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EDITOR'S NOTES

Welcome to the August 2005 issue of the Liquid Fuels from Biomass newsletter. In this issue, we summarize three recent meetings that Task 39 has been involved in. 1) A recap of the 1st International Biorefinery Workshop highlights the growing interest in biofuels and bioenergy as part of an integrated approach to natural resource consumption. 2) A summary of the IEA Session on the carbohydrate-based economy, offered as part of the International Union of Forest Research Organizations (IUFRO) Congress, focuses on forest biomass and its use in bioenergy and biofuel applications. 3) A summary of the Biotechnology Industry Organization's 2nd Annual World Congress on Industrial Biotechnology and Bioprocessing, provided to Task 39 by Brent Erickson.

As always, we encourage all IEA Bioenergy Task members to make use of this newsletter, to contribute content, and to suggest improvements. The next issue of the Newsletter will be released in November 2005. We look forward to your contributions! - [Warren Mabee](#)

FROM THE TASK LEADER

I hope you all are having a pleasant and productive summer! In this issue of the IEA Task 39 Newsletter, we have summarized the events that occurred at a number of recent meetings which showcase the rising interest worldwide in liquid biofuels from biomass. Task 39 took a leadership role in coordinating a special session at the IUFRO Forestry Congress in Brisbane, Australia, which focused on all aspects of bioenergy from forest biomass. In addition to our own work in Task 39, this session highlighted the efforts of Task 30 (Short Rotation Crops for Bioenergy Systems), Task 31 (Biomass Production for Energy from Sustainable Forestry), and Task 38 (Greenhouse Gas Balances of Biomass and Bioenergy Systems), as well as Australian Bioenergy. Steven Schuck, ExCo member for Australia, also presented on the situation in Australia.

Our upcoming workshop in Lund, Sweden is approaching rapidly and is shaping up nicely, with 14 confirmed speakers and 22 student, government, and industry participants. We thank our Task 39 members at Lund University, particularly Christian Roslander, Guido Zacchi, and Bärbel Hahn-Hägerdal, for their organizing efforts.

As always, the success of Task 39 rests upon the dedication and contributions of our members! We are always looking for input from our membership, and welcome any suggestions, ideas, or contributions that you might wish to make. All it takes to get started is to send an email to one of the Task 39 country representatives listed later in this newsletter.

Best wishes from Vancouver! - [Jack Saddler](#)

UPCOMING MEETINGS

The next IEA Task 39 Workshop will be held October 12 to 14, 2005, in Lund, Sweden. This workshop is being developed as a short course on bioconversion, and will be organized into eight sessions over two days, with a restricted list of invited speakers or faculty (15) and a limited number of 'students' attending (20-30), primarily from Northern Europe, including Sweden, Finland, Denmark, the Netherlands and the UK. If you have expressed interest in attending but not yet confirmed your hotel reservations, we would ask that you contact Christian Roslander (Christian.Roslander@chemeng.lth.se) in order to finalize your arrangements.

We look forward to seeing you in Lund this October!

1ST INTERNATIONAL BIOREFINERY WORKSHOP WASHINGTON, DC, USA – 20-21 JULY 2005

Warren Mabee

The 1st International Biorefinery Workshop was organized by the US Department of Energy Office of Energy Efficiency and Renewable Energy and the European Commission Directorate General for Research. About 300 attendees gathered from across the United States, Canada, and the European Union in order to bring each other up-to-date on biorefinery development. In addition to providing a review of state-of-the-art research into biorefinery technologies, the meeting served as an opportunity to evaluate biorefinery markets and opportunities, and provided a forum in which partnerships for biorefinery RD&D efforts could be fostered.

The Workshop was opened by the US Secretary of Energy, Samuel Bodman, who provided the audience of approximately 300 attendees with an overview of the US government's position on renewable energy, and particularly biofuels. When speaking about the new Energy Bill being tabled in the United State, he stated:

"...on the issue of biomass, we are encouraged to see Congress supporting the increased use of clean, domestically-produced renewable fuels, such as ethanol and biodiesel, and we look forward to a flexible, cost-effective Renewable Fuels Standard in the final energy legislation."

– S. Bodman, July 20, 2005

The first Plenary Session focused on a *Strategy for Future Transport Systems*. Speakers included James Sinnick from BP, Gerson Santos-Leon from Abengoa Bioenergy, Kjell Bergström from Saab/GM, and Loren Beard from DaimlerChrysler. In the talks and discussion, a number of positive statements about the potential for bio-based materials, fuels and energy use in traditional applications were made.

In all, there were 14 Breakout Sessions covering a wide range of topics, too many to summarize effectively in this space! However, a brief recap of the meeting is as follows. Sessions 1A/2A brought together lessons learned from *Existing Biorefineries*, particularly based on agricultural and forestry materials. In this category, the Archer Daniels Midland facility in Decatur IL was shown to be the largest current example of an agriculture-based operation, while large pulp mills have the potential to be adapted into more diverse forest-based biorefining operations. Sessions 1B/2B provided an overview of R&D focused on the *Thermochemical Platform*. This

session primarily discussed the development of synthesis gas products, and had strong representation from non-biobased industries, including oil refineries and the automotive sector. Sessions 1C/2C examined non-technical barriers to *Biorefinery Deployment*, including financing and marketing issues. Finally, Session 1D focused on the larger vision for the potential sector by examining *The Analysis Underlying the Biorefinery Concept*.

Sessions 1E/2E focused on the technical R&D challenges associated with biomass *Production & Feedstocks*, particularly given the extremely large amount of inexpensive biomass that will be required to support large-scale biorefining efforts. In Session s 1F/2F, the R&D issues associated with the *Sugars Platform* focused on issues that are very near to Task 39's core mandate, with a presentation by Bärbel Hahn-Hägerdal providing a link to the Task's ongoing efforts. In Sessions 1G/2G, the guidelines for *Establishing Biomass R&D Priorities* were discussed from the European and American perspective, showing some of the differences between the approaches of these jurisdictions.

In the closing Plenary Session, some of the *Opportunities for Biorefineries* were discussed, including the potential for biomass production under a variety of climate change and management regimes, the long-term potential associated with woody biomass, the need for bioproducts to improve rural economies and national security, and the ability of biofuels and bioenergy to reduce greenhouse gas emissions and improve environmental performance.

In the closing statements of the conference, some of the 'lessons learned' from the workshop were discussed. These included the need to improve overall process efficiencies and to work towards process integration, the need to foster linkages between thermochemical- and sugar-platform development, and the opportunities that exist in collaborating with the EU.

It should be noted that a number of companies provided support for this workshop, including a number of active participants in Task 39, such as Abengoa Bioenergy R&D, Genencor International, Iogen Corporation, and Novozymes. It was very encouraging to see representatives from a number of diverse sectors, including energy, chemical, forestry, and automotive manufacture, all of whom will be necessary players in the biorefining sector of the future.

IEA SPECIAL SESSION AT THE IUFRO XXII WORLD FORESTRY CONGRESS: THE ROLE OF THE IEA IN CREATING A CARBOHYDRATE-BASED ECONOMY BRISBANE, AUSTRALIA – 9 AUGUST 2005

[Warren Mabee](#)

This session, organized by Warren Mabee and Jack Saddler of Task 39, was designed to examine the role that forest biomass will play in future energy, fuels, and materials production, and to highlight the role that the International Energy Agency Bioenergy Program plays in this area. As such, we invited participation from a number of IEA Tasks. The International Union of Forest Research Organizations is an event that attracts top researchers from around the world, with expertise in all aspects of forestry.

[Jack Saddler](#) opened the session and presented an overview of some of Task 39's ongoing program, focusing on the technical progress in bioconversion of lignocellulosics to ethanol, as well as policy and biodiesel opportunities. Some examples of policy decisions designed to support increased ethanol production and use were discussed, including the Brazilian experience of the 1980's and 1990's, as well as current Canadian initiatives for supporting commercial ethanol production. The talk also provided a review of major existing pilot facilities for lignocellulosic bioconversion, either in existence or currently under construction. Finally, ongoing research to reduce the high costs associated with the enzymatic hydrolysis step was described.

[Steve Schuck](#) provided the audience with an overview of bioenergy development in Australia. He described the drivers and key issues for bioenergy, focusing on the Australia's recently released Energy White Paper, its Mandatory Renewable Energy Target, and other Federal and State Government policies and programs supporting renewable energy and bioenergy. It was shown that aspects of bioenergy have been contentious in Australia, and the attitudes of some environmental organizations and electricity retailers were described. Bioenergy development is being fostered in Australia through Bioenergy Australia, a group of 40+ government and industry organizations. Several examples of Australian bioenergy projects existing or under development were provided, as well as an indication of likely future opportunities and directions for the bioenergy industry and for the forestry industry.

[Annette Cowie](#), Subtask Leader for IEA Bioenergy Task 38 (*Greenhouse Gas Balances of Biomass and Bioenergy Systems*) discussed the role of bioenergy in the mitigation of greenhouse gas (GHG) emissions. Task 38 has developed computer models and case studies for the assessment of GHG balances of bioenergy systems compared with fossil energy systems. A major objective is to aid decision-makers in selecting the most effective options to limit emissions or enhance removals of greenhouse gases. Task 38 has focused much of its efforts in clarifying

the option of biomass sinks within the relevant provisions of the Kyoto Protocol.

[Jim Richardson](#), Task Leader for IEA Bioenergy Task 31 (*Biomass Production for Energy from Sustainable Forestry*), reviewed the availability of forest biomass for bioenergy, biofuels, and biomaterials. Throughout most of the developing world, forest biomass is harvested for energy, for cooking, heat and other daily needs. Increasingly in the western industrialized world also, interest is focused on the forest as a feedstock for bioenergy, a sustainable, carbon-neutral alternative to fossil energy. To be truly sustainable, the harvest of biomass for energy must consider nutrient cycling, carbon sequestration, stand productivity and soil and water conservation, as well as cost-efficient forest operations.

[Theo Verwijst](#), Task Leader for IEA Bioenergy Task 30 (*Short Rotation Crops for Bioenergy Systems*) expanded upon the theme opened by Jim Richardson, and provided an overview of the developments in short rotation crops (SRC) for bioenergy in Scandinavia. It describes the past and present drivers for SRC-development and identifies current trends that provide opportunities for Scandinavian forestry, agriculture and the bioenergy industry. A major question addressed in the paper is how the Scandinavian systems could be modified to function in different parts of Europe and elsewhere. Barriers to large-scale implementation in Scandinavia and their solutions are illustrated and compared to the situation outside Scandinavia.

[Ritva Toivonen](#), Research Director at the Pellervo Economic Research Institute in Helsinki, closed the formal component of the session with a discussion of the growing share of bioenergy in the European Union. The target of the EU is to double the share of renewables (triple the use of bio-fuels) between 1995 and 2010, which indicates strongly growing demand for energy-wood. This would strongly accelerate international trade of wood-based bio-fuels, and the development would no doubt also have impacts on industrial round-wood markets. This may lead to changes demand/supply balance of traditional forest industry products.

Overall, the session met its objective of raising the profile of IEA activities within the more traditional forest research community that IUFRO represents. Our session attracted crowds of between 50-90 people, a considerable success given the range of parallel sessions that were offered at the Congress. We would like to thank all of the presenters, as well as the audience, for their attendance at this session and for the range of insights that were provided.

THE BIOTECHNOLOGY INDUSTRY ORGANIZATION'S SECOND ANNUAL WORLD CONGRESS ON INDUSTRIAL BIOTECHNOLOGY AND BIOPROCESSING

Orlando, Florida, 20-22 April 2005

*Brent Erickson
Executive Vice President
Biotechnology Industry Organization (BIO)*

Representatives from more than 250 companies, universities and government laboratories in 28 countries gathered April 20-22 to discuss the latest developments in industrial biotechnology as they relate to biofuels production and other applications at the 2nd World Congress on Industrial Biotechnology and Bioprocessing in Orlando, Florida last April. The conference attracted more than 700 attendees – a 50 percent jump over the first World Congress, also held in Orlando in 2004.

Paul Roberts, author of "The End of Oil: On the Edge of a Perilous New World," opened the forum by predicting that biofuels' time has come. "The days of cheap oil are over," Roberts told the gathering. "Only three years ago, \$50-per-barrel oil seemed like a bad dream. But we can say that oil prices will be higher, and that we will need a cost-effective and environmentally sound replacement.... Biofuels are one of the few options available today."

The conference featured discussion tracks on using industrial biotechnology for manufacturing and synthesis, bioprocessing of agricultural feedstocks, sustainability issues, novel applications, and advances in bioprocessing. It also featured addresses by notable representatives from government, industry and the media.

Iowa Governor, Tom Vilsack, pointed to the biofuels boom as one of the primary reasons Iowa ranked second in the nation in per capita income growth in 2004. He outlined his state's vision for a robust bioeconomy, and highlighted the importance of government support for emerging biobased industry.

Jim Greenwood, President of the Biotechnology Industry Organization (BIO), one of five groups who

partnered to organize the meeting, called on the federal government to do more to help spur investment in biorefineries and biomass refining technology. (In June, Congress responded by including \$3.6 billion of investments for biofuels and biobased products in the comprehensive energy bill signed by the President August 8.)

In the bioprocessing track, Charles Wyman of Dartmouth College, Bruce Dale of Michigan State University, Michael Ladisch of Purdue University, and Richard Elander of the National Renewable Energy Laboratory presented a report on advances in biomass pretreatment. Jeff Lievense from Tate & Lyle, Hans van Dijken of BIRD Engineering, Lee Lynd of Dartmouth College, and Jan de Bont of TNO Quality of Life discussed remaining challenges in lingo-cellulosic fermentation. Tom Pekich and Bill Dean of Genencor, David Johnson of the US Department of Agriculture and Larry Russo from the US Department of Energy examined how the current ethanol industry might serve as a bridge to biomass ethanol production. And scientists from China presented a perspective on industrial biotechnology in that country.

The novel applications track featured tantalizing advances in biological fuel cells, marine biotechnology, and the nanotechnology-biotechnology interface, and a special presentation on industrial biotech initiatives at the Department of Defense.

The 3rd World Congress on Industrial Biotechnology and Bioprocessing will take place in Toronto, Canada, July 12-14, 2006.

FUTURE WORKSHOPS/SYMPOSIA

18th Annual Ethanol Conference & Trade Show

August 16-18, 2005

Omaha, Nebraska – Qwest Center Omaha

www.ethanol.org

International Conference and Trade Fair for Hydrogen and Fuel Cell Technologies

Aug. 31 - 2005 to Sep. 1 - 2005

Hamburg, Germany

http://www.hamburg-messe.de/h2expo/h2_en/start_main.php

Green Power Central and Eastern Europe

September 7-9, 2005

Prague

<http://www.greenpowerconferences.com/events/GreenPowerCEE.htm>

Bioenergy 2005 in Wood Industry: International Conference and Exhibition

September 12-15, 2005

Jyväskylä, Finland

<http://www.finbioenergy.fi>

Eastern Biofuels Conference & Expo

September 13-15, 2005

Warsaw, Poland

www.renewableenergyaccess.com/rea/events

Conference on Renewable Resources and Biorefineries

September 19-21, 2005

Ghent, Belgium

<http://www.rrbconference.urgent.be/>

World Hydrogen Technologies Convention

October 3-5, 2005-08-24

Singapore

<http://www.whtc2005.com/>

Ninth Grove Fuel Cell Symposium

October 4-6, 2005

London, UK

<http://www.grovetfuelcell.com/index.htm>

2005 Emerging Transport Technology Conference: The future of the motor car

October 4-5, 2005

Australia

<http://www.greenfleet.com.au/uploads/pdfs/ETTC%20Brochure%202005.pdf>

European Conference and Cooperation Exchange

October 5-8, 2005

Vienna, Austria

<http://www.bit.or.at/energy/menue.htm>

4th European Conference on Green Power Marketing

October 6-7, 2005

Berlin, Germany

<http://www.greenpowermarketing.org/index1.html>

Industrieforum Holzenergie

October 12-13, 2005

Stuttgart, German

<http://www.pellets2007.de/index.php?id=46>

Biofuels Workshop & Trade Show Eastern Region

October 10-12, 2005

Atlanta, Georgia – Hyatt Regency Atlanta

<http://www.bbibiofuels.com/biofuelsworkshop/east/2005/>

Fuels for the Future, 2nd Trade Conference on Biofuels

October 14-15, 2005

Berlin

http://www.mvo.nl/biobrandstoffen/download/RZ_Anouncement_3005051.pdf

Beyond Kyoto, searching for a sustainable energy-environment balance

October 18, 2005

Brussels

<http://www.friendsofeurope.org/>

Global Cooperation on 1 Watt: A Meeting on Standby Power

November 2-4, 2005

Seoul, Korea

<http://www.standbyforum.co.kr/index.php>

World Ethanol 2005 & Ethanol Production Workshop

November 2-4, 2005

Amsterdam, the Netherlands

http://www.agra-net.com/NASApp/cs/ContentServer?pagename=marlin/home&siteid=20000000062&MarlinViewType=MARKT_EFFORT&marketingid=20001252825

2nd European Hydrogen Energy Conference

November 22-25, 2005

Zaragoza, Spain

<http://ehc.info/>

Bioenergy Australia 2005 Conference

December 11-13, 2005

Melbourne, Australia

sschuck@bigpond.net.au

Canadian Renewable Fuels Summit

December 13-15, 2005

Toronto, Ontario – Toronto Royal York Hotel

<http://www.bbibiofuels.com/crfs/>

1st European Fuel Cell Tech & Applications Conf.

December 14-16, 2005

Rome, Italy

<http://www.asmeconferences.org/EFC05/index.cfm>

The Pacific Rim Summit

January 12-13, 2006

Honolulu, Hawaii

<http://www.bio.org/pacrim/>

National Biodiesel Conference & Expo 2006

February 5-8, 2006

San Diego, California – San Diego Convention Center/Omni San Diego Hotel

<http://www.biodieselconference.org/2006/>**Bioenergy World 2006**

February 9-12, 2006

Verona, Italy

<http://bees.sas.free.fr/bioenergy-world/>**BBI International's 22nd Annual International Fuel Ethanol Workshop & Expo**

June 20-23, 2006

Milwaukee, Wisconsin – Midwest Airlines Center

<http://www.fuelethanolworkshop.com/>**Biofuels Markets**

February 16-17, 2006

Brussels

<http://www.greenpowerconferences.com/Biofuels.htm>**World Sustainable Energy Days 2006**

March 1-3, 2006

Wels/Austria

<http://www.esv.or.at/esv/index.php?id=217&L=1&contUId=0>**Hydrogen Expo US**

March 12-14, 2006

Long Beach, CA

<http://www.hydrogenexpo.com/>**New Energy 2006**

March 16-18, 2006

Shanghai, PR China – Intex Shanghai

www.coastal.com.hk**Central Biofuels Conference & Expo II**

March 21-23, 2006

Panama City, Panama

www.centralbiofuels.com**Biofuels Markets in Latin America**

March 27-28, 2006

Rio de Janeiro

<http://www.greenpowerconferences.com/Biofuels.htm>**Group Exhibit Hydrogen and Fuel Cells**

April 1, 2006

Hannover, Germany

<http://www.fair-pr.com/>**International Conf. on Commercialization of H2 FC**

April 25, 2006

Hannover, Germany

<http://www.fair-pr.com/>**28th Symposium on Biotechnology for Fuels and Chemicals**

April 30-May 3, 2006

Nashville, TN, USA

<http://www.simhq.org/html/meetings.html>**Eastern Biofuels Conference and Expo II**

May 30-June 1, 2006

Budapest, Hungary – Intercontinental Budapest

wendy@biofuelsconference.com**Biofuels Markets Asia**

June 5-6, 2006

Bangkok

<http://www.greenpowerconferences.com/Biofuels.htm>**2006 Challenge Bibendum**

June 9-12, 2006

Paris, France

<http://www.challengebibendum.com/challenge/front/index.jsp>**16th Annual World Hydrogen Energy Conf.**

June 13-16, 2006

Lyon, France

<http://www.whec2006.com/main2.asp?version=an>**The 3rd Annual World Congress on Industrial Biotechnology and Bioprocessing**

July 12-14, 2006

Toronto, ON

<http://www.bio.org/>**World Forum on Energy Regulation**

October 8-11, 2006

Washington, DC

<http://www.worldforum2006.com>**Asia Biofuels Conference & Expo IV**

October 10-12, 2006

Beijing, China – The Great Wall Sheraton Hotel

wendy@biofuelsconferences.com

CONTACT INFORMATION

Please find contact information below for IEA Bioenergy's Executive Committee (ExCo), as well as the country representatives for each member of Task 39. Additional contact information is available at www.iea.org and at www.ieabioenergy.com.

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