iTech in Brief

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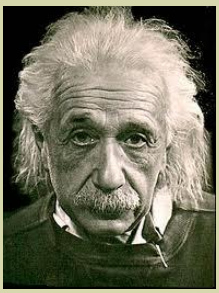
"If we knew what it was we were doing, it would not be called research, would it?".



Albert Einstein (1879-1955) [German physicist]

In this issue

New Streetlights, Traffic Signals Save Money, Reduce Energy Use

The Chicago Department of Transportation (CDOT) is completing an initiative to install new, energy-efficient street lighting and traffic signals in hundreds of locations throughout the cityð improvements that will lead to an estimated $1.8 million annual savings in electrical costs, and almost 15,000 metric tons of carbon dioxide (CO2) reduction.

CDOT will also replace older traffic signals with new, LED traffic signals at 1,000 intersections citywide. LED traffic signals are brighter and easier to see than older incandescent-bulb fixtures, and also use less electricity.

The new streetlights are the Cityôs new standard for street and alley lights. They feature ceramic metal-halide fixtures that use less wattage and, therefore, less electricity, than the sodium-vapor fixtures they replace. Each fixture is estimated to reduce electricity use about $40 to $70 annually, and will have a longer average lifespan (7-8 years vs. 5-6 years).

Despite the lower wattage, the lights appear as bright or brighter to the eye than the old light fixtures, and offers truer color of objects.

Streets Lighted with Ceramic Metal Halide Bulb

Chicago is the first larger city in the United States to use white metal-halide lighting.

Additionally, Chicagoôs ceramic metal-halide fixtures reduce "sky glow" (light traveling up, instead of down) by between 50 to 100 percent depending on the type of fixture. They also reduce ñlight trespassòð light shining into unwanted areas, like nearby buildings or homes.

The anticipated cost savings and pollution reduction is significant. The traffic signal program will save more than $1,065,000 annually, with a carbon-dioxide reduction of more than 8,100 metric tons. The changes will also result in lowered maintenance costs for several years.

Source: www.cityofchicago.org:

Global Spec: DirectU2 – The World of Glass, Ceramic, Fibers and Fabrics September 22, 2011 - Volume 3 Issue 9

Image: alibaba.com

c Tongue to Identify Different Cava Wines

sci-entists have developed an electric tongue that they claim can distinguish different types of Cava wines. Cava, a Spanish "sparkling wine", is a centuries-old tradition carried on in the northern areas of Spain.

The new research aimed to copy the human taste system due to a combination of ñsensor systems and advanced mathematical procedureso̍. The device can also detect defects in the wines, said the researchers at the Autonomous University of Barcelona who have been researching and developing electric tongues over several years.

The electronic tongue they have developed can currently identify three types of cava: Brut, Brut Nature and Medium-Dry. However, with proper training the device will be able to identify all wine varieties, claim the researchers.

As the type of cava is determined by the amount of sugar added, it was important to find out the sugar content to distinguish between different wine varieties, said the scientists. The resulting classifications are: Brut Nature (<3 g/L, no sugar added), Extra Brut (<6 g/L), Brut (<12 g/L), Extra Dry (12-17 g/L), Dry (17-35 g/L), Medium-Dry (33-50 g/L) and Sweet (>50 g/L).

In order to design the electronic tongue, the researcher group identified 21 different cava samples using voltammetric measurements.

Using a combination of principal component analysis (PCA), discrete wavelet transform (DWT), and artificial neural network (ANN), the researchers said they managed to replicate the human taste system and distinguish between different types of cava, obtaining a classification similar to a sommelier or wine professional.

A second order standard addition method (SOSAM) was used to correlate the sought analytical information. This made it possible to quantify the amount of sugar added in the cava production process, said the researchers. The scientists said they are currently working on perfecting the device through the incorporation of biosensors.

Electronic tongues contain a sensor matrix to obtain chemical information from samples in the same way that they are obtained by human senses. The perception of taste is based on the generation of sensory patterns of the nerves activated by the brain and nerve print recognition, this is achieved with the use of computerised systems which interpret data obtained by the sensor matrix.

As in biological mechanisms, a learning and training process is required to enable the electronic tongue to recognise properties that need to be identified, the scientists added.

Ref:
Science Daily.com; Electroanalysis Volume 23, Issue 1, Pages 72-78; wineintro.com; image pcglobaltech.com

tification Addresses Full Lifecycle

A new standard (GS-50) from Green Seal Inc is being acclaimed as the first in the personal care and cosmetic category in the US to cover the whole product lifecycle. The standard establishes environmental, health and performance requirements for products intended to be left on the body and hair including, but not limited to, lotions, hairspray and styling products, sunscreen, nail polish, insect repellent, make-up, antiperspirant and deodorant.

Green Seal says this standard, along with Green Seal standard for soap and shower products (GS - 44) provides tools that manufacturers can download and use to improve their products, validate those improvements through certification and provide consumers with a guide.

Green Seal says GS-50 covers much more than many other standards. To achieve certification, manufacturers must satisfy performance, health and environmental, social responsibility, packaging and labeling requirements as well as provide definitions for common claims including ónaturalô, óorganicô and óbio basedô.

The evaluation process includes review of data; assessment of labeling, marketing and promotional materials; and an on-site audit of manufacturing facilities. Those certified will be monitored annually.

The upcoming release of the new FTC Green Guides for Environmental Marketing Claims in the US are likely to result in more scrutiny of claims made on products and how the claims are substantiated, says Green Seal. Greater transparency will therefore make independent verification increasingly important.

(For more information visit http://www.greenseal.org)

Ref.

SPC 2011, Vol. 84 (6)

Make a difference

The environmental quality of your wardrobe is ultimately determined by the way you wash it. Sixty percent of energy associated with a piece of clothing is spent in washing and drying it. Over its lifetime, a T shirt can send up to 4 kg of CO_2 into the air.

Wash your clothes in warm water instead of hot

Save up to launder a few big loads instead of many smaller ones

Use the most efficient machine you can find

Dry your clothes in natural way, by hanging them on a line rather than loading them in a dryer

Time April 9th, 2007; image blog.timesunion.com

uded Bran Makes Better Bread: Study

Breads containing extruded bran could help to provide a better quality loaf than its non- extruded counterpart, according to new research by a team of researchers from the University of Valladolid, Spain.

Researchers, report that the extrusion of wheat bran before its use in high fibre bread could improve the quality and characteristics of both the bread dough and the final loaf.

Extruded bran

The research investigates the effect of bran extrusion on bread quality, reporting that using extruded bran also reduces the loss of dough height during fermentation to a greater extent than untreated bran, and produces a higher volume and better firmness than breads with normal bran.

Bran is often used to enrich breads (notably muffins) and breakfast cereals, especially for the benefit of those wishing to increase their intake of dietary fibre. In addition to being a rich source of fibre, bran has also been shown to be high in vitamins and minerals, whilst it also has high antioxidant content.

However, the addition of bran can have negative consequences on bread volume and certain sensory properties, noted the authors.

The researchers investigated the effect of bran extrusion on the rheological characteristics of bread dough, behaviour during fermentation, and final bread quality, by adding between 2.5 and 20 per cent bran to bread dough.

The team reported that extruded bran increased dough development time and tenacity to a greater extent than non-extruded bran, whilst it also minimized the loss of stability if over-mixing occurred. Extruded bran, due to its greater gas production, also reduced loss of dough height during fermentation to a greater extent than untreated bran according to the researchers.

They added that no differences were found in the sensory evaluation.

Source: LWT - Food Science and Technology, 44(10): 2231-223;
www.bakeryandsnacks.com
Images: 123rf.com ; chefinyou.com

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s Fibre for Car Bumpers

Alternative and environmentally-friendly means of manufacturing everyday items are constantly being sought by researchers. The University of Philippines is currently looking at Abaca fibres to make a car bumper.

Abaca Tree

Abaca is a plant indigenous to Philippines, which provides 86% of the worldôs production of the banana-shaped plant. This can be harvested three times a year and yields 600 ï 1300 kg of fibre per hectare. Abaca fibre is also extremely strong with mechanical strength of up to 970 MPa. The car bumper is made from woven Abaca fibre, reinforced with polyester composite. The bumper will form a part of an e-car and its strength is comparable to commercial bumpers currently available.

Source: Asia Research News 2010

Images: abacaphilippines.com; fabricsamples.com

Abaca Fabric

New Technique Scales up Nanofiber Production

A new spin on an old technology will give scientists and manufacturers the ability to significantly increase their production of nanofibers, according to researchers at North Carolina State University.

Collections of nanofibers, because they are porous and lightweight, are useful in applications ranging from water filtration to tissue regeneration to energy storage. But although nanofibers are relatively inexpensive to produce, the current method of production, needle electrospinning, is time-intensive.

In electrospinning, a liquid-polymer solution is passed through a hypodermic needle held at high voltage. The needle transfers electric charge, which transforms the solution into a jet of charged liquid that ñspinsò into a nanofiber as it exits the needle. Unfortunately, this method of production does not lend itself to large-scale manufacturing processes.

A team of NC State University researchers including physicists, a textile engineer and a graduate student found a particularly simple technique that scales up nanofiber production and provides a close connection to the needle electrospinning method. In a study recently published in the journal *Nanotechnology,* they demonstrated ñbowl electrospinning.ò In place of a hypodermic needle, the researchers filled a bowl with the polymer fluid and applied a short burst of very high voltage to the liquidôs surface, which caused multiple jets to form and ñspinò nanofibers onto a collector placed around the outside of the bowl.
According to them, the experiment gave a 40-fold increase in nanofiber production, and demonstrated the potential for further increases.

Source: http://news.ncsu.edu/releases/tp-bochinski/; Global Spec October 27, 2011 - Volume 3 Issue 10

Roof Airbag System

company in USA has developed a roof-mounted airbag that is designed to allow auto-makers create more space for interior styling compared with typical instrument panel airbags.

The ñbag in roofò airbag system deploys one airbag from the roof, protecting both driver and passenger, thus eliminating the need for a passenger-side airbag, usually found in the instrument panel.

The company said that putting the system in vehicles will not only save space but it will significantly lower dashboard production costs.

They have worked on the ñbag in roofò project for several years, expects the ñbag in roofò to debut in 2014 model-year vehicles and manufacturing will most likely take place in Germany or Poland.

Source: http://www.autoweek.com/article/20110520/CARNEWS/110529989#ixzz1cQKotdg8

Rapid and Accurate Measurements of Large Surface Areas

Gaining rapid and accurate measurements of large surface areas is a task which has taxed designers and engineers over many decades, yet without such data, optimisation of production is difficult and problem is exacerbated when the areas that need to be measured or digitised are shiny or reflective. .

In the aerospace sector, even smaller aircraft have surface areas of several hundred Ft^2 or more. The tiniest fault or imperfection at any stage can cause significant performance issues.

Co-ordinate measuring machines are not an option here because while they are highly accurate at measuring a few points, time simply does not permit the measurements of enough points to gain a truly accurate representation of the whole surface. As said before laser scanners are also not viable.

This was the issue faced by a UK-based aviation company, a specialist repair and maintenance centre for sports aircraft.

An aircraft with a wingspan of around 20 feet and the company initially created a lifesize óproof of conceptô model to secure investment.

With this complete, the next phase was to gain an accurate representation of the entire aircraft for virtual testing and finite element analysis (FEA) on CAD with the aim of optimising the aerodynamic design of the final aircraft.

A UK-based white light scanning specialists whose Quartz range of scanners is proven in the acquisition of millions of points to create a highly detailed point cloud in just a few seconds ï even when contending with large and reflective surface areas.

The scanning experts using products from the companyôs acclaimed Quartz white light scanning range, scanned the entire aircraft within a few hours ï a total of some 250 scans which have since been ópatchedô and surfaced ready for the FEA stage. Even after data reduction, some 250M measurements were available in this detailed model.

Source: www.phasevision.com

EVENTS

Ninth International Banana Forum and First International Congress of Biotechnology and Biodiversity

Location: Ecuador Date: 28 - 31 May 2012
Organisation: Centro de Investigaciones Biotecnologicas del Ecuador

...ional Congress of Biotechnology and Biodiversity will be run in ...IX International Banana Forum. Commercial Fair and Symposia on update topics will be common for both meetings. Social activities will also be for all participants.

Key objectives - Create a forum where national and regional results on biotechnology, biodiversity and banana growing will be presented and discussed. Analyze the main trends on the more relevant aspects of biotechnology, biodiversity and banana industry, including biodiscovery, metagenomics and genetic engineering, which will be accomplished with contributions from world class experts. Analyze with both banana producers and exporters the most important results obtained through research on fungicide resistance in M. fijiensis, climate change adaptation, technological innovation and bioprocesses. To promote biobusiness by means of a ñbiobusiness roundò.

Registration details - Online registration may be made by accessing the website of the Biotechnological Research Center of Ecuador www.cibe.espol.edu.ec or on the website of the Association of Banana Exporters of Ecuador (AEBE) www.aebe.com.ec from September 12, 2011. Additionally, the registration form can be sent via e-mail to the following address: cibe@espol.edu.ec .

Updated information will be available for the event from September 9, 2011 in CIBE-ESPOL and AEBEôs WebPages.

Those interested can follow the new information and happenings of the event through Twitter and Facebook: CIBE-ESPOL from September 30, 2011

Contact Details - david_catagua@hotmail.com

For more information: http://cibe.espol.edu.ec/node/48

Source: www.scidev.net/en/events/

Coriander Oil Could Tackle Food Poisoning and Drug-Resistant Infections

Coriander oil has been shown to be toxic to a broad range of harmful bacteria. Its use in foods and in clinical agents could prevent food-borne illnesses and even treat antibiotic-resistant infections, according to the authors of a study published in the Journal of Medical Microbiology.

Researchers from the University of Beira Interior in Portugal tested coriander oil against 12 bacterial strains, including E.coli, and meticillin-resistant Staphylococcus aureus (MRSA). Of the tested strains, all showed reduced growth, and most were killed, by solutions containing 1.6% coriander oil or less.

Coriander oil is one of the 20 most-used essential oils in the world and is already used as a food additive. Coriander oil is produced from the seeds of the coriander plant and numerous health benefits have been associated with using this herb over the centuries.

This study not only shows that coriander oil also has an antibacterial effect, but provides an explanation for how it works. Coriander oil damages the membrane surrounding the bacterial cell and this disrupts the barrier between the cell and its environment and inhibits essential processes including respiration, which ultimately leads to death of the bacterial cell.

Source: www.foodingredientsonline.com

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Information Services Centre, Industrial Technology Institute
No. 363, Bauddhaloka Mw., Colombo 07
Phone / Fax: 2698624
E-mail: info@iti.lk

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thushara@iti.lk

Snail mail: Head, Information Services Centre, Industrial Technology Institute
363, Bauddhaloka Mw., Colombo 07
Tele/Fax: 011ï 2698624

Compiled by Thushara Abeysekera
Assisted by Ramani Kapurubandara