

# APEC

## Advanced Biohydrogen and Green Growth Newsletter

### **APEC Meetings and Events**

§ 2013 APEC Short-Term Training Course on Green energy Technology §  
November 25-26, 2013  
Chinese Taipei

*The food security, climate change, energy security, interlinked challenges, and green growth for the APEC region.*

The second 2013 APEC Short-term Training Course on Green Energy Technology was held at Feng Chia University, Taichung, Chinese Taipei on November 25-26. There were 7 instructors and 42 students from Philippines, Indonesia, Lao, Malaysia, Vietnam, Thailand, Chinese Taipei, India, and Singapore participated in the course. 7 Outstanding instructors deliver different lectures in green energy fields. Participants also did the experiments in the Lab and gained significant ideas and knowledge in the area of green energy technology.



2013 APEC Short-Term Training Course on Green energy Technology



Learn by experiment in the Lab

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➤ **Publisher: Office of APEC Research Center for Advanced Biohydrogen Technology**

➤ **Editor: Chiu-Yue Lin, Professor**

➤ **Address: 100 Wenhwa Road, Seatwen, Taichung, Taiwan**

➤ **TEL: +886-4-24517250 Ext. 6230**

➤ **FAX: +886-4-35072114**

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## Research News

### § Green energy initiation and investments in APEC countries- North American (USA) contributions §

#### Monsanto Biofuels Feedstock Research Extended

**US - US-based technology provider Monsanto and plant genomics company Evogene are to extend and expand a research and development collaboration involving biofuels feedstocks up to August 2016.**

The collaboration, initially signed in 2008, has focused on identifying key plant genes related to yield, environmental stress and fertiliser use in corn, soyabean, canola and also cotton. The new agreement extends these existing programmes, while adding a new five-year programme for the identification of genes providing resistance to stalk rot disease in corn. Stalk rot is believed to be caused by multiple *Fusarium* species, which is a family of fungi that causes yield loss across the world's major crops. "Agricultural innovation will be key in helping to meet growing global demand," said by David Fischhoff, Monsanto technology strategy development leader. "This collaboration is focused on developing new tools that help farmers drive yields even further." The prior agreement included a put option giving Evogene the right, under defined conditions, to sell one million Evogene shares to Monsanto at \$12 (€8) per share. The prior put option has been cancelled in exchange for an increase in all future milestone payments and royalty rates with respect to genes licensed by Evogene to Monsanto.

#### Syngenta Contract Could Boost Ethanol Production

US - Plant and crop improvement business Syngenta has signed a contract with Arkalon Ethanol in Kansas for the plant to start using corn which features its Enogen trait technology. Syngenta claims Enogen, a field-to-fuel system, will help deliver alpha amylase enzyme directly in corn grain thus saving the costs of adding liquid enzymes and improving process efficiency. The way Syngenta explains the enzyme works is by helping an ethanol plant to reduce the viscosity of corn mash, resulting in 'unprecedented levels of solids loading, thereby increasing ethanol yields and throughput, as well as saving critical costs from reduced natural gas, energy, water and chemical usage'. "In our research, we've seen no yield drag between our hybrids with the Enogen trait and commercial hybrids of the same isoline without the trait, so the premium paid to the grower is a true premium and can really make a difference in their bottom line," said by the head of Syngenta renewable fuels David Witherspoon. It is believed Arkalon is contracting local corn farmers to produce and supply Enogen grain to its ethanol plant for 2014 at an average premium of \$0.40 (€0.36) per bushel.

**Adapted from:** <http://www.thebioenergysite.com/news/13514/monsanto-biofuels-feedstock-research-extended>,  
<http://www.thebioenergysite.com/news/13472/syngenta-contract-could-boost-ethanol-production>

### § Green energy initiation and investments in APEC countries- Chinese Taipei contributions §

#### Biodiesel Created Via Microwave Research

**Chinese Taipei - Research at the National Cheng Kung University, Taiwan has developed a microwave-based process which transforms waste cooking oils into biodiesel in 10 seconds.**

The team was led by the visiting Aharon Gedanken from the Department of Chemistry at Bar-Ilan University, Israel. "I was told Taiwanese people like to cook a lot but waste cooking oils are a problem for the environment. So we come up with an idea to combine a microwave and with a certain catalyst so that we can fully convert the waste into biodiesel efficiently," he mentioned.

"Everyone could do this, albeit at small-scale, in their own kitchens." The project is currently converting 100kg of waste oil a day but Gedanken believes that

figure can eventually move into tonnes. "We are in the process of applying for a patent for the technology which underpins the study," he added.

"In Europe, by 2020, 20 per cent of the diesel at petrol stations will contain biodiesel and I hope Taiwan will see that across 100 per cent of its outlets by the same year." The university is hoping an approved budget for 2014 which will allow it to purchase equipment to scale up production levels

**Adapted from:** <http://www.thebioenergysite.com/news/13509/biodiesel-created-via-microwave-research>

## § Green energy initiation and investments in APEC countries- Mexican Ventures §

### Waste to Fuel Biodiesel Plant for Merida

**MEXICO - The city of Merida in Mexico is to have a waste to biodiesel refinery producing up to 3.5 million litres of biodiesel a year.**

The Waste to Diesel bio refinery will process 800 tonnes of waste a day. Oliver Hoffman, director of the company and a finalist in the green companies competition Cleantech Challenge Mexico 2013, said that the efficiency of the plant model will mean that a tonne of biofuel will be produced for every two tonnes of solid waste processed.

He added that the biodiesel has superior performance to conventional diesel and will be able to extend the life of an engines by 30 per cent because combustion is cleaner and more efficient.

Mr Hoffman said that the model biofuel plant that is suitable for any motor vehicle, and will not need cars or trucks to be modified. "The biodiesel quality exceeds European standards, which are the strictest in the world, and meets the highest standards of quality," he said.

### Mexican Biorefinery to Yield Diesel from Waste

MEXICO – A bio-refinery plant is planned in Merida City, Yucatan, that will produce one tonne of biodiesel from every two tonnes of waste.

Waste to Diesel is responsible for the project that promises an output of 3.5 million litres of biodiesel per year. Oliver Hoffman, company director, said the benefits of using biodiesel extend to the motor, extending the life of engines by up to 30 per cent.

This is because of the lower sulphur levels compared to the content of a typical litre of diesel. Explaining the extraction process, Mr Hoffman that the biofuel is a light oil made by a 'molecular break' technique that produces oil at a faster pace. "Once selected, solid wastes are introduced into a tank where it is mixed with a kind of oil," said by Mr Hoffman.

**Adapted from:** <http://www.thebioenergysite.com/news/13430/waste-to-fuel-biodiesel-plant-for-merida>,  
<http://www.thebioenergysite.com/news/13494/mexican-biorefinery-to-yield-diesel-from-waste>

## § Green energy initiation and investments in APEC countries- Australian and Thailand contributions §

### Biodiesel Operation to Expand in Australia

**AUSTRALIA** - A grant has been awarded by the Western Australian government to help expand a renewable fuels programme. The Ashburton Aboriginal Corporation (AAC) will put the A\$25,000 (€17,600) into its AshOil programme, which uses used cooking oil to produce about 15,000 litres of biodiesel each week. It is believed AAC currently supplies mining company Rio Tinto with 50,000 litres of the fuel a month.

### Cassava for Ethanol Encouraged in Thailand

**THAILAND** - In Thailand, the ministries of Commerce and Energy are reportedly set to cooperate

to develop a strategy to promote the production of ethanol from cassava.

Energy minister Pongsak Raktapongpaisarn is believed to have been tasked with overseeing the country's production of cassava as an energy and food crop, with one objective being to prevent a price drop. Raktapongpaisarn has recently been encouraging cassava farmers to get involved with the government's contract farming programme. In addition to this, the minister has also been asked to lead policy in regards to bio-plastics and Thailand's first bio-plastic pant.

Adapted from: <http://www.thebioenergysite.com/news/13532/biodiesel-operation-to-expand-in-australia>,  
<http://www.thebioenergysite.com/news/13468/cassava-for-ethanol-encouraged-in-thailand>

## Special Column

### § Dr. Eniya, AGENCY FOR THE ASSESSMENT AND APPLICATION OF TECHNOLOGY (BPPT), Indonesia visited GEDC §

On November 20, Overseer Prof. Chiu-Yue Lin invited Dr. Eniya, AGENCY FOR THE ASSESSMENT AND APPLICATION OF TECHNOLOGY (BPPT), Indonesia to visit GEDC. Two sides signed a MOU for the joint projects, and further worked on academic exchanges. In the future BPPT will have students visit to GEDC as part of technical exchange and cooperation.



Dr. Eniya visit to GEDC and signing of MOU