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Iranian scientists use nanosensors to achieve best limit for early cancer diagnosis

Iranian researchers from Nanobiotechnology Department of the University of Tehran designed a nanosensor that has the highest reported value of sensitivity in the diagnosis of cancer. The nanosensor enables diagnosis of cancer in its early stages through a fast, simple and cheap method. Results of the research have been published in Biosensors and Bioelectronics, vol. 60, issue 1, April 2014, pp. 35-44.¹

Researchers of Iran use stem cell to treat skin burn

Researchers of Cell and Molecule Research Center of Iran University of Medical Sciences in cooperation with experts from Amir Kabir University of Technology have managed to use stem cell for treating skin burns in laboratory animals. The research, in case of success, will lead to a significant development in treating skin injuries particularly severe burns.²

Iranian scientists use new method to treat BPH

For the first time in the Middle East, Iranian radiologists in Imam Khomeini (RA) Imaging Center and an expert in interventional radiology have used interventional radiological technique to treat Benign Prostatic Hyperplasia (BPH). The new method rules out the need for surgery, and simply by blocking the artery for a shrink in prostate size.³

Surgical stapler developed in Khuzestan

Researchers at Ahvaz Jondishapour Medical University, Khuzestan province, southern Iran, have developed a surgical stapler which is used in surgery in place of sutures to close wounds. In bowel and lung surgery, staples are primarily used because since staple lines are more consistent, they are less likely to leak blood, air or bowel contents.⁴

Iran Inaugurates Mideast's Largest Biological Refinery

Qeshm Micro Algae Biological Refinery started operation in Southern Iran as the Middle-East's largest biological technological company on micro algae. The aim of the company is to enrich foodstuff for human being's health, healthy world with reduction of green gas and production of healthy biological products. The company is working on transfer of hi-tech for cultivating micro algae in industrial scale to produce biodiesel bio energy, bio jet in 1000-

^{1.} http://english.farsnews.com/newstext.aspx?nn=13930428000159

^{2.} http://www.irna.com/en/News/2720809

^{3.} http://en.mehrnews.com/detail/News/103336

^{4.} http://www.irna.com/en/News/2732165

acre scale and technology for industrial production of goods preventing chronic diseases as food additives. It also produces medical and sanitary products for industrial purposes.⁵

New Method for Production of Polymeric Nanocarriers Used in Medical Industries

Iranian researchers from Amirkabir University of Technology produced polymeric nanocarriers that can be used in pharmaceutics and medical industries. This new method does not require complicated chemical reactions and enables the production of the product only in one step. Results of the research have been published in Advanced Materials, vol. 26, issue 19, June 2014, pp. 3118-3123.⁶

Iran and UK produce new generation of wind turbine generators

Iran's Sharif university of Science and UK's Cambridge University have jointly invent new generation of wind turbine generators. Joint powerful research team of Iran and UK universities invented the first world inductive generator consuming two fuels with 20 KW of power. The generator is now in Cambridge University working in a network. Inductive generators, consuming two fuels, cut costs of producing electricity by wind. Researchers of Sharif and Cambridge universities were able to make a new generation of these generators which cuts expenses notably and opens a new window in energy industry.⁷

Device to prevent DVT made in Iran

Researchers at Tehran's Amirkabir University of Technology have produced electrical stimulation device to help persons prone to varicose veins and blood clots. The device has four parts: motion detection unit, electrical stimulation unit, processing and control unit and a rechargeable battery.⁸

Iranian Scientists Produce Cobalt–Alumina Ceramic Nano Inks

Iranian researchers from the Institute for Color Science and Technology (ICST) produced low-cost inkjet nano inks to be used in ceramic and printing industries. The reduction in production cost of ceramic nano ink to be used in inkjet printers is one of the most advantages of the proposed method. On the other hand, the proposed ink helps the reduction of environmental pollution since it is based on water. Results of the research have been

^{5.} http://www.isna.ir/en/news/93050502418

^{6.} http://english.farsnews.com/newstext.aspx?nn=13930423000152

^{7.} http://en.mehrnews.com/detail/News/103478

^{8.} http://www.irna.com/en/News/2732517

published in Journal of the European Ceramic Society, vol. 43, issue 12, 2014, pp. 3119-3126.9

Iran produces new glucose sensor

Isfahan University of Technology researchers have developed a new non-enzymatic good analytical performance sensor based on copper/porous silicon nanocomposite. The low-cost sensor showed a good analytical performance.¹⁰

Scientists of Iran use waste cotton fibers to produce cellulose nanoparticles

Iranian researchers from Amir Kabir University of Technology managed to synthesize cellulose nanoparticles by using two environment-friendly processes. The use of waste cotton fibers for the production of cellulose nanoparticles is among the interesting points in this research. In addition to biodegradability and the ability to be recovered and re-used, cellulose nanoparticles are light and cheap, and they have very desirable mechanical properties. Therefore, they have high potential to be used in pharmaceutics, foodstuff, cosmetics, paper production and composite manufacturing. Results of the research have been published in details in Powder Technology, vol. 261, July 2014, pp. 232-240.¹¹

Iranian students win 1 gold, 3 silver medals at int'l chemistry contest

Iranian chemistry Olympiad team won one gold and three silver medals at the 46th International Chemistry Olympiad, held in Hanoi, Vietnam, from July 20-29. The Iranian team, comprising four 12th graders, won the medals in the Olympiad, which was joined by 291 contestants from 77 countries and territories.¹²

Researchers of Iran produce antibacterial nanocoating

Amirkabir University of Technology's researchers have produced an antibacterial nanosilver coating on the surface of polyethylene films. The coating can be used in packaging of foods such as milk to prevent bacterial growth, increase shelf-life and maintain the quality

- 9. http://english.farsnews.com/newstext.aspx?nn=13930510000110
- 10. http://www.irna.com/en/News/2732564

^{11.} http://english.farsnews.com/newstext.aspx?nn=13930507000184

^{12.} http://www.irna.com/en/News/2732743

and taste of foods. Results of this research will also have applications in medical, pharmaceutical and textile industries.¹³

Iran only second to US in slow drug delivery technology

Islamic Republic of Iran is only second to the US in developing slow drug delivery technology. Iranian researchers have conducted projects to develop slow drug delivery technology, thus helping patients in need of daily injection of drugs through providing their body tissues with amounts of drug enough for 3 months using the technology. The technology had before been successfully tested in human and animal samples. Before the technology being launched in Iran, the technology was imported with an annual cost of \$25 million; and now, the project meets the domestic demands, and the country has an eye on exports.¹⁴

Royan Institute achieves greater infertility treatment success

Royan Institute researchers successfully conducted egg freezing technology and produced recombinant proteins used as growth factors. In this achievement if a patient has to undergo chemotherapy quickly after cancer diagnosis, doctors collected a sample of tissue from the ovary and froze it. After the woman's chemotherapy was completed, the doctors implanted the stored sample into her ovary. The institute has now established an ovary and egg bank.¹⁵

Sharif university students shine at IMC 2014

Tehran's Sharif University of Technology students won two gold and four bronze medals at the 21st International Mathematics Competition (IMC) for University Students. Some 73 teams from around the world participated in the competition held in Blagoevgrad, Bulgaria, from July 29 to August 4, 2014.¹⁶

Iranians indigenize Claus technology

Researchers at the Nanotechnology and Catalyst Research Center affiliated to the Research Institute of Petroleum Industry have indigenized the Claus process. The Claus process is the most significant gas desulfurizing process that recovers sulfur from the gaseous

- 14. http://en.mehrnews.com/detail/News/103521
- 15. http://www.irna.com/en/News/2733012

^{13.} http://www.irna.com/en/News/2732851

^{16.} http://www.iranreview.org/content/Documents/10-Iranians-on-List-of-World-s-Most-Influential-Scientific-Minds.htm

hydrogen sulfide found in raw natural gas and from gases derived from refining crude oil and other industrial processes.¹⁷

Non-Enzyme Nanosensors Quickly Measure Blood Sugar

Iranian researchers from Isfahan University of Technology designed a new non-enzyme nanosensor that has applications in the measurement of blood glucose. Results of the research can meet the needs of hospitals and diagnosis laboratories to a cheap, quick and accurate sensor for the measurement of blood sugar in patients.¹⁸

First Iranian-made amphibian aircraft unveiled

Iran has produced its first amphibious aircraft. Amphibious aircrafts or amphibians are the aircrafts that can take off and land on both land and water. Fixed-wing amphibious aircraft are seaplanes (flying boats and floatplanes) equipped with retractable wheels.¹⁹

Nanoparticles Help Production of Canals for Recovery of Nerves

Iranian researchers used nanotechnology and designed nerve-guiding canals which are appropriate for the recovery of damaged nerves. The product is biocompatible and biodegradable and after passing the complementary tests, the canal can be used in neurology surgery sections. Results of the research have been published in Journal of Materials Science: Materials in Medicine, vol. 25, issue 2, February 2014, pp. 363-373.²⁰

Iranian universities develop salt-tolerant rice

Scientists at Sari Agricultural Sciences and Natural Resources University and Babol Noshirvani University of Technology, northern Iran, and Yazd University, central Iran, are in the process of perfecting the salt-tolerant rice before conducting field tests. This will make saline rice farms in coastal areas usable. The researchers have also achieved success in seawater desalination, using minerals and agricultural wastes. They are also developing seawater desalination equipment.²¹

19. http://www.irna.ir/en/News/2733640

^{17.} http://www.irna.ir/en/News/2733131

^{18.} http://english.farsnews.com/newstext.aspx?nn=13930518000126

^{20.} http://english.farsnews.com/newstext.aspx?nn=13930519001050

^{21.} http://english.irib.ir/radioculture/sci-tech/item/193813

Iran develops smart surgical drill

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An Iranian knowledge-based company developed a smart drill to improve orthopedic surgical procedures. The drill helps prevent side-effects of knee and hip joint replacement surgeries. Using the drill prevents damage to nerves and arteries of bones. The smart drill has so far been used in knee and hip joint replacement surgeries in Gilan Hospital, northern Iran.²²

Silver nanocoatings better choice for packaging of foodstuff

Iranian researchers from Amirkabir University of Technology produced antibacterial silver nanocoating to increase the life and quality of foodstuff. This method has applications in textile, hygienic and medical industries as well as foodstuff packaging, specially dairies. Results of the research have been published in Surface and Coatings Technology, vol. 245, issue 1, February 2014, pp. 1-8.²³

Iranian University obtains 4 medals in Mathematics Contests

Mathematics team of Isfahan University of Technology won one gold, one silver and two bronze medals in the International Mathematics Competitions (IMC-2014). Attended by 324 postgraduate students in mathematics from 72 universities, the 21st edition of the competition was held in Bulgaria during July 29-August 4.²⁴