firms are starting to pursue a new stage of development. The research cooperative will include Toyota Motor Corp., Mitsubishi Electric Corp., Daikin Industries Ltd., Denso Corp., Aichi Steel Corp. and NEC Tokin Corp. Advanced motors for hybrid vehicles, air conditioners and other products contain such rare earths as dysprosium and neodymium to lift performance. The collaborative research will focus on ways to create magnets using other metals.

World-Class Material Technology From Japan

(October 11, 2012)



Industrial materials developed in Japan, such as a superconductive substance that makes power transmission much more efficient or carbon fibers that may replace steel, are set to transform industries and the lives of people around the world. Sumitomo Electric Industries Ltd. is one such pioneer. It has developed an alloy that achieves zero electrical resistance when cooled below -200°C (high-temperature superconductivity). One project of Sumitomo aims to hook a superconducting cable into the power grid for the first time in Japan. On the other hand, Toray Industries Inc. drew international attention last year when its carbon fiber, which is lighter and stronger than steel, was adopted for use in Boeing Co.'s newest 787 passenger jet.

Development Of New Materials Through Cooperation Between Academia And Industry

(October 12, 2012)

Universities are playing a key role in developing advanced industrial materials in Japan. Magnesium is the most lightweight of all industrial metals, but it loses strength and begins to burn easily at high temperatures. But the magnesium alloy developed by Yoshihito Kawamura, a professor at Kumamoto University, does not begin to burn until about 1,100°C. Pure magnesium turns liquid and begins to burn at less than 650°C. Morinobu Endo, a distinguished professor at Shinshu University, has been working on carbon nanotubes with Nissin Kogyo Co., a Nagano Prefecture-based manufacturer of brake parts. Carbon nanotubes are very lightweight and strong, and Endo has sought to make them more heat- and pressure-resistant by creating a 3-D mesh structure and mixing it with rubber. This is used as a rubber material for highly heat-resistant sealant in oil drilling equipment.

Slime Mold As Model For Next-Generation Semiconductor

(October 12, 2012)

A joint research team from the National Institute of Information and Communications Technology (NICT), government-backed research institute Riken and the University of Tokyo has developed a next-generation semiconductor element. Researchers modeled the new semiconductor on the behavior of slime mold. The new type of semiconductor was designed based on a mechanism through which slime molds process information by manipulating their ameba-like bodies into various shapes. It excels at computations that refine enormous options into one. Consequently, the semiconductor can quickly solve difficult problems such as what route gives the shortest time when visiting multiple destinations.

Safer Platinum Recycling Process

(October 19, 2012)

A research team at the University of Tokyo has developed a technology to efficiently recycle platinum used in catalytic converters and fuel cells. The researchers led by Toru Okabe, a professor at the university, came up with a way to recycle the precious metal that does not require use of highly toxic chemicals, thereby eliminating the need for large waste-liquid processing plants. It also cuts processing time from several hours at present to 15 minutes, Okabe said. Okabe's team is calling on companies to help put the new technology to practical use as soon as possible. The researchers developed a method to remove platinum from scrap, using steam containing an activated metal. The result is a platinum-magnesium alloy which allows for an easier collection.

5. Information & Communications Technology

Wireless Smartphone Speakers

(October 01, 2012)

Sony Corp. will introduce speakers that can function wirelessly using smartphones equipped with near-field communication (NFC) technology. By holding a phone with NFC capability over the speaker, users can play tunes stored on their handsets through the speaker or use it as a speaker phone. The speakers come in two types. One is the size of a tennis ball and weighs 135g. The other has a handle and weighs about 1kg. The lighter model will be priced at about 8,000 yen, while the heavier one will sell for about 10,000 yen.

Bleak Future For Japanese Smartphone Manufacturers

(October 01, 2012)

As U.S. firm Apple Inc. released its new iPhone 5 to fanfare, other foreign electronics manufacturers prepared to unveil new smartphones based on Google Inc.'s Android mobile operating system. Japanese handset makers, however, are struggling to keep up with the fast-moving pace of modern cellphone manufacturing. This year, a lot of Japanese smartphone makers started preparing for the annual release of the latest iPhone by unveiling new models for the summer.

Mobile Phone Carrier Merger

(October 01, 2012)

Softbank Corp., Japan's third-largest mobile phone carrier, will acquire fourth-ranked rival eAccess Ltd. Softbank plans to make eAccess a wholly owned subsidiary through a stock swap and hopes to use eAccess' available bandwidth to cope with sharply rising data traffic amid the rapid spread of smartphones. Softbank's purchase is expected to further intensify competition among industry leader NTT DoCoMo Inc., second-ranked KDDI Corp. and Softbank. Combined sales at Softbank and eAccess in the current fiscal year are expected to total about 3.6 trillion yen, which would top KDDI's sales estimate of 3.58 trillion yen.

Latest Smart-Home Technologies At CEATEC

(October 02. 2012)

The Cutting-Edge IT & Electronics Comprehensive Exhibition (CEATEC) Japan 2012 at Makuhari Messe in Chiba Prefecture, featured a range of advanced electric vehicles and smart-home technologies. Toyota Motor Corp. showcased its latest electric vehicle technologies. Other electronics manufacturers, meanwhile, are using the show to unveil products for smart homes, which manage electricity use. Panasonic Corp., meanwhile, is introducing its AiSEG device, which controls the amount of power used by home appliances. It monitors air conditioners and other appliances so it can control and visualize electricity consumption at home.

New Factory To Produce OEL Panels For Smartphones

(October 02, 2012)

Japan Display Inc. plans to begin mass production of OEL (Organic Electroluminescent) panels for smartphones in 2014, foraying into a segment now dominated by South Korea's Samsung. The company -- created in April through the integration of small- and midsize-display operations of Hitachi Ltd., Toshiba Corp. and Sony Corp. -- will build a new OEL production line next year at its Mobara plant in Chiba Prefecture. Japan Display recently developed an OEL panel offering 326 pixels per inch. The panel arranges the three primary colors of red, green and blue in striped lines, in contrast to the two-color method employed by Samsung.

Supercomputer Envisioned To Accelerate Development Of Regenerative Medicine

(October 05, 2012)

Yoshiki Sasai, group director at the Riken Center, and other researchers are planning to use the Supercomputer K to determine the best method to create organs from these cells. The researchers successfully developed an optic cup, a basic part of the eye, from embryonic stem (ES) cells for the first time in the world. While it takes about six months to transform ES cells into an optic cup, the researchers spent about three years to find how to do this. Plans are under way to use the Supercomputer K to develop new medicines, work out disaster prevention measures and conduct research on cosmic evolution and for other purposes. With the help of the supercomputer it will become possible to create target organs more effectively.

Spin Off Of LCD Business

(October 07, 2012)

Hon Hai Precision Industry Co. has asked Sharp Corp., currently under rehabilitation, to spin off its small and midsize liquid crystal display business into a joint venture between them. In addition to establishing a joint company to produce and market LCD panels. The Taiwanese firm is also demanding the Japanese company to accept board members from Hon Hai. Sharp is in talks with Hon Hai over the former's proposal that the Taiwan firm take a 9.9% stake in the electronics maker. In connection with the proposal, Hon Hai demanded Sharp spin off its LCD business, but the company appears reluctant to agree. Under the circumstances, the direction of the tie-up negotiations between the two firms, key to Sharp's reconstruction is becoming more uncertain.

Carriers To Double Wireless Connection Speeds

(October 07, 2012)

Mobile phone carriers aim to speed up communications for smartphones. New smartphones to be released this winter will be able to accommodate faster transmission speeds. NTT DoCoMo is poised to double communication speeds from 37.5 megabits per second to 75 megabits early next year. Meanwhile, KDDI Corp. and Softbank Corp. recently launched LTE service to coincide with the release of Apple Inc.'s iPhone 5. Softbank is expected to double communication speeds to 75 megabits per second by the end of 2013, while KDDI aims to reach 112.5 megabits sometime between spring and autumn of next year and 150 megabits by the spring of 2014.

Asian Cyberdefense Network

(October 08, 2012)

After a recent spate of international cyber-attacks, many of which are believed to have originated in China, the government plans to promote a cyber-attack defense network with 10 member countries of the Association of Southeast Asian Nations. The move comes amid a series of cyber-attacks against websites of government offices and corporations in many countries. Under the system, the government intends to share information about cyber-attack patterns and technology to defend against the attacks. It also plans to carry out exercises to verify the effectiveness of the system. The 10 countries, including Thailand and Indonesia, agreed to establish the network because many of the recent attacks are believed to have come from China, observers said.

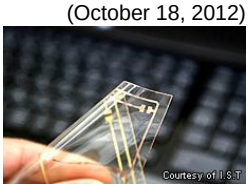
Ecommerce Alliance For NFC Payments

(October 12, 2012)

NTT DoCoMo Inc. announced a new partnership with MasterCard Worldwide that will enable its smartphone users to make contactless electronic payments in other countries starting sometime after next April. With the contactless payment system, a smartphone or other device with an embedded IC chip can be waved over a sensor to make payments at shops or trains stations. The most common device of this kind in Japan is East Japan Railway Co.'s Suica commuter pass. Such devices to date are unavailable to Japanese consumers for use overseas. MasterCard offers the PayPass contactless payment system, which can be used at 500,000 locations in 41 countries and regions, including the U.S., South Korea and Taiwan. The new alliance lets users of certain types of DoCoMo smartphones make payments via PayPass-compatible terminals.

Transparent Circuit Boards

(October 18, 2012)



I.S.T, a maker of various functional materials including toner-fixing resin tubes for printers, has developed a way to formulate polyimide films that are transparent yet retain their excellent heat and chemical resistance. This combination of properties makes these films suitable replacements for the opaque polyimide films used for printed circuits in products like LCD panels and smartphones. Polyimide is normally murky brown, but by modifying the molecular structure I.S.T was able to formulate a transparent version that can withstand temperatures as high as 310°C. Using this material, panel makers could design displays that are clear even around the edges. In another possible application, the material could be used to sandwich transparent electrodes between sheets of glass to make auto glass with a built-in antifogging feature.

Ultrasmall Japanese Parts In New Smartphone

(October 19, 2012)

The many crucial components supplied by Japanese manufacturers for the iPhone 5 highlight how the nation's quality parts have increased their presence in Apple Inc.'s latest smartphone, according to specialists who took apart the handset. LTE (Long Term Evolution) compatibility led to an increase in circuits that take in signals from the antenna, along with microchips for controlling communications. Expanding circuits on a board without using more space or adding more weight requires ultrasmall parts, an area where Japanese companies excel. The number of high-frequency filters from Murata Mfg. Co. and energy-saving power coils from TDK Corp. and Toko Inc. has sharply increased in the iPhone 5, the experts say.

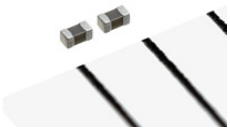
Gadget Makers Challenged By Rise Of Smartphones

(October 20, 2012)

As smartphones take a bigger bite out of demand for video and digital cameras worldwide, embattled Japanese makers of consumer gadgets are looking for opportunities in the medical and industrial equipment markets. Furthermore, Sony Corp. released a video camera that comes without an LCD display or zoom function. Instead, users can play back the images they record and operate the device using their smartphones. On the other hand, JVC Kenwood Corp. is focusing on in-car GPS navigation systems to make up for lost revenue from its video camera business. But here, too, handsets are eating into the business, threatening to further erode the company's revenue. The competitive pressure is driving the company's development of heads-up displays, which projects car navigation images onto the windshield, letting drivers keep their eyes on the road.

Capacitor With 10 Times Increased Capacity

(October 24, 2012)



TDK Corp. announced that it has developed a way to increase charge-holding capacity as much as 10-fold for the tiny multilayer ceramic capacitors used in products like smartphones. The higher-performance capacitors can contribute to the further miniaturization of smartphones. Although TDK can use the technology to boost capacity as much as 10-fold, the company will begin by mass-producing capacitors with double the current standard capacity. To boost the charge-holding capacity of the multilayer device, TDK devised a way to make each layer 60% thinner. As a result, as many as 2.5 times more alternating layers of electrode and insulating materials can be stacked in a given volume of space.

Increased Distance For Writing On Electronic Blackboard

(October 26, 2012)

Panasonic Corp. has developed an electronic blackboard that can be operated and written on with a special pen from a distance of up to 8 meters. The blackboard is available in two sizes, a 103-inch and an 85-inch model. The plasma panel reads the light emitted from the pen. Panasonic improved the panel's light sensing capability by a factor of 100 compared to conventional products. Users will be able to write on the screen or zoom in and out while seated during business meetings, for example.

6. Energy / Environment

Foreign Companies Investing In Japanese Power Market

(October 02, 2012)

Tokyo Electric Power Co. and other major electric power companies are reviewing their procurement practices to cut costs in the aftermath of last year's nuclear disaster. The efficiency push has made life harder for domestic power equipment suppliers. Overseas companies are also making increasing headway into Japan's market for power generation equipment. Last month a coalition of Toshiba Corp. and GE won an order to build natural-gas-fired power generation systems for Chubu Electric Power Co. for an estimated 100 billion yen. Initially, Mitsubishi Heavy Industries Ltd. appeared most likely to win the contract because it was the only Japanese company capable of making a large gas turbine with an output of at least 1 million kilowatts.

Household Storage Batteries For Lease

(October 03, 2012)

Orix Corp. and NEC Corp. will begin leasing large-capacity storage batteries for regular households, a move expected to help spread solar power generation in homes. By storing electricity supplied at night and using it in the daytime, people can cut utility bills because nighttime electricity is cheaper. This could save a family of four 3,000 yen to 7,000 yen a month. Storage batteries have not been widely used in homes because of their high prices. But the new leasing business will likely offer them for a monthly fee of about 5,000 yen to 7,000 yen, based on a 10-year contract.

Japanese Company To Take Part In U.S. Megasolar Project

(October 03, 2012)

Sumitomo Corp. will join one of the world's biggest solar power projects, the construction of a 550MW solar farm in the western U.S. The major trading company will likely make an investment of around 16 billion yen, among the largest in the solar power field by a Japanese firm. The entire project will cost an estimated roughly 180 billion yen. Sumitomo will obtain a 25% stake out of the 50% now held by the General Electric Co. group. The other 50% is owned by major U.S. power utility NextEra Energy Inc. Investments by these businesses will account for roughly one-third of the total project cost. The rest will be funded with subsidies from the U.S. federal and state governments as well as loans from financial institutions.

Power-Saving Pilot Project

(October 04, 2012)

A corporate consortium including Toshiba Corp. and Taisei Corp. will launch a pilot program in Yokohama that offers a financial incentive for cutting electricity use during peak hours. The goal of the project, to begin this month and run through March 2015, is to reduce area power consumption by up to 20% during peak periods. The program will start with the participation of 600 residential units and about 10 office and commercial buildings, with their electricity use monitored by a dedicated centralized system. When high demand is anticipated the following day, for instance, requests for reduced consumption will be sent to them. Household participants will then adjust their thermostat by about 2 degrees. Businesses will tap charged storage batteries or take other actions.

Greenhouse Gas Emissions Likely To Rise In 2012

(October 05, 2012)

Greenhouse gas emissions will decline only 1% in 2012 from 1990 levels, a sharp rise from the 6.4 percent cut marked last year, the Environment Ministry estimates. The difference was caused by the drop in nuclear power generation this year as almost all the nation's nuclear plants remained. Under the Kyoto Protocol, Japan must cut greenhouse emissions by a yearly average of 6 percent from 2008 to 2012 compared to 1990 levels. The nation will likely meet this target, since the ministry estimates the yearly average reduction over the five years will be 8 percent. However, much of these reductions were due to reduced economic activity during the 2008 collapse of the U.S. investment bank Lehman Brothers.

Investigation On The Effect Of LEDs On Rearing Poultry

(October 06, 2012)

The Aichi Agricultural Research Center in Nagakute is investigating the use of LED lights in raising the famous Nagoya Cochin breed of chickens. Some farmers have already begun installing LEDs at their facilities because the energy-efficient lights help reduce electricity bills, but the center also found they can prevent aggressive behavior among chickens. Since the central government instructed manufacturers to cease production and marketing of incandescent bulbs by the end of this year, the research center turned its attention to LEDs, which can also last up to 40 times longer than incandescent bulbs, and in 2010 it began investigating their impact on the growth of Nagoya Cochin chickens bred for consumption.

2MW Solar Farm In Kyushu

(October 06, 2012)

Major sealant producer Nippon Valqua Industries Ltd. will build a megasolar farm at a plant in Fukuoka Prefecture, joining the expanding ranks of businesses operating solar facilities in Kyushu, attracted by the southern region's longer daylight hours. The solar farm will be set up on a roughly 30,000m^2 vacant plot at a subsidiary's plant in the city of Iizuka. Sporting 12,000 or so solar panels, the facility is expected to have a generation capacity of around 1,880kW -- enough to power some 550 households. Nippon Valqua aims to sell all output from the megasolar farm to Kyushu Electric Power Co., starting as early as this coming March.

Predicting Ecological Impact Of Construction Projects

(October 06, 2012)

Businesses are strengthening services to support biodiversity initiatives, especially as nongovernment entities and consumers ratchet up calls for environmental conservation. Taisei Corp. will soon launch a streamlined service for assessing the environmental impact of construction projects. The general contractor has developed an evaluation system that uses a database, including topographical maps, satellite images and wildlife distribution maps, to gain a better understanding of the ecosystems surrounding a construction site. Such studies typically take about a year to complete. But Taisei has shortened the duration to around a week, while reducing fees for the service to around one-fifth.

TEPCO To Import Shale Gas From The U.S.

(October 07, 2012)

Tokyo Electric Power Co. is in talks with U.S. energy companies to import affordable shale gas amid rising fuel costs for thermal power generation. If the negotiations go well, the utility could curb fuel costs by procuring U.S. shale gas for about half the price it currently pays for liquefied natural gas. As a result, it may not need to raise electricity rates further. According to sources, TEPCO aims to procure 2.4 million tons of shale gas a year from the United States, or about 10% of the liquefied natural gas it imported last year. The company is negotiating with firms such as Cheniere Energy Inc. and Sempra Energy, the sources said. Both U.S. firms develop shale gas resources in Louisiana.

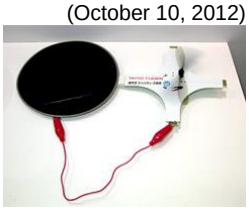
Ministry Creates New Guidelines For Methane-Fueled Power

(October 10, 2012)

The Environment Ministry plans to create guidelines for municipal governments on methane-fueled electricity generation in a bid to promote the use of the renewable energy source, ministry officials said. The guidelines will introduce how best to install such power generation systems, which use methane gas produced during the fermentation process of kitchen waste, separately for both city and provincial areas, the officials said. Methane-fueled power generation with raw garbage has yet to gain popularity in Japan due to the trouble of waste segregation and the high maintenance costs for the facility. But the launch of a feed-in tariff program is expected to raise interest in methane-fueled power generation among municipal governments.

DVD-Sized Dye-Sensitized Solar Cells

(October 10, 2012)



Taiyo Yuden Co. has set 2015 as the sales release date for a dye-sensitized solar cell that has the same dimensions as an optical disc. Thin, lightweight and easy to carry, the solar cell is expected to find a variety of uses as a mobile power source and for energizing sensors with built-in communications capabilities. Taiyo Yuden, which makes CD-R and DVD-R recordable optical discs, plans to use some of the same manufacturing steps to fabricate dye-sensitized solar cells in order to keep costs down. The new dye-sensitized solar cell will have an energy conversion efficiency of 3-5%, meaning each disc-shaped device will generate 0.2 to 0.5 watt. Taiyo Yuden expects to initially price them at around 300 yen per disc.

Yield From Sugar Cane Quadrupled

(October 10, 2012)

Asahi Group Holdings Ltd., working with research institutes, has devised a method to extract up to four times more sugar from strains of sugar cane that are more suited for bioethanol production. With the conventional method, sucrose is first crystallized from sugar cane juice before glucose and other substances are fermented to produce ethanol. In the process, some sucrose remains in the juice without being extracted, reducing the yield. The new method reverses this sequence by first producing ethanol using a special yeast that ferments only the nonsucrose content. This way, more sucrose can be crystallized afterward, improving efficiency.

60MW Offshore Wind Farm

(October 11, 2012)

General contractor Maeda Corp. plans to build its first offshore wind farm, a facility off the coast of Yamaguchi Prefecture with a total output of 60,000kW. The firm intends to set up 3,000kW wind turbines about 1-2km off the coast of Shimonoseki. The first phase of construction will start in spring 2015 and involve around 10 turbines, which are slated to begin generating power in stages about a year later. Installation of the remaining 10 turbines is expected to be completed in 2016. To set up the turbines, which will be fixed to the ocean floor, Maeda will apply the technical expertise gained from building dozens of land-based turbines in Japan.

Japan And India To Form Alliance To Combat High LNG Costs

(October 11, 2012)

The Japanese and Indian governments agreed to begin joint research on reducing the cost of procuring liquefied natural gas (LNG). The agreement came in a meeting between Economy, Trade and Industry Minister Yukio Edano and Indian Planning Commission Deputy Chairman Montek Ahluwalia in Tokyo. LNG imports for the two countries account for 38 percent of the global market, and they plan to strengthen their bargaining power by working together. Asian countries, including Japan, are forced to make contracts with gas-producing countries in which LNG prices are linked to crude oil prices. Therefore, Asian countries procure LNG at prices two to six times higher than those paid by Europe and the United States.

More Gold Mining

(October 11, 2012)

Sumitomo Metal Mining Co. has found a new gold bed at the existing Hishikari gold mine in Isa, Kagoshima Prefecture, estimated at 30 tons with a market value of ¥130 billion. The company will start digging a tunnel to the bed next month with the aim of starting the extraction in 2018. It will have to pump out hot spring water, and the overall effort will cost ¥3.2 billion. The company has produced about 200 tons of gold from the Hishikari mine since 1985. The new vein is deeper than any of the beds tapped so far. The mine is estimated to hold a further 150 tons of gold, the Sumitomo unit said.

Low-Cost Devices For Removing CO_2

(October 16, 2012)

Sumitomo Corp. and Sumitomo Chemical Co. plan to install and operate devices for separating carbon dioxide at chemical plants and other facilities, using technologies that can halve costs compared with conventional methods. The firms plan to establish a joint venture with Renaissance Energy Research, a start-up that makes CO_2 separation membranes, as early as this year. Chemical plants separate CO_2 from natural gas to produce hydrogen and ammonia, which are used to make fertilizer and other products. High-pressure steam is often used, resulting in heavy costs for fuel and for maintaining large equipment. The joint venture's CO_2 separation devices will use a special membrane developed by RER that is just tens of microns thick but can remove almost all the CO_2 from natural gas, according to the developer.

Cogeneration System Burning Less Natural Gas

(October 16, 2012)

Fujifilm Corp. has installed an energy-efficient cogeneration system at a factory in the Netherlands. A new production line was recently set up at the factory, which makes aluminum plates used by printing and newspaper companies. The Fujifilm Holdings Corp. unit took that opportunity to put in the new cogeneration system. The system combines a steam turbine generator with a waste gas burner, which generates hot water and also to produce steam for the generator. Natural gas is the typical fuel burned in waste gas burners, but the new system can also burn volatile organic compounds (VOCs) mixed with natural gas. The result is a roughly 10% reduction in the amount of natural gas consumed.

Order For Energy Storage System From Italy

(October 18, 2012)

NEC Corp. has won a contract to supply a lithium ion power storage system to the Italian electric utility Enel SpA, the Japanese company said. The energy storage system consists of lithium ion batteries with a capacity of 2 megawatt-hours and related equipment. It will be supplied to Enel's smart-grid pilot program that taps renewable energy such as wind and solar power. NEC's involvement with the program is a result of the strategic alliance in smart-grid operations it formed with Enel in April 2011. NEC supplies lithium ion batteries for households and electric vehicles, including Nissan Motor Co.'s Leaf. It aims to grow sales to power utilities and other customers to secure production volume and reduce costs through economies of scale.

Subsidies For Development Of Offshore Plants

(October 22, 2012)

The government plans to promote the growth of domestically produced offshore plants for refining and storing natural gas and crude oil at sea, in the hope of developing resources in the nation's exclusive economic zone. In particular, the government intends to subsidize Japanese companies' technological development projects related to the construction of large offshore plants. The government's next Basic Plan on Ocean Policy is set to include the plan for enhancing support to the industry. The five-year basic plan, which will be in effect from 2013, should be completed by the end of this year. Specifically, the support will target the technological development of offshore plants converted from large tankers by installing drilling equipment and refineries on the vessels.

2.4MW Offshore Wind Turbine

(October 22, 2012)

A huge wind turbine built in the Pacific Ocean near Tokyo, the largest in Japan, was shown to reporters before it starts power generation, possibly next January. The 126-meter-high turbine, with a 92-meter-diameter bladed wheel, is located about 3 kilometers off Choshi, Chiba Prefecture, and is capable of generating around 2.4MW, with the electricity to be transmitted onshore through underwater cables. The facility will be run by Tokyo Electric Power Co. and the New Energy and Industrial Technology Development Organization. Research results gained from the use of the turbine will be offered to private companies to promote the development of offshore wind power generation. The structure is connected to the ground at a depth of 12 meters and an observation tower is set up about 300 meters away.

Project To Store Excess Energy In Hydrogen Fuel

(October 24, 2012)

Toshiba Corp. will provide network and energy management support for a British project testing the use of hydrogen to store excess electricity generated from solar, wind and other renewable sources. The three-year project to be launched next month on the Isle of Wight will electrolyze water using surplus power from renewable sources and store the resulting hydrogen in special storage facilities. In addition to producing electricity using fuel cells when additional power is necessary, stored hydrogen will be supplied for use with fuel-cell vehicles. At present, batteries are mostly used to store surplus output from renewable energies. The project's hydrogen fuel technology can likely provide a lower cost alternative to storage batteries.

300MW Wind Farm In Mongolia

(October 24, 2012)

Softbank Corp. will build a huge wind-farming operation in Mongolia on tracts of idle land roughly the size of Tokyo Prefecture. Softbank has secured rights from the government there to lease about 2,200km^2 in the country's southern desert. Plans call for constructing four wind farms. The first, capable of generating 300MW, will go online as early as 2014. The electricity will be sold to a local utility, with exports to Russia and other neighboring nations also under consideration. SB Energy Corp., Softbank's green energy subsidiary, has formed a joint venture with local firm Newcom Group. SB Energy holds a 49% stake in the unit.

1.2MW Solar Farm In Yamaguchi

(October 25, 2012)

Yuasa Trading Co. will construct a 1,200kW solar farm in Yamaguchi Prefecture and start selling electricity to utilities. By generating energy, the trading house will go beyond selling household photovoltaic systems and get a firsthand look at how well the panels and other equipment hold up. Installation work will begin next month, with sales of electricity under the renewable-energy purchasing framework starting in April. The farm will use and compare products from Panasonic Corp., Solar Frontier KK and Canadian Solar Inc. It will also evaluate the durability of such equipment as panel-mounting systems and power inverters, which convert direct current generated from panels into alternate current. The site is located near the coast, so Yuasa will be able to assess the impact of salt corrosion on performance.

Methane Hydrate Sources Found

(October 29, 2012)

Methane hydrates, viewed as a next-generation energy source, have been found under the sea in two areas of Japan's exclusive economic zone, a researchers' group in the country said. The group also said it has collected the substance methane hydrates in layers several meters below the seabed at a spot in the Sea of Japan off northwestern Japan and another in the Sea of Okhotsk off Hokkaido. The group also said it has found an undersea column of methane gas off Tottori and Shimane prefectures, western Japan, a discovery that suggested the existence of methane hydrates. Methane hydrate, a solid substance consisting of methane and water molecule, is expected to be an alternative to natural gas that Japan vastly imports.

Ozone Hole Back To 1990 Levels

(October 29, 2012)

The size of the ozone hole over Antarctica is at its smallest since 1990, according to the Japan Meteorological Agency. The ozone hole appears over Antarctica around August each year, reaching its largest extent in September or October. This year, it peaked on Sept. 22 at 20.8 million km^2, about 50 percent bigger than Antarctica itself. The largest ozone hole on record was 29.6 million km^2 in 2000. The Montreal Protocol was adopted in 1987 to

stop depletion of the ozone layer, which protects the Earth's ecosystem by absorbing harmful ultraviolet rays from the sun.

Research On Termite Digestion To Produce Biofuels More Efficiently

(October 29, 2012)

Termites are able to break down wood with the greatest known efficiency in the world, thanks to a complex setup inside their intestines. The internal organs contain more than 300 types of microorganisms. It is thanks to the microorganisms living in symbiosis in their guts that termites can break down wood and take nourishment from it. Yuichi Hongo, an associate professor at Tokyo Institute of Technology, and his associates have already managed to extract a specific microorganism and successfully map the entire genomes of a number of bacteria that live in it. This makes them the first in the world to map the genome of a microorganism from inside a termite's intestines. It marks a huge step toward unlocking the mechanisms inside the termite's gut.

Large Scale Home Energy Management System

(October 30, 2012)

Sekisui House Ltd. and IBM Japan Ltd. will join in a three-year, smart city project that links more than 30,000 houses and apartment buildings nationwide to a network in order to help them conserve energy. Until now, home energy management system services have mainly been offered in particular areas. The project will at first build a network that connects mainly newly built homes that have introduced energy management systems. Such information as each home's electricity and gas usage will be gathered and stored at IBM Japan data centers via its cloud computing service. The data will be analyzed to help raise efficiency. Homeowners will be able to access a detailed description of their energy use through personal computers or smartphones.

7. Space Development

Japan And The U.S. Plan To Promote Space Cooperation

(October 06, 2012)

Japan and the United States plan to launch a bilateral consultation body to promote comprehensive cooperation in space, including the use of space-based global positioning systems, Japanese officials said. The consultation body, involving all relevant ministries and agencies, is expected to discuss interoperation of the U.S. Global Positioning System and a Japan-developed satellite system, the officials said. Bilateral cooperation in the field is expected to help enhance disaster preparedness and environmental preservation, and is likely to lead to improved car navigation systems, they said. Until now, such cooperation between the two nations has been conducted through consultations between Japan's Foreign Ministry and the U.S. State Department, and between the Japan Aerospace Exploration Agency (JAXA) and the U.S. National Aeronautics and Space Administration (NASA).

Five Satellites Released From ISS

(October 06, 2012)

Five small satellites were released from the International Space Station in the first such experiment, the Japan Aerospace Exploration Agency said. Three Japanese-made and two U.S.-made satellites were sent out. Releasing satellites from the ISS results in less vibration than direct launches on rockets, helping to reduce design and production costs, according to JAXA. The experiment involving Japan's Kibo lab used satellites provided by such entities as the Fukuoka Institute of Technology, Tohoku University and Wakayama University. After being released into orbit, the satellites will carry out various missions, including taking pictures of Earth and sending Morse code messages to the ground with a high-power light-emitting diode, for about 100 days.

Japanese Astronaut Added To ISS Crew

(October 09, 2012)

Astronaut Kimiya Yui was selected as a crew member of International Space Station and will become the fifth Japanese astronaut to stay in orbit for an extended period. Yui's stint will run for about six months, starting June 2015. According to a press release from Japan Aerospace Exploration Agency, a Russian Soyuz rocket will carry Yui to the station. Yui, a former pilot with Japan's Air Self-Defense Force, was selected for the astronaut program in 2009 and became eligible to serve aboard the ISS in July of last year. His training period of around four years will be the second shortest for a Japanese astronaut, following Koichi Wakata's two-year training.

Cargo Ship Successfully Docks With The ISS

(October 12, 2012)

An unmanned spacecraft owned by Space Exploration Technologies Corp. of the United States successfully docked at the International Space Station. Japanese astronaut Akihiko Hoshide and other ISS crew members used a robotic arm to grab the commercial cargo ship, called "Dragon," and gently guide it to the docking site. The Dragon was developed to deliver supplies to the ISS, following the retirement of the U.S. National Aeronautics and Space Administration's space shuttles. This is the Dragon's second visit to the ISS since the company, known as SpaceX, conducted a test flight in May. After about 400 kilograms of cargo, including food and experiment equipment, are unloaded from the Dragon, the cargo ship will detach from the ISS and return to Earth.

New-Type Rocket Launch Next Year

(October 29, 2012)

Japan plans to launch a new-type "epsilon" solid rocket under development from the Uchinoura Space Center in Kagoshima Prefecture next year, officials at the Japan Aerospace Exploration Agency said. With the cost of developing the new rocket reduced by using the H2A rocket's solid booster for the new rocket's first stage, the agency aims to nearly halve the cost of launching the rocket to about 5.3 billion yen compared with the H2A, they said. The preparatory period for launching the rocket will also be significantly shortened, with automatic inspection by computer. The first epsilon rocket will carry a small satellite which will observe Venus and Mars while orbiting the earth.

8. Engineering / Robotics

New Generation Of Prosthetics Interacts With Nerves

(October 01, 2012)

Robotics and information technology are making the next generation of prosthetic limbs so advanced that they can respond to muscle movements and brain signals, giving users greater control over movements than ever before. One example is a myoelectric prosthetic hand which can perform 15 different motions, including holding and picking up objects and turning the wrist. All five fingers move independently without the need for switches. A user can write with a pen and even play rock-paper-scissors. Prof. Hiroshi Yokoi of the University of Electro-Communications plans to commercialize the prosthetic before the end of this year through his university-affiliated startup company.

Fuel Cell System Goes Aloft

(October 05, 2012)

IHI Corp. has successfully operated a regenerative fuel cell system on a plane with Boeing Co., the Japanese firm said. The 737 flew for about five hours above Seattle. In the trial, in which IHI Aerospace Co. also participated, the IHI-built system supplied electricity and was also recharged by the aircraft engines. The fuel cell system is a separate power source from the engines and could eventually see practical use as an auxiliary power source for such applications as operating the galley. Currently, generators powered by aircraft engines supply onboard electricity.

Japan, Thailand Aiming To Cooperate In High-Speed-Rail Technology

(October 06, 2012)

The Japanese and Thai governments are hammering out the details of a technological cooperation agreement for high-speed rail systems. Thailand plans to build four high-speed-railway links, including a route between Bangkok and Chiang Mai. China and other countries are also showing interest in those projects. If things go smoothly, a working-level committee on Japan's bullet train and subway technologies, among other subjects, will be established. By dispatching engineers from Japan and providing other forms of assistance for Thailand's large-scale railway projects, the Japanese government aims to help boost domestic firms' infrastructure-related exports.

Improved Battery Technology Boosts EV Range By 30%

(October 09, 2012)

NEC Corp. has developed technology that improves the storage capacity of lithium ion batteries by at least 30%, paving the way for long-distance travel by electric vehicles. EVs' short range compared with gasoline-powered cars has been a major obstacle to promoting EVs. The challenge is to increase the voltage to boost the battery's capacity while minimizing the formation of gases inside, which shortens its life. NEC has developed electrodes and electrolyte that cut down on the formation of gases at high voltage, successfully raising capacity. Batteries using the new technology would have comparable life and production costs to those installed in Nissan Motor Co.'s Leaf EV but would boost range by about 30%, according to NEC.

Indonesian Railway Project For Japanese Companies

(October 10, 2012)

Sumitomo Corp. and Mitsubishi Heavy Industries Ltd. have successfully bid for a trunk railway electrification and repair project in Indonesia. Sumitomo and Mitsubishi Heavy will export a Japanese-standard signaling system for the project, the first time for Japan to export a basic railway technology overseas. The Japanese government will provide low-interest yen loans to help Indonesia finance the project. Mitsubishi Heavy will be responsible for the technological aspects of the project, including overall design and supply of equipment, while Sumitomo will handle the contract and other commercial matters. The railway project will begin later this year and is expected to be completed by the end of 2016.

Venezuela Buys Japanese Railway Cars

(October 10, 2012)

Marubeni Corp. and two other Japanese companies have jointly received an order for 52 railway cars from Venezuela National Railways. The trading firm, Nippon Sharyo Ltd. and Toshiba Corp. will deliver by mid-2015 commuter-type railway cars that operate at speeds of around 100km/h. Nippon Sharyo will manufacture the train cars, while Toshiba will handle their electrical systems. The rolling stock will be used to bolster services on a railway link that connects the capital Caracas with its environs. Marubeni received orders tied to the 42km link in 1992 and 2004, working with Italian and Venezuelan companies. Nippon Sharyo and Toshiba previously supplied rolling stock for this particular route.

Increasing The Production Of Key Dreamliner Part

(October 11, 2012)

Fuji Heavy Industries Ltd. plans to double monthly output of center wing boxes for Boeing Co.'s 787 Dreamliner passenger jet by the end of next year. As part of this, the maker of Subaru cars increased production lines at its Handa plant in Aichi Prefecture from two to three in July. It is now working to get the new line up to full capacity. The center wing box is a key aircraft component connecting the wings to the fuselage. For the 787, Fuji Heavy has been manufacturing cutting-edge center wing boxes based on a carbon fiber compound to deliver high strength at light weight. The firm has already shipped more than 100 units since beginning mass production in 2006.

Fuel-Efficient Domestic Plane Promises Significant Savings

(October 11, 2012)

The Mitsubishi Regional Jet (MRJ) will be the first airliner designed and produced domestically since the YS-11 in the 1960s. The inaugural flight set for 2013 and the first delivery scheduled for 2015. The MRJ is a passenger jet aircraft seating 70-90 passengers. One key characteristic of the MRJ is its high fuel efficiency. Most of the fuselage is made of aluminum, while carbon composite parts make up only about 10 percent of the aircraft. Using a highly fuel-efficient engine, the fuel consumption is at least 20 percent better than other competing aircraft, said an official of Mitsubishi Aircraft.

Subfloor Inspection Robot

(October 16, 2012)

Daiwa House Industry Co. has decided to market a crawl space inspection robot that the firm has been using itself until now to check underneath homes' floors and to conduct surveys before moving forward with renovation work. The decision to begin outside sales reflects the growing demand for home renovation and the expanding market for previously owned homes. The radio-controlled carlike device is fitted with LED lighting and camera equipment. The operator views a computer screen while manipulating the robot to inspect under the house for termite damage as well as cracks in pipes and the foundation, and to perform simple evaluation of earthquake resistance. With the robot, there is no need to have a person root around underneath the floor.

Rare-Earth Used In Hybrid Motors Cut By 30%

(October 18, 2012)

Honda Motor Co. has developed a technology that uses 30% less of a rare-earth element critical to the production of hybrid-vehicle motors. The rare-earth dysprosium is essential for making the magnet in hybrid motors highly resistant to heat. In collaboration with a magnet maker, Honda devised a method for applying the element in a thin layer, reducing the amount of dysprosium used without compromising the magnet's performance. The price of dysprosium soared between May and July of last year as China curbed production, rising fivefold from earlier in the year to around 3,700 dollars per kilogram in July. The price has since fallen to around 1,000 dollars.

Japan Loses Fight For EV Charging Standard

(October 18, 2012)

Japan pioneered the development of electric vehicles and then created its own charging technology in the hope of making it the international standard. But a rival U.S.-European charging system is making big strides overseas, threatening to isolate Japanese automakers from the global EV market. SAE International, a U.S. industry body that sets automotive standards, selected the Combined Charging System, or Combo, as the fast-charging standard in the U.S. It got the nod over Japan's CHAdeMO system, which is already in use worldwide, including in the U.S. Fast-charging capability is key for EVs, as vehicles need frequent charging due to their limited storage battery capacities. In May, General Motors Co., Volkswagen AG and six other U.S. and European automakers announced that they will use Combo technology in their EVs.

Robotic Suit To Offer Stronger Radiation Protection

(October 18, 2012)

A robotic suit developed to help workers wearing heavy protective gear against radiation exposure at nuclear accident sites was unveiled. The HAL suit contains radiation-shielding metallic materials and weighs around 70 kilograms, but wearers can move freely for a variety of tasks thanks to motors located at joint sections that assist movements, according to maker Cyberdyne Inc., based in Tsukuba, Ibaraki Prefecture. The polyethylene protective suits currently in use at the site of the crippled Fukushima Daiichi Nuclear Power station cannot shield workers from radiation. The metallic suit is designed to cut radiation exposure in half, the developers said. The suit also comes with a fan at the back to release body heat in addition to a thermometer and a heartbeat monitor to protect workers from heatstroke, they said.

Accident Prevention Systems Proliferate

(October 19, 2012)

Nissan Motor Co. has become the latest automaker to unveil a vehicle anti-collision system, a function that is becoming a magnet for the growing number of elderly drivers. Nissan's new technology will automatically redirect a vehicle when it detects a dangerous situation, such as a possible collision with another car or when a pedestrian jumps in the way. According to Nissan's announcement, the system is an advanced version of technology used in an automatic braking system to prevent rear-end collisions. Nissan aims to release models equipped with the new system in three years at the earliest. To accommodate the increasing number of elderly drivers, automakers are developing new systems that can prevent accidents.

Modified Hybrid Car As Emergency Power Source

(October 23, 2012)

Toyota Motor Corp. will offer an option for its Prius hybrids that allows the cars to be used as an emergency power source. A slightly modified Prius will come equipped with a 100-volt socket that can supply electricity to appliances in the home. If the car has a full tank of gas, it can serve as a power source for four days for a typical household. Toyota introduced the new option recently. The same option will also become available for the Prius Plug-in Hybrid and a simplified model of the Prius Plug-in Hybrid for business users.

Alliance For Overseas Rail Projects

(October 24, 2012)

Central Japan Railway Co. plans to team up with Taiwan High Speed Rail Corp., West Japan Railway Co. and Kyushu Railway Co. to boost their chances of participating in overseas high-speed-rail projects. The company, better known as JR Tokai, will hold a meeting in Nagoya between Chairman Yoshiyuki Kasai and top executives from the three other firms. Considering that the three prospective partners have been using JR Tokai's rolling stock and operating systems, the firm is looking to use their operational and safety track records to market its technology. The four may eventually deepen their tie-up to cover technological cooperation. JR Tokai has drawn up a strategy to pitch its N700-I Bullet Train, developed for overseas deployment, along with its maglev linear-motor train and operating systems.

Brazilian R&D Operations Upscaled

(October 24, 2012)

Honda Motor Co. said that it will spend about 4 billion yen over the next two years to expand research facilities in Brazil to strengthen the development of subcompact cars suited to the local market. The new facilities, which will be located at the automaker's Sumare production site in the state of Sao Paulo, will be completed in 2013. The number of R&D employees there will be doubled or tripled from the current staff of around 100. This will make Honda's

Brazilian facilities its largest overseas R&D operations after those in the U.S. and Thailand. Demand for subcompact cars in Brazil is increasing in tandem with its growing middle class.

Car Radar Detects People & Obstacles

(October 27, 2012)

A subsidiary of Fujitsu Ltd. has developed radar technology for cars capable of warning drivers about people appearing suddenly from behind walls and objects in the dark. Unlike existing collision-avoidance systems that use radio waves or ultrasound, Fujitsu Laboratories Ltd.'s radar technology can spot even small objects tens of meters away. The company aims to commercialize the technology in 2014. Fujitsu plans to develop an early-warning system that sounds an alarm when it detects approaching people or hidden objects as drivers back into a parking space. The radar system employs lasers normally used in optical communications gear to detect obscure objects. The radar can recognize toys and other objects, and can even detect people and animals emerging from behind an obstacle, as well as children playing in the street.

Robot To Solve University Entrance Exam

(October 29, 2012)

A group in Japan has set about developing the “Todai Robot”, a computer system that will be able to pass the extremely demanding entrance exam for the University of Tokyo, also known as Todai. The robot will use natural-language processing for the semantic analysis to figure out the meaning of the questions. Once that is done, the questions are translated into a form that can be processed by a computer. The Todai Robot needs to do this on its own, mobilizing mathematical terminology and a highschool level understanding of math to determine how to answer the questions. Currently only around 50-60% of Level 2 entrance-exam problems can be solved, which is not good enough to get into Todai. By creating a robot able to solve those problems, the scientists hope to gain valuable insights into the creation of artificial intelligences.

Young Engineers Launch Wheelchair Start-Up

(October 29, 2012)

The spread of 3-D printing technology and the proliferation of production outsourcing services is making it easier than ever for entrepreneurs to launch manufacturing startups and pursue business models that big companies cannot imitate. Recognizing an opportunity to forge their own paths, a group of engineers in their 30s left their jobs at such big-name companies as Nissan Motor Co. and Sony Corp. to start Whill Inc., an electric wheelchair manufacturer. Their product, called the Whill type-A, looks more like a giant pair of headphones than a conventional wheelchair. The wheelchair is powered by lithium ion batteries and can run for 20km on a two-hour charge.

9. Nuclear Development

Atomic Energy Commission Gives Up Compiling Nuclear Policy

(October 02, 2012)

The Japan Atomic Energy Commission decided to give up its key task of compiling the basic policy for the use of nuclear power, as its role will come under drastic review in the country's new energy strategy. The commission was created in 1956 to set basic policies for development and utilization of nuclear energy. But the government has decided to use a different arena to discuss nuclear policies to implement its new energy strategy that seeks to phase out nuclear power in the 2030s. However, the commission will continue to play its part by making proposals on important issues for the use of nuclear power.

New Regulatory Body Not Deciding On Reboot Of Nuclear Reactors

(October 03, 2012)

Japan's new nuclear regulatory commission confirmed that its mission is to assess the safety of reactors from a scientific standpoint and not to make judgments on whether they should be reactivated. The Nuclear Regulation Authority tried to clarify its role over the resumption of reactors, given uncertainty over who is the main actor in making a judgment on the controversial issue. Noting that the supply and demand of electric power and economic aspects should be taken into account when rebooting reactors, commission head Shunichi Tanaka said, "Government offices in charge of energy policy as well as plant operators should make the decision on activating reactors and create a consensus among local people."

Nuclear Regulation Authority Issues Disaster Guidelines

(October 04, 2012)

The Nuclear Regulation Authority (NRA) released a draft of guideline measures to cope with nuclear disasters that includes a request to preemptively distribute stable iodine pills to houses within a 50-kilometer radius of nuclear power plants. The draft expands the range of priority areas for emergency measures to a 30-kilometer radius from each nuclear power plant. In addition to the distribution of iodine pills, the draft guideline also presented for the first time measures to cope with situations where large quantities of radioactive substances have been discharged. Compiling the new guideline was one of the first tasks of the NRA, which was established in September.

Moratorium For New Nuclear Plant In Yamaguchi

(October 05, 2012)

The Japanese government will not allow the construction of a new nuclear power plant in Yamaguchi Prefecture, western Japan, in line with its policy of not endorsing the building of new reactors, industry minister Yukio Edano said. The construction of the nuclear complex by Chugoku Electric Power Co. in the town of Kaminoseki is "subject to the principle of not constructing new reactors," the minister of economy, trade and industry told a press conference. Despite Edano's remarks, Chugoku Electric filed an application with the Yamaguchi prefectural government to extend its license, effective for three years and due to expire, to reclaim the planned construction site.

Investigation Of Fukushima No. 1 Reactor

(October 09, 2012)

The operator of the crippled Fukushima Daiichi nuclear power plant started a series of surveys to check the interior condition of the No. 1 reactor that has suffered a meltdown. Tokyo Electric Power Co. inserted a camera inside the primary containment vessel to capture images. It also plans to take a sample of water inside the reactor. The utility hopes to get more clues about the condition of the fuel that is believed to be accumulating at the bottom of the vessel. Of the remaining units that also contain melted fuel inside, the utility checked the No. 2 reactor earlier this year, but there is no concrete plan to carry out a similar survey at the No. 3 reactor because of the high radiation level.

Reactor 1 Water Level Higher Than Expected

(October 12, 2012)

The water level inside reactor 1's primary containment vessel at the Fukushima No. 1 nuclear plant is higher than expected. Spokesman Masayuki Ono stated that it is difficult to accurately determine where melted fuel inside the vessel is located but stressed that Tepco doesn't expect to change its plan for decommissioning the reactor. Workers trying to inspect the reactor found that the surface level of the water was at 2.8m about 80cm higher than expected. As for radiation levels, the area of insertion logged 11.1 sieverts per hour, enough to cause death after about 40 minutes of exposure.

TEPCO Convenes Nuclear Reform Committee

(October 13, 2012)

Tokyo Electric Power Co.'s nuclear reform committee, a third-party group tasked with reexamining the causes of the disaster at the Fukushima No. 1 nuclear power plant and proposing safety measures, held its first meeting at the company's head office in Chiyoda Ward, Tokyo. Dale Klein, former chairman of the U.S. Nuclear Regulatory Commission, is chairing the Nuclear Reform Monitoring Committee formed by the struggling utility. At the meeting, Klein said that since nuclear power will continue to play a role in the world's energy supply, TEPCO needs to implement drastic reforms. TEPCO aims to compile a reform plan for its nuclear energy division, which was responsible for exacerbating the situation during the Fukushima accident, by the end of the year.

No Restarts Of Nuclear Reactors This Year

(October 13, 2012)

The head of the new nuclear regulatory agency says reactors will not be allowed to restart until they pass seismic inspections and meet safety standards to be instituted next year. Under the new requirements, emergency procedures for accidents and terrorist attacks will become compulsory for nuclear plant operators, said Shunichi Tanaka, chairman of the Nuclear Regulation Authority. This follows criticism that collusion between the plant operators and authorities left the Fukushima No. 1 power plant unprepared for last year's crisis. Before the disaster struck, operators were allowed to decide for themselves whether to follow safety guidelines recommended by regulators. Tanaka has also criticized the government's decision to restart two reactors in Oi, Fukui Prefecture to avoid a power crunch during the high-demand summer.

Nuclear Crisis Avoidable

(October 14, 2012)

Tokyo Electric Power Co. has acknowledged for the first time that the nuclear disaster at the Fukushima No. 1 power plant could have been avoided. In a statement, Tepco's internal reform task force said the utility was aware safety improvements were necessary long before last year's quake and tsunami caused three catastrophic core meltdowns at the facility, but failed to act. Tepco feared efforts to bolster its nuclear facilities in the event of major natural disasters would spur antinuclear sentiment, interfere with operations and increase litigation risks, according to the task force. The utility could have mitigated the impact of the Fukushima meltdowns if it had diversified the plant's power and cooling systems by paying closer heed to international standards and recommendations, the task force said.

Waterless Radiation Removal Method

(October 19, 2012)

Takasago Thermal Engineering Co. has developed technology for removing radioactive materials from the surface of contaminated rubble without using water. With the new approach, rubble is frozen to minus 20°C in a freezer so that water in the surface clay containing radioactive substances hardens and becomes easy to peel off. In tests on rubble from Fukushima Prefecture, the process reduced the quantity of contaminated material requiring storage in an interim storage facility by 65% and lowered radioactive material concentration by 70%. In addition, this approach produces no contaminated water and costs just 40% as much as water-based processes.

Japan Releases Radiation Spread Projections In Severe Accidents

(October 24, 2012)

Japan's nuclear regulatory authorities released their first projections for the spread of radiation from nationwide reactors in the event of a severe accident like the one at the Fukushima Daiichi complex last year. The regulatory body conducted the radiation simulations for 16 atomic plants in Japan to provide references for local governments to expand areas that should be subject to special preparations against nuclear disasters from the current radius of 10 km from a plant. The authority plans to propose in its new nuclear disaster mitigation measure guidelines that emergency zones be set within a radius of around 30 km, but the latest estimates may make some local governments think about whether to include areas at a greater distance.

Storage Capacity Problems With Radioactive Water

(October 28, 2012)

Workers at the Fukushima No. 1 plant are struggling to find space to store the highly contaminated water used to cool its crippled reactors, the manager of the water treatment team said. About 200,000 tons of radioactive water are being stored in gigantic tanks built around the complex. Tepco is close to starting a new treatment system that could make the water safe enough to discharge into the ocean. But its tanks are filling up in the meantime, mostly because cracks in reactor buildings are allowing groundwater in.

10. Physics

Superconducting Motor For EVs In Development

(October 13, 2012)

Sumitomo Electric Industries Ltd. has begun developing a superconducting motor for electric vehicles, hoping to have a prototype for buses ready by next spring. Superconductors have zero resistance to the flow of electricity, so a vehicle with such a motor could consume 20-30% less energy than a conventional electric car using copper wire. Sumitomo Electric, a leading developer of superconductors, has an established technique for the fabrication of superconducting wires from high-temperature superconductors. It has already used this wire to construct a motor coil and is developing a sealed motor where the coil will be kept cold via liquid nitrogen so that it remains in the superconducting state.

Highest Lightning Observation Device On Tokyo Skytree

(October 18, 2012)

In the vertiginous height of 497 metres, a lightning observation device is installed on the 634-meter Tokyo Skytree in Tokyo. The device is installed about 50 meters higher than the tower's second observation deck, the Tembo Galleria, making it the world's highest lightning observing spot on a man-made structure. Since its opening, Skytree has been struck by lightning more than 10 times, including hits at its highest point. The device successfully recorded lightning currents and waveforms of eight strikes in May and June.

11. Intellectual Property Rights / Technology Transfer / Alliances

Korean Company Buys Japanese Social Game Developer

(October 02, 2012)

Online game developer Nexon Co. said that it has acquired social game developer gloops Inc. for 36.5 billion yen. The move gives Nexon, mainly a developer of personal computer titles, a foothold for faster expansion into the market for games for smartphones and other mobile platforms. For its part, gloops has developed a considerable amount of content for the game delivery service operated by social gaming firm DeNA Co. Nexon's strategy is to actively broaden its business into mobile platforms and overseas markets through mergers and acquisitions as well as big investments in other companies.

Japanese Company To Acquire U.S. Biotechnology Firm

(October 05, 2012)

Takeda Pharmaceutical Co. said its U.S. unit has agreed to buy out LigoCyte Pharmaceuticals Inc., a Montana-based biotechnology firm whose vaccine to prevent norovirus-induced gastroenteritis is in a clinical development phase. LygoCyte focuses on the development of vaccines based on its proprietary virus-like particle technology, which enables the production of vaccines capable of covering multiple generic varieties of norovirus, it said. "Norovirus is the most common cause of outbreaks of gastroenteritis and foodborne illness in the U.S., and is responsible for 200,000 deaths each year, most of them in developing countries," Rajeev Venkayya, executive vice president of Takeda's Vaccine Business Division, said in a statement.

Investment Facility For Venture Capital

(October 05, 2012)

Mitsui & Co. will launch an investment facility that offers funding to promising start-ups without regard for short-term profitability. The Japanese trading house will partner with SRI International to offer seed money to ventures tapping new advanced technology of the nonprofit U.S. research institute. Mitsui will target funding for start-ups in such fields as energy, biotechnology, agriculture, space science and information technology. SRI has contributed to the birth of new innovations and technologies, such as the computer mouse and the speech recognition technology in Apple Inc.'s iPhone. The institute is involved in leading global research in biotechnology, green energy and other fields.

Japanese University Secures iPS Cell Patents

(October 09, 2012)

The basic patent for iPS cells, developed by Kyoto University professor Shinya Yamanaka, was granted in Japan in 2009. Patents covering methods for creating the cells were approved in Europe in July 2011 and in the U.S. the following month. Kyoto University's extensive patent portfolio gives it leverage when negotiating cross-licensing deals with overseas parties, especially in the U.S., the world's largest pharmaceutical market. It will also help prevent an American firm or other player from monopolizing the technology. Researchers are rushing to develop ways to cultivate safe iPS cells suitable for use in regenerative medicine. Kyoto University's future success in this field will depend on acquiring patents that would help in future medical and industrial applications.

Investing In Nuclear Power

(October 10, 2012)

Toshiba Corp. said it will buy out Shaw Group Inc.'s 20% stake in the nuclear power-plant company Westinghouse Electric Co. for about JPY 125 billion and pursue the search for new investment partners. The company said it would use cash on hand and loans to buy Shaw's entire stake in Westinghouse by January 2013. Following the news, Toshiba shares dropped as much as 4.4% on the Tokyo Stock Exchange. Toshiba earlier said it was in talks with various parties to sell some of its 67% stake in Westinghouse on the condition that it keep its stake in the U.S. unit above 50%. The planned sale is part of Toshiba's effort to make the nuclear-power business more globally competitive and to raise cash to sustain its financial standing.

Japanese Telecom Subsidiary Buys U.K. IT Consulting Firm

(October 11, 2012)

NTT Data Corp. has acquired British firm RMA Consulting Ltd., seeking to take advantage of its software design expertise focused on the user experience. The Japanese company purchased all of RMA's outstanding shares through local subsidiary NTT Data EMEA Ltd. on for an estimated 1 billion yen. NTT Data aims to utilize RMA's expertise in designing and consulting on user-focused systems to develop new products globally and to expand the customer base of the NTT group.

Swiss-Made Waterless Urinals Sold In Japan

(October 11, 2012)

Toto Ltd. will begin selling waterless urinals from a Swiss company that can save about 60% on maintenance costs. Consisting of plastic, the urinals made by Urimat Schweiz AG resist surface deposits and have a special trap that seals in odors. The partnership with Urimat will broaden Toto's lineup of efficient toilets as the Japanese company speeds up development of its own low-flush models. The two toilet makers are also expected to consider joint product development. Urimat has sold more than 200,000 environmentally friendly urinals worldwide but only a little more than 500 in Japan since it entered the market in 2009.

Generic Drug Unit To Be Sold

(October 16, 2012)

Takeda Pharmaceutical Co. is in talks with several potential buyers for the generic-drug business of U.S. unit URL Pharma as part of a broader effort to focus its operations in developed countries on new drugs. Takeda acquired URL Pharma for 800 million dollars, or some 64 billion yen, in June, seeking to expand its prescription drug lineup in the U.S. Takeda intends to accelerate the introduction of new drugs in developed countries while cultivating emerging markets through generic-drug operations. It seeks to efficiently tap international markets by matching its offerings to local incomes.

Fynomer Drug Discovery Contract

(October 19, 2012)

Covagen AG signed its first drug discovery deal, a pact worth potentially up to US$146 million with Mitsubishi Tanabe Pharma Corp. that involves its Fynomer protein scaffold technology. Covagen was spun out from the Swiss Federal Institute of Technology Zurich (ETH Zurich) in 2007. Fynomers are low-molecular-weight protein binders that are derived from from the Src homology 3 (SH3) domain of Fyn tyrosine kinase. The molecular format is highly flexible and lends itself to the creation of different types of fusion proteins, with differing valencies. The alliance will focus on the development of bispecific antibody-Fynomer fusions, called FynomAbs, which comprise a conventional antibody fused to a pair of Fynomers.

Joint-Venture For AIDS Drug Sales

(October 29, 2012)

Major Japanese drugmaker Shionogi & Co. has agreed to hand over to its British partner Viiv Healthcare Ltd. the marketing rights for AIDS drugs it is developing via a joint venture with Viiv. Shionogi intends to take advantage of the London-based company's global marketing network. The venture, Shionogi-ViiV Healthcare LLC, is developing the drug “dolutegravir” and other compounds that block the action of a key enzyme of HIV, the virus that causes AIDS. Shionogi said applications for regulatory approval for the new drugs will be filed by the yearend, with the marketing of the drugs expected to commence shortly contingent on approval. Another British drug maker, GlaxoSmithKline plc, and U.S. drug maker Pfizer Inc. have equity stakes in ViiV Healthcare at present.

Endoscope Business Alliance

(October 29, 2012)

Pioneer Corp. has formed an endoscope business alliance with Otsuka Medical Devices Co. Pioneer will supply small, high-performance cameras used in endoscopes, and Otsuka Medical will make the final product and begin sales in 2014. Pioneer, will enter the medical field for the first time. Otsuka Medical Devices, a wholly owned unit of Otsuka Holdings Co. engages in the medical equipment business.

12. General Interest

Graduate Employment Ceremonies Coming Up This Fall

(October 02, 2012)

Major Japanese companies will hold ceremonies to welcome recent graduates in the fall instead of just the traditional spring inductions, as recruiting transitions to a year-round event. NEC Corp. held job offer ceremonies in Tokyo and Osaka, welcoming around 350 hires slated to join the firm next spring. Reflecting its push to strengthen overseas operations, foreigners for the first time accounted for more than 10% of the incoming hires. The University of Tokyo is considering adopting fall admissions instead of spring to bring it in line with the international norm. With that in mind, a growing number of Japanese companies are holding initiation ceremonies for new hires in both the fall and spring.

Engineers For EV Development Sought-After

(October 03, 2012)

Aiming to speed its development of electric vehicles, Mitsubishi Motors Corp. plans to aggressively recruit engineers from electronics and information technology manufacturers. The firm will increase midcareer hiring by 70% up to 170 this year, the most in the last decade, company sources said. Environmentally friendly vehicles have many components not used in their gasoline-powered counterparts, including lithium ion batteries, drive motors and power inverters. This makes accumulating core electrical and electronic technologies key to a company's competitiveness. Mitsubishi Motors now sells such EVs as the i-MiEV minicar and the commercial-use Minicab MiEV, and plans to add an electric minitruck and a plug-in-hybrid version of the Outlander sport utility vehicle. But as the company seeks to broaden its green lineup, it faces a shortage of engineers.

Foreigners To Be Hired

(October 03, 2012)

Mitsui Chemicals Inc. will increase hiring of young foreigners just starting their careers as it seeks to build a more international workforce. The chemicals maker plans to take on at least 10 foreigners a year for positions at the parent company starting in 2013, up from just two or three a year until now. It currently has about 60 foreigners in full-time positions. With the domestic market shrinking, Mitsui Chemicals is working to grow its overseas network. Besides hiring more foreigners, it plans to dispatch more to overseas units. The company will expand its internship program to help find skilled foreign employees, taking in more interns from more countries. It currently accepts about 20 interns a year from universities and research institutes in China, India and Singapore.

Kinect As A Tool For Disabled

(October 04, 2012)

Microsoft Japan Co. said that it has developed a system based on a high-tech video game sensor that allows the disabled to operate home appliances using subtle physical cues. Developed jointly with the University of Tokyo's Research Center for Advanced Science and Technology, the Observation and Access with Kinect (OAK) system closely monitors users' body movements by using a video camera and sensor. The system interprets the movements and triggers a command assigned to that particular motion. Using this function, slight manipulations of the mouth or hand can be programmed to turn on a television set or a light.

Boarding Gate Detecting Explosives In Seconds

(October 04, 2012)

Hitachi Ltd., Nippon Signal Co. and the University of Yamanashi have jointly developed a boarding gate capable of detecting explosives without disrupting the flow of passengers.
Handling explosives results in minute particles getting left behind on the hands. When a passenger taps the boarding pass at the gate's reader, a puff of air is timed to collect any particles. The technology is geared toward the use of smart cards and mobile phones as boarding passes. Particles from the collected air are concentrated using centrifugal force, enabling the detection of explosives through mass spectrometry analysis in one to two seconds.

Law Office For Foreigners

(October 04, 2012)

A law office specializing in legal consultation for foreign residents of Japan has been opened in Minato Ward, Tokyo, funded by a local bar association. Foreign residents often hesitate to ask for legal advice because of the language barrier. Following recent changes in the residency management system for foreigners living in Japan, it is feared that

the number of people who are unable to obtain sufficient information will increase. The Tokyo Bar Association, which is assisting the opening of the new office, hopes it will be effective in helping foreigners with legal worries. The new office will be called the Tokyo Public Law Office, Mita Branch--Foreigners and International Service Section.

Female Imperial Branches To Counteract Dwindling Numbers Of Qualified Heirs

(October 07, 2012)

Concerned over the future of the Imperial family, the government in a report released called for allowing princesses to create their own Imperial branches, though support for the solution is far from unanimous. The administration of Prime Minister Yoshihiko Noda will be tested over whether it can convince the Liberal Democratic Party and other opposition parties to cooperate in revising the Imperial House Law to achieve the proposal. Allowing princesses to create new Imperial branches would enable them to retain their royal status after marrying commoners. The idea comes as the number of people with a right to the throne continues to decline. The government worries that if the situation continues, the Imperial family will find it difficult to maintain its current level of activity, possibly even endangering the existence of the family.

Underground Expressways In Tokyo

(October 08, 2012)

The government is considering removal of aging sections of elevated lanes of the Metropolitan Expressways in Tokyo and burying the roads underground. The greatest hurdle to this idea, is the huge construction cost, estimated at 4.3 trillion yen. The first elevated lane of the expressway opened between the Kyobashi and Shibaura districts in 1962, two years before the Tokyo Olympics. The Metropolitan Expressways are now 301 kilometers long, with about 90 kilometers constructed more than 40 years ago. About 1 million vehicles use the expressways every day. To avoid trouble over purchasing land, many sections of the expressways were built over existing roads and rivers. About 80 percent of the lanes are elevated.

Chairs For U.N. Made In Japan

(October 20, 2012)

Asahi Sofu Manufacturing Co., a furniture maker based in Asahi, Yamagata Prefecture, produced and delivered 260 chairs for use at the United Nations headquarters in New York. The chairs to be installed in the U.N. Trusteeship Council's conference hall were designed by Finn Juhl (1912-1989). The company said it reproduced the chairs' smooth curves and slim legs. The conference hall and chairs were designed by the world famous Danish architect and completed in 1952. As the building has aged, the Danish government is refurbishing the entire conference hall. This year marks the 100th anniversary of Juhl's birth. Asahi Sofu is a furniture maker specializing in original equipment manufacturing of other companies' brands.

The Garden In The Sky

(October 22, 2012)

Local residents take a stroll around “Meguro Tenku Teien” (Meguro Garden in the Sky) on the Ohashi junction of the Metropolitan Expressway’s central circular route Saturday. According to the Meguro Ward government, this is the nation’s first park on an expressway junction. The garden has about 1,000 trees and covers about 7,000m^2 over a loop about 400m long. It covers the junction at heights between 11m and 35m above ground, and is scheduled to officially open in March. The junction, which partially opened in 2010, is covered with concrete walls to prevent exhaust gas from polluting nearby areas.

Wrestler Yoshida Granted People's Honor Award

(October 24, 2012)

The government formally decided to bestow the People's Honor Award on Saori Yoshida for her remarkable achievement of winning a combined 13 consecutive world and Olympic wrestling titles. Yoshida, 30, will become the 19th individual winner of the prize, which was inaugurated in 1977. An award ceremony will be held at the Prime Minister's Office. Yoshida's record of 13 consecutive 55-kilogram titles is unprecedented in wrestling history, breaking the record of legendary Russian Greco-Roman champion Alexander Karelin. Yoshida earned her 10th world championship in Canada while taking her third Olympic gold at this year's London Olympic Games.

Japan: From 20th To 24th In 'Ease Of Doing Business'

(October 24, 2012)

Japan ranked 24th in "ease of doing business" in a report released by the World Bank on Monday, down from 20th the previous year, indicating the country needs aggressive regulatory reforms to change this perception. The 2013 annual report showed Japan lags far behind its East Asian rivals such as Hong Kong, which came in second, South Korea, in eighth place, and Taiwan, in 16th spot. Covering 185 economies, the report measured and tracked regulation changes for domestic small and midsize enterprises and assigned the rankings based on indicator sets that benchmark regulations in 10 areas, such as starting a business, protecting investors and trading across borders. Singapore ranked first, while New Zealand took third place, the United States fourth and Denmark fifth.

Second Most Millionaires Living In Japan

(October 24, 2012)

Japan has about 3.58 million people with net assets worth $ 1 million or more this year, the second-highest number after the United States, which has 11.02 million millionaires, according to an estimate by the Swiss bank Credit Suisse Group AG. The figure for Japan represented an increase of around 83,000 from the previous year. The bank is projecting the figure to hit 5.4 million in 2017. On the list of super-rich adults with net assets of $ 50 million or more, Japan drops to fourth with some 3,400, after the United States with around 38,000, China with 4,700 and Germany with 4,000.

Tokyo Ranks 10th In Cities Of Opportunity Ranking

(October 26, 2012)

Tokyo came in at No. 10 on PricewaterhouseCoopers' 2012 Cities of Opportunity ranking, rising from 14th place in 2011, among 27 major cities around the world. The U.S.-based consulting firm put Tokyo at the bottom of the list in terms of natural disaster risk following the Great East Japan Earthquake, its business environment and cosmopolitanism were rated highly. It came out on the top for availability of quality health care and number of headquarters of the world's largest 500 firms. New York topped the overall ranking, followed by London. Singapore was the highest-scoring city in Asia at seventh. Cities were rated based on the total score for 60 items in 10 broad areas.

Mobile Phone Disaster Alert System

(October 29, 2012)

The government will promote the implementation of a new disaster alert system to ensure the public can receive important information as soon as possible on their cell phones and through other channels. The planned system will enable mobile phones, cable TV connections and other devices to automatically receive emergency information, such as evacuation instructions from local governments and reports from the central government's J-Alert system, according to officials. Under the current J-Alert system, the Cabinet Secretariat and the Japan Metrological Agency send emergency alerts to the Fire and Disaster Management Agency, which notifies relevant local governments via satellite. Municipalities then turn on disaster broadcast systems to relay emergency information to residents via outdoor loudspeaker systems.

Calls

> **EU Seventh Framework Programme (FP7)**
The seventh EU Framework Programme on Science Research and Innovation
http://cordis.europa.eu/fetch?CALLER=FP7_NEWS&ACTION=D&RCN=34831

> **Japan-EU Funding Opportunities** [Exchange Promotion]
Latest funding and research calls between Europe and Japan
Newsletter: http://ec.europa.eu/euraxess/links/japan/docs/Newsletter_June_2012.pdf

Upcoming Science and Technology Related Events in Japan

> **Swiss Solar Pavilion @ PV EXPO 2013** [Photovoltaics], Feb 27 – March 1, 2013
Organized by the Swiss Science & Technology Office
➥ If you wish to participate in the Swiss Solar Pavilion, please contact tok.science@eda.admin.ch

> **150 Years Anniversary: Switzerland-Japan Friendship Year 2014**
The year 2014 will mark a milestone in the friendly relations between Switzerland and Japan which will celebrate the establishment of diplomatic relations 150 years ago.
http://www.eda.admin.ch/eda/en/home/reps/asia/vjpn/embjpn/anchjp.html

>> More events on the Japan Science and Technology Office homepage:
http://tinyurl.com/News-Events-in-Japan
