TECHNOLOGY ROUNDUP

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- Nanoparticles May Increase Plant DNA Damage
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Natural Air Purifier

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- Technology Exhibition: Technologies (R&D) For Rice Sector
- Packaging, Plastics, Mould & Die Machinery Surabaya
- IITEC Pakistan 2012- IT & Telecom Exhibition & Conference
- Subconist & EF
- Climate Change: A Challenge for Agriculturists
- Gemeinsame Jahrestagung der DGEM, AKE und GESKES
- The 20th European Biomass Conference and Exhibition

PASTIC National Centre
Quaid-i-Azam University Campus
P.O. Box 1217, Islamabad

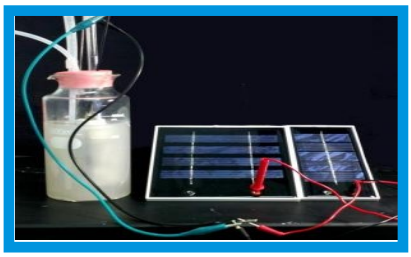
Phone: 051-9248103-4, 9248111
Fax: 051-9248113
Email:editor@pastic.gov.pk
Web: www.pastic.gov.pk

from adult epithelial stem cells and dermal papilla cells can regenerate fully functional hair follicle and hair growth. Their bioengineered follicles showed restored hair cycles and piloerection through the rearrangement of follicular stem cells and their niches. The bioengineered hair follicle also developed the correct structures and formed proper connections with surrounding host tissues such as the epidermis, arrector pili muscle and nerve fibers.

This study thus reveals the potential applications of adult tissue-derived follicular stem cells as a bioengineered organ replacement therapy.

Www.researchsea.com

Electricity and Carbon Dioxide Used to Generate Alternative Fuel



Researchers at the UCLA Henry Samueli School of Engineering and Applied Science have demonstrated a method for converting carbon dioxide into liquid fuel isobutanol using electricity.

Today, electrical energy generated by various methods is still difficult to store efficiently. Chemical batteries, hydraulic pumping and water splitting suffer from low energy-density storage or incompatibility with current transportation infrastructure.

Ralph M. Parsons Foundation Chair in Chemical Engineering, and his team report a method for storing electrical energy as chemical energy in higher alcohols, which can be used as liquid transportation fuels.

The current way to store electricity is with lithium ion batteries, in which the density is low, but when it is stored in liquid fuel, the density could actually be very high. In addition the electricity can be used as transportation fuel without needing to change current infrastructure.

Liao and his team genetically engineered a lithoautotrophic microorganism known as Ralstonia eutropha H16 to produce isobutanol and 3-methyl-1-butanol in an electro-bioreactor using carbon dioxide as the sole carbon source and electricity as the sole energy input.

Photosynthesis is the process of converting light energy to chemical energy and storing it in the bonds of sugar. There are two parts to photosynthesis a light reaction and a dark reaction. The light reaction converts light energy to chemical energy and must take place in the light. The dark reaction, which converts CO2 to sugar, does not directly need light to occur.

The researchers have been able to separate the light reaction from the dark reaction and instead of using biological photosynthesis, they are using solar panels to convert the sunlight to electrical energy, then to a chemical intermediate, and using that to power carbon dioxide fixation to produce the fuel. This method could be more efficient than the biological system.

Liao explained that with biological systems, the plants used require large areas of agricultural land. However, because Liao's method does not require the light and dark reactions to take place together, solar panels, for example, can be built in the desert or on rooftops.

Theoretically, the hydrogen generated by solar electricity can drive CO2 conversion in lithoautotrophic microorganisms engineered to synthesize high-energy density liquid fuels. But the low solubility, low mass-transfer rate and the safety issues surrounding hydrogen limit the efficiency and scalability of such processes. Instead Liao's team found formic acid to be a favorable substitute and efficient energy carrier.

Instead of using hydrogen, they use formic acid as the intermediary and use electricity to generate formic acid and then use the formic acid to power the CO2 fixation in bacteria in the dark to produce isobutanol and higher alcohols.

The electrochemical formate production and the biological CO2 fixation and higher alcohol synthesis now open up the possibility of electricity-driven bioconversion of CO2 to a variety of chemicals. In addition, the transformation of formate into liquid fuel will also play an important role in the biomass refinery process.

Www.ucla.edu

Forthcoming Tech Events

Itechnology Exhibition: Technologies (R&D) For Rice Sector

7 May, 2012
Gujranwala
www.pastic.gov.pk

Packaging, Plastics, Mould & Die Machinery Surabaya

6-12 June, 2012
Indonesia
www.emeraude-international.com

IITEC Pakistan 2012- IT & Telecom Exhibition & Conference

7-9 July, 2012
www.explorelahore.com

Subconist & EF

30 May- 2 Jun 2012
Turkey
www.biztradeshows.com

Climate Change: A Challenge for Agriculturists

28-30 May, 2012
Pakistan
http://www.aup.edu.pk/

Gemeinsame Jahrestagung der DGEM, AKE und GESKES

14-16 June, 2012
Germany
Http://www.ernaehrung2012.de/

The 20th European Biomass Conference and Exhibition

18-22 June, 2012
Italy
http://www.conference-biomass.com

Tech & Trade Offers

Peel Bond Strength Tester

Peel test or adhesion testing is the measurement of the adhesive or bond strength between two materials, determine the strength requires to separating fabric with interlining / fusing gives repeatable and accurate results long Gripper is provided to hold the test specimen accurately and can be used vertically and horizontally.

Features:

1. Digital Gauge 10 kg -10g (20 & 25 Kg Available)
2. Kg to Lb unit conversion facility
3. Sensitivity 1%
4. Large LCD Display
5. Auto peak hold, Tar button
6. Long Battery Backup-More than 100 hrs
7. Auto Power off for saving batteries after 20 seconds
8. Screen back light On / Off control

Company Contact
Mars Traders
Mr. Ziauddin Qureshi [Director/CEO/General Manager]
Mobile: 92-301-8235127
Phone: 92-21-36057366
Fax: 92-21-5206702, 1-630-981-0641
Address: R-243, Sector-9, North Karachi, Pakistan
Www.marstraders.com

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Company Contact
Indusvalleycrafts
Mr. Masroor Saeed [Director/CEO/General Manager]
Mobile: 923217802222
Phone: 92-61-6781458
Fax: 92-42-7707384
Address: 103 Hadiat Ullah Block, Mustafa Town, Lahore, Pakistan
http://indusvalleycrafts.com

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