

TECHNOLOGY ROUNDUP

A NEWS BULLETIN FROM
Technology Information Services Division
Pakistan Scientific & Technological Information Center



PASTIC

Nov-Dec, 2009

Vol. 1, No.3

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- IFTECH (International Food & Technology Exhibition) PAKISTAN
- ICBTE-2010 (International Conference on Business Technology and Engineering)

International

- Aquatech India 2010 (Industry Science & Technology)
- The China International Exhibition on Label Printing Technology 2010
- ICECT 2010 (International Conference on Electronic Computer Technology)

Tech & Trade Offers

- **Dizyan natural gas network**

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- **EDX3600B Professional Full-element Analyzer**

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PASTIC National Center
Quaid-I-Azam University Campus
P.O. Box 1217, Islamabad

Phone: 051-9248103-4
Fax: 051-9248113
Email:
director@pastic.gov.pk
www.pastic.gov.pk

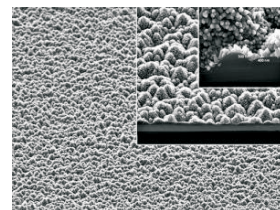
'Intelligent Car' Warns the Driver in Case of Accident Hazard



A research group of the Department of Computer Architecture and Technology at the University of Granada Spain has developed a new computer system, called DRIVSCO, that allows vehicles to learn from the behavior of their drivers at the wheel, in such a way that they can detect if a driver presents an "unusual behavior" in a curve or an obstacle on the road and generates signals of alarm which warn him on time to react. The concept investigated was how to get that a car learns from the user's driving facing a curve or an approaching intersection, a pedestrian or another vehicle regardless the type of driving of the driver. The DRIVSCO goes far beyond a computer vision system for driving assistance. During night driving, if the vehicle detects a deviation in his way of driving in face of a curve, it interprets that it is due to the lack of visibility of the driver (as the driver has a limited visibility of the low beams field, whereas the car's night vision system is much more powerful and has a longer range). Therefore, it generates signals of alarm to warn the driver of his unusual behavior when approaching a curve or detection of a potentially dangerous object. The research group has developed a system of artificial vision (analysis of the scenario) in only one chip. Such device receives input pictures and produces a first "interpretation of the scenario" in terms of depth (3D vision), local movement, image lines, etc, everything in an only electronic chip. This system can be assembled in different types of vehicles in future. In addition, they have used a "reconfigurable hardware", so that the system can adapt itself to new field of application.

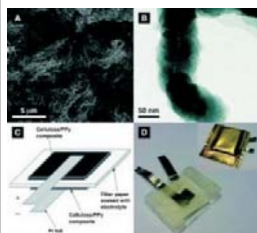
New Nanostructure Technology Provides Advances in Eyeglass, Solar Energy Performance

Chemical engineers at Oregon State University, USA have invented a new technology to deposit "nanostructure films" on various surfaces, which may first use as coatings for eyeglasses that cost less and work better. The key to the process is use of a chemical bath, controlled by a microreactor, to place thin-film deposits on various substrates such as glass, plastic, silicon or aluminum. The technology will create a type of nanostructure that resembles millions of tiny pyramids in a small space, which function to reduce the reflectance of any light that strikes the material. The films reduce the reflectance of light, and in the case of eyeglasses would capture more light, reduce glare and also reduce exposure to ultraviolet light. The technique may also provide a way to make almost any type of solar energy system work more efficiently, and ultimately could be used in cameras or other types of lenses. A patent has been applied for the new technology, and the first commercial products may be ready within a year.



Www.oregonstate.edu

Paper Battery may Power Electronics in Clothing and Packaging Material



Imagine a gift wrapped in paper that lights up with words like "Happy Birthday" or "Happy Holidays," thanks to a built in battery an amazing battery made out of paper. Scientists are trying to develop light, ecofriendly, inexpensive batteries consisting entirely of nonmetal parts. The most promising conductive polymer being used is polypyrrole (PPy), but often regarded as too inefficient for commercial batteries. The scientists realized, however, that by coating PPy on a large surface area substrate and carefully tailoring the thickness of the PPy coating, both the charging capacity and the charging (discharging) rates can be drastically improved. The secret behind the performance of this battery is the presence of the homogeneous, uninterrupted, nano-thin coating about 1/50,000th the thickness of a human hair of PPy on individual cellulose fibers which in turn can be molded into paper sheets of exceptionally high internal porosity. The special cellulose used was extracted from a certain species of green algae, with 100 times the surface area of cellulose

found in paper. That surface area was key to allowing the new device to hold and discharge electricity very efficiently. The innovative design of the battery cell was simple since both of the electrodes consist of identical pieces of the composite paper separated by an ordinary filter paper soaked with sodium chloride serving as the electrolyte. The potential difference is solely due to differences between the oxidized and reduced forms of the functional PPy layer. The battery recharged faster than conventional rechargeable batteries and appears well-suited for applications involving flexible electronics, such as clothing and packaging, the scientists say. Alternatively, low-cost very large energy storage devices having electrodes of several square yards in size could potentially be made in the future.

.Www.acs.org

Hydrogen Fueled Cars

Scientists at the Swiss-Norwegian experimental stations (beamlines) at the ESRF has just discovered a new form of lithium borohydride (LiBH₄) which brought research on hydrogen-fueled cars one step closer to application. Automotive industry regards hydrogen as a perspective energy carrier. If a good hydrogen storage material is developed, the petrol in cars can be replaced by clean hydrogen energy and five kilograms of hydrogen would take you as far as twenty liters of petrol. Today there are several compounds of interest, which are known to either store relatively large amounts of hydrogen or release it easily, but none do both in a way suitable for practical application. Researchers at the ESRF are currently studying several compounds of light elements with hydrogen and different forms they take at different pressure and temperature. The new form of lithium borohydride, appears to be unstable. Until today, all the known forms of this material are too stable, which means that they don't let the hydrogen go. This one is really unexpected and very encouraging. Combined experimental and theoretical efforts suggest that the new form of LiBH₄ can release hydrogen at a lower temperature and becomes even more attractive considering the fact it appears already at 10.000 bar, the pressure used by pharmaceutical companies to compress pellets. It can be stabilized by chemical substitutions even at ambient pressure. For now, the team's next step is to apply chemical engineering to the compound to "freeze" the new form at ambient conditions and check whether it shows more favorable hydrogen storage.

Www.sciencedaily.com

New Multi-Use Device for Measuring Oxygen Intake

Purdue University researcher's team has created a fiber-optic sensor capable of measuring oxygen intake rates could have broad applications ranging from plant root development to assessing the effectiveness of chemotherapy drugs. The self-referencing optrode is non-invasive, can deliver real-time data, holds a calibration for the sensor's lifetime and does not consume oxygen like traditional sensors that can compete with the sample being measured. The sensor is created by heating an optical fiber and pulling it apart to create two pointed optrodes about 15 microns in diameter, about one-tenth the size of a human hair. A membrane containing a fluorescent dye is placed on the tip of an optrode. Oxygen binds to the fluorescent dye. When a blue light is passed through the optrode, the dye emits red light back. The complex analysis of that red light reveals the concentration of oxygen present at the tip of the optrode. The optrode is oscillated between two points, one just above the surface of the sample and another a short distance away. Based on the difference in the oxygen concentrations, called flux, the amount of oxygen being taken in by the sample is calculated. It's the intake, or oxygen transportation, that is important to understand because just knowing the oxygen concentration in or around a sample will not necessarily correlate to the underlying biological processes going on. The sensor could have applications in biomedical science, agriculture and material science. Testing included tumor cells, fish eggs, spinal cord material and plant roots. Future work will focus on altering the device to measure things such as sodium and potassium intake as well. The National Science Foundation funded the research.



www.purdue.edu

When is the Pineapple Ripe? Metal Oxide Sensors to Detect Safety and Quality Of Foods



Researchers at the Fraunhofer Institutes for Molecular Biology and Applied Ecology IME in Schmallenberg have developed system that uses volatile components to detect when the pineapple is ripe and when it can be delivered to the supermarket. The system has been developed by bringing together various technologies based on the use of metal oxide sensors, similar to those installed in cars, for example, to close ventilation vents when driving through a tunnel. Researchers at IPM have developed these sensors further and if a gas flows over the sensor, at temperatures of 300 to 400°C, it will burn at the point of contact. The subsequent exchange of electrons changes the electrical conductivity, before the gas reaches these sensors; it has to go through a separation column with polymers. Certain substances are already filtered out here. A prototype of the analysis equipment already exists. Initial tests were promising the system measures the volatile substances just as sensitively as conventional equipment used in food laboratories. In a further step the researchers want to optimize the system and adapt it to specific problems.

www.fraunhofer.de

New Technology Detects Chemical Weapons in Seconds

Scientists at Queen's University Belfast are developing new sensors to detect chemical agents and illegal drugs which will help in the fight against the threat of terrorist attacks. The devices will use special gel pads to 'swipe' an individual or crime scene to gather a sample which is then analyzed by a scanning instrument that can detect the presence of chemicals within seconds. This will allow better, faster decisions to be made in response to terrorist threats. The scanning instrument will use Raman Spectroscopy which involves shining a laser beam onto the suspected sample and measuring the energy of light that scatters from it to determine what chemical compound is present. It is so sophisticated it can measure particles of a minuscule scale making detection faster and more accurate. Normally this type of spectroscopy is not sensitive enough to detect low concentrations of chemicals, so here the sample is mixed with nanoscale silver particles which amplify the signals of compounds allowing even the smallest trace to be detected. Preliminary researches have already been completed and are now at the exciting stage where they put the various strands together to produce the integrated sensor device. For the future, they hope to be able to capitalize on this research and expand the range of chemicals and drugs which these sensors are able to detect. It is hoped the new sensors will also be the basis for developing 'breathalyzer' instruments used by police for detecting alcohol and roadside drugs.



www.epsrc.ac.uk

Plasmobot': Scientists to Design First Robot Using Mould



Scientists at the University of the West of England are to design the first ever biological robot using plasmodium, the vegetative stage of the slime mould *Physarum polycephalum*, and a commonly occurring mould which lives in forests, gardens and most damp. This research is at the forefront of unconventional computing. This mould, or plasmodium, is a naturally occurring substance with its own embedded intelligence. It propagates and searches for sources of nutrients and when it finds such sources it branches out in a series of veins of protoplasm. The plasmodium is capable of solving complex computational tasks, such as the shortest path between points and other logical calculations. This new plasmodium robot, called plasmobot, will sense objects, span them in the shortest and best way possible, and transport tiny objects along pre-programmed directions. The robots will have parallel inputs and outputs, a network of sensors and the number crunching power of super computers. The plasmobot will be controlled by spatial gradients of light, electro-magnetic fields and the characteristics of the substrate on which it is placed. It will be a fully controllable and programmable amorphous

intelligent robot with an embedded massively parallel computer.

www.uwe-ac.uk

FORTHCOMING EVENTS

NATIONAL

6th Pharma Asia International Exhibition 2009 (Exhibition & Conference)

06-08 March, 2010, Karachi, Pakistan
www.health-asia.com

IFTECH (International Food & Technology Exhibition) PAKISTAN

31st May-3rd June, 2010, Karachi, Pakistan
www.foodtechpakistan.com

ICBTE-2010(International Conference on Business Technology and Engineering)

23-24 July 2010, Islamabad, Pakistan
www.iqraisb.edu.pk/icbte

INTERNATIONAL

Aquatech India 2010 (Industry Science & Technology)

3-5 February 2010 New Delhi, India
www.iloveindia.com

The China International Exhibition on Label Printing Technology 2010

9-11 March, 2010, China
www.2456.com

ICECT 2010 (International Conference on Electronic Computer Technology)

7-10 May, 2010, Kuala Lumpur, Malaysia
www.icect.org

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Company Contact

Design Traders

Mr. Shoukat Bari [Marketing]

Address: 9/14, Omer Blessing, Firdous Colony, Nazimabad.
Karachi, 74600, Sindh, Pakistan.

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Dr. Zulfeqar Hussain Khan (CEO)

T-15 Second Floor, Hakimsons Building, West Wharf, Karachi 74000, Pakistan

Phone: 0092-21-2315070-80 Fax: 0092-21-2205080

Mobile: 0092-321-2818712

E-mail: jmzpba@gmail.com



Please give us your feedback and address queries to director@pastic.gov.pk