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EDITOR'S NOTES

Happy New Year, and welcome to the March 2006 issue of the Liquid Fuels from Biomass newsletter. In this issue, we start our series of *Institutional Overviews*, where we will highlight the research organizations that are so important to the development of liquid biofuels. In this issue, we will highlight Lund University. Many thanks to Guido Zacchi, Mats Galbe, and Gunnar Lidén for contributing this article. We also include a summary of an upcoming PhD course on enzyme technology being offered by the Technical University of Denmark. Finally, we have introduced a new feature that we hope many of you will take advantage of: a page to highlight available scholarships and positions within research and industry.

Over the spring and summer, there will be a number of opportunities for Task 39 members to meet and work together. On April 30, we will be hosting a Country Representatives meeting in Nashville, TN, as part of the 28th Symposium on Biotechnology for Fuels and Chemicals. A summary of this meeting will be found in the next Newsletter. From June 12-14, the Biodiesel subtask will be holding their end-of-triennium workshop in Potsdam, Germany. Finally, from August 27th-September 1st we will be co-hosting a major workshop entitled ***Biofuels and Bioenergy: Challenges and Opportunities***. In conjunction with IEA Bioenergy Tasks 29 and 31, we will be inviting 150 of the leading scientists and companies from around the world to Vancouver, British Columbia. Attached to this newsletter is a one-sheet poster describing the event. Please check your calendars and save these dates, and be sure to check with our website (www.task39.org) for more details.

As always, we encourage all IEA Bioenergy Task members to make use of this newsletter, to contribute content, and to suggest improvements. - [Warren Mabey](#)

FROM THE TASK LEADER

In this issue of the Task 39 Newsletter, we begin what we hope will be an extensive series examining the research institutions in our member countries which are making such a strong contribution to our understanding of biofuels. This issue's examination of Lund University's program was summarized from original material prepared by Mats Galbe, Gunnar Lidén, and Guido Zacchi. Special thanks to each of these individuals for putting this together!

As we enter the last year of the triennium, we will have to spend quite a bit of time discussing the future direction of Task 39, Liquid Biofuels. As most of you know, in the past the main focus of our network has been on biodiesel produced from agricultural crops, on bioethanol from lignocellulosic biomass, and on policy issues related to both of these areas. However, in the last few years the IEA Bioenergy Executive Committee has been asking our Task to examine liquid biofuels derived by thermochemical means. We need to discuss the potential overlap this creates with some of the other Tasks and identify what type of role our network could play. We will be discussing these matters extensively over the next year, particularly at the workshops that we have organized.

Upcoming meetings and opportunities for Task members to participate include the Task 39 Business Meeting (April 30 in Nashville, TN), at the biodiesel workshop (June 12-14 in Potsdam, Germany), and at the end-of-triennium Workshop, entitled *Biofuels and Bioenergy* (August 27-September 1, in Vancouver, BC). As Warren indicated above, I would appreciate it if you would save these dates in your calendar and register for each event as soon as possible. More information is on our website (www.task39.org).

As always, the success of Task 39 rests upon the dedication and contributions of our members. I look forward to seeing you all soon, and to receiving your input into our next triennium's activities! - [Jack Saddler](#)

PRODUCTION OF ETHANOL FROM BIOMASS RESEARCH IN SWEDEN

Mats Galbe, Gunnar Lidén and Guido Zacchi

Research into ethanol production from lignocellulosic materials started at Lund University in the 1980's. Initially, the research consisted of individual projects and fundamental research activities dominated. In 1993, the Swedish ethanol development program was established with an increased level of governmental funding. This program was not part of a climate policy initiative and had funding amounting to 45 million SEK (€ 5M) for a three-year period, which was later extended by one year. The first ethanol program was followed by 7-year program on ethanol production from lignocellulosic material, with funding of 210 MSEK (€23M). This program was made up of 10 different projects, distributed among the major actors in the field in Sweden, with research ranging from fundamental to applied aspects in the disciplines microbiology, enzymology and engineering. The funding was provided by the government via the Swedish Energy Agency, or its predecessor NUTEK (the Swedish National Board for Technical and Industrial Development). The distribution of research projects throughout Sweden is shown below.

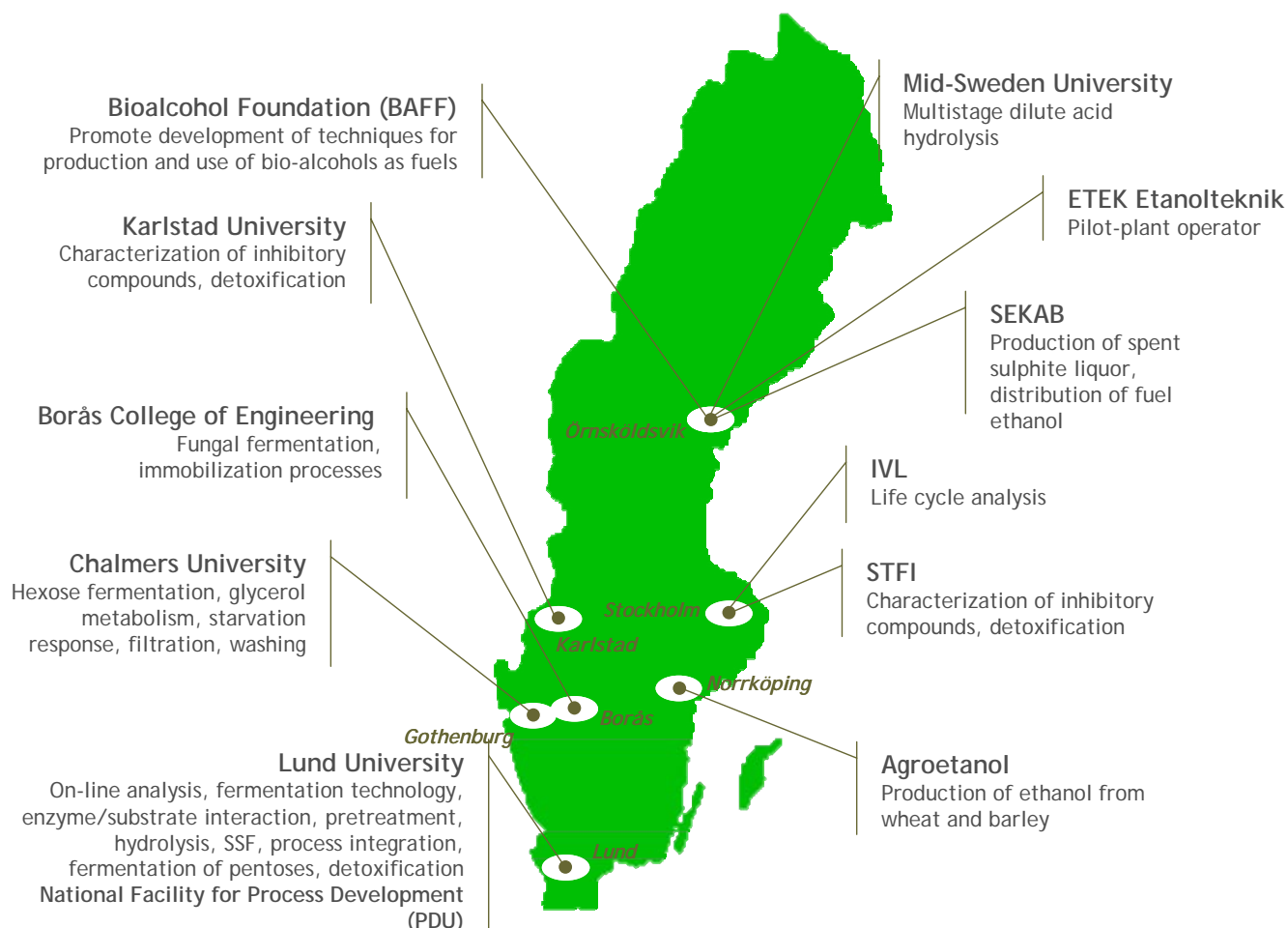
Research at Lund

Research on ethanol production has a long tradition at Lund University. As early as the mid-1980s, studies in

areas then believed to be more challenging were initiated. After a few years of initial investigations on a variety of topics such as fermentation, bio-sensors, separation of sugars and distillation, the research groups realized that a more structured approach was necessary. The departments of Applied Microbiology, Biochemistry, Analytical Chemistry and Chemical Engineering started a co-operative project covering the whole chain from pretreatment of the raw material to the final recovery of ethanol. The main raw material under consideration at that time was willow. Since then the group has carried out both basic and applied research on the production of fuel ethanol from lignocellulosic raw materials.

Today, the department of Applied Microbiology focuses on development of new genetically modified organisms, mainly originating from baker's yeast. The aim is to develop an industrial micro-organism able to ferment all sugars available in biomass and to make them tolerant to the inhibitory compounds that are present in wood hydrolysates. Detoxification of fermentation feed stocks is also studied.

The department of Biochemistry studies fundamental aspects of enzymatic hydrolysis of cellulose and hemicellulose and the interaction of the enzymes with



lignocellulosic material. The aim is to optimize the enzymatic hydrolysis step to achieve cost-effective hydrolysis of the cellulose after pretreatment. This will be done by minimizing the addition of enzymes, and by understanding and controlling the interaction between enzymes and cellulose as well as between enzymes and lignin.

The department of Chemical Engineering performs research on pretreatment, enzymatic hydrolysis, simultaneous saccharification and fermentation (SSF), process integration and techno-economic process evaluation. Development of fermentation technologies, mainly fed-batch techniques, to overcome inhibition and to increase productivity are also important research areas. A process development unit (PDU) has been constructed in which 5-10 kg of raw material can be processed through all stages to the final product (ethanol) and co-products. The unit is very flexible and capable of handling various raw materials, e.g. agricultural residues and forest residues; it can be used to study various process steps, individually or integrated, and various process configurations including recirculation of process streams. This is a national facility, which can be used both for applied research within the universities and research institutes, and for commissioned research for industries. It can also be used for commissioned work to institutes and industrial partners outside Sweden.

Research elsewhere in Sweden

At Chalmers University in Göteborg, research concerning dewatering of hydrolysates as well as fermentation of hexoses is carried out, as well as investigations into various methods that might increase the filterability of the lignin. Fundamental work regarding hexose fermentation in yeast includes starvation response, hexose transport and glycerol metabolism. Chalmers University, in collaboration with University College of Borås, also examines the use of alternative fermentation organisms of the genera *Rhizopus* and *Mucor* for fermentation of multiple sugars in dilute-acid hydrolyzates. Fermentation technology studies are primarily focused on immobilized cell systems.

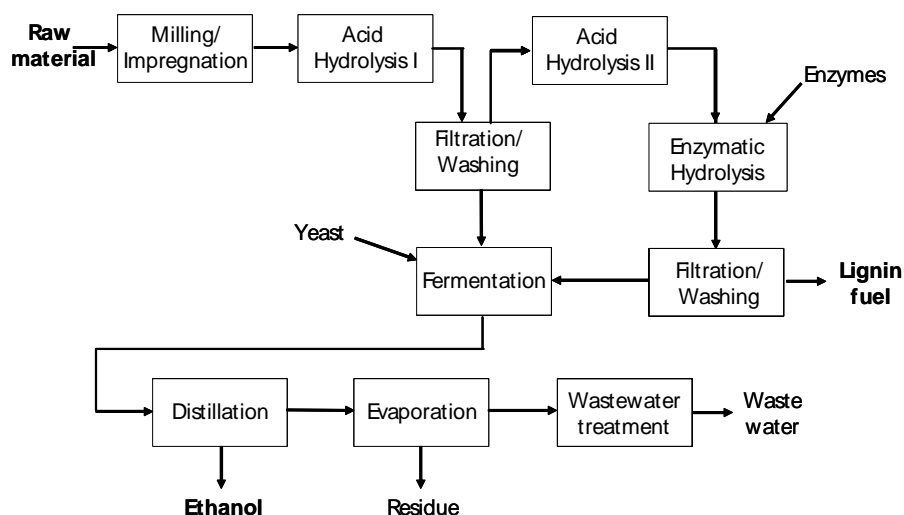
The detoxification and characterization of inhibitors is studied in collaboration between Karlstad University and

STFI-Packforsk (the Swedish Forest Research Laboratory). The efficiency of various methods for detoxification, including overliming, enzymatic treatment by laccase, ion exchange, has been assessed. Furthermore, the mechanism behind sugar degradation in overliming detoxification has been elucidated.

The Bio-Alcohol Fuel Foundation (BAFF), formerly known as the Swedish Ethanol Development Foundation (SSEU), is supported by a group of industrial companies. The aim of the foundation is to promote implementation of bio-alcohol in the transport sector, including aspects such as production of fuel, fuel distribution and acquisition of vehicles to the Swedish market. BAFF is also engaged in international networking activities. SSEU was established in 1983 and it has played an active role in promoting the introduction of ethanol on the Swedish fuel market. Up to the middle of the 1990's the organization also supported ethanol research projects in industry and at universities.

The ETEK Pilot Plant

Parallel to the research projects in the program, there was a development of a Swedish pilot plant unit, with the aim to prove process concepts and to provide reliable design data for a full-scale process. The pilot plant, situated in Örnsköldsvik, was built during the final phase of the 7-year program and was officially opened by the Swedish Prime Minister in May 2004. The total investment for the plant was in the order of € 16M. The plant is designed to be operational for both a two-stage dilute-acid hydrolysis process and an enzymatic process, with a dilute-acid pretreatment step. The two-stage hydrolysis reactor is designed to be operated in either co-current or counter-current mode. In the enzymatic process, fermentation will take place simultaneously with the hydrolysis, i.e. an SSF process. The layout of the pilot plant, which has a capacity of handling 2,000 kg of dry material/day, is schematically shown in the figure below. The Swedish company ETEK is responsible for operation of the plant. The location is adjacent to the company SEKAB, which produces ethanol from spent sulphite liquor. A core competence of SEKAB is the purification of ethanol to meet desired specifications, and the company purifies and distributes biomass-based ethanol for many different applications, including bio-ethanol as a fuel for motor vehicles.



PHD COURSE ON ENZYME TECHNOLOGY, LIGNOCELLULOSE, AND NON-STARCH POLYSACCHARIDES

Lisbeth Olsson

Background

Enzymatic hydrolysis of lignocellulosic, hemicellulosic, and pectinaceous plant materials is an integral part of a large number of food, feed and agroindustrial processes. Enzyme catalyzed processes on plant biomass are also important in novel manufacturing routes for biochemicals and food ingredients and in biofuel processes. Active participation in these developments requires solid knowledge about the mechanistic and quantitative aspects of enzyme action on plant materials, including differently composed polysaccharides and different types of biomass, chemistry and analyses of plant biomaterials, enzyme protein chemistry and molecular biology, enzyme discovery, cloning, purification, and characterization. This course aims to target all these topics.

Course Content

This course will encompass lectures and exercises on: structure and composition of lignocellulose materials and non-starch polysaccharides, enzyme groups that are necessary to degrade different plant polysaccharides; cellulytic, hemicellulytic and pectinolytic enzymes, and their action and classification; enzyme mechanisms, synergism between different enzyme groups; methodology, analysis of polysaccharide structure and composition, enzyme activity determination; microbial enzyme production, enzyme producing microorganisms, recombinant enzyme production and strain development, as well as selected research highlights and novel applications.

Who should attend?

The course is intended for PhD students working within biotechnology, food and agroindustrial sciences, bioengineering, and pharmacy, but the course is open and also welcomes scientists working in industry. The course is part of the PhD courses offered under the auspices of the Graduate School FOOD, and is also arranged within the NordForsk Network "Food and Bioresource Enzyme Technology". Participants belonging to the latter network have priority over other participants. MSc students can only participate as a rare exception. Limit: Maximum 30 participants.

Course teachers

Lisbeth Olsson, Associate Professor, PhD and Anne S. Meyer, Associate Professor, PhD (responsible for the course), and guest teachers from the NordForsk Network on Enzyme Technology.

Accommodation

A limited number of rooms have been pre-booked at a guesthouse near DTU called "Hotel Fortunen", address Ved Fortunen 33, 2800 Lyngby, Tlf (+45) 45 87 00 73; Fax (+45) 45 87 12 22. Basic, shared rooms with shared toilet and bathroom, breakfast included, can be rented for

1800,- DKK per week*. Reservations can be made for Saturday - Friday (May 13-19). Please indicate on the registration form if you want to book such accommodation and contact Else Green at eg@biocentrum.dtu.dk, tlf: (+45) 45 25 26 25 for more information. Transportation to the Hotel: From Klampenborg train station: bus no. 388; From Lyngby train station: bus no. 182, 183, 187 & 388. We have rented bikes* for easy transportation from the Hotel to DTU. * This hotel accommodation and bike rental will be covered by the NordForsk Network "Food and Bioresource Enzyme Technology" for PhD students in the Network.

Alternatively rooms may be booked at:

Hotel Postgården	or at	Scandic Eremitage
Lyngby Hovedgade 78		Lyngby Storcenter 62
DK-2800, Kgs. Lyngby		DK-2800, Kgs. Lyngby
Tel (+45) 4588 1022		Tel (+45) 4588 7700

Course fee

The course fee** is DKK 2000,- per person. The fee covers:

- All course materials and shipment (sent to participants in advance)
- Costs of consumables during the course
- Lectures, exercises and the written exam
- Lunch six days (Sunday May 14. - Friday May 19. 2006)
- Informal get-together dinners 4 days, +one dinner out Monday evening
- Coffees, teas, beverages, and snacks during breaks (all 6 days)

** The fee is waived for Nordforsk Network PhD students.

Payment

Upon acceptance of registration the course fee must be paid either via

GIRO (Dank Postgiro): Account no. 1199 1030574 or
BANK (Danske Bank): Account no. 4180 4263972007
Please mark the payment BST-AM.

Payment deadline is May 5th. 2006 !

Aims

The objective of this course is to provide the participants a comprehensive insight into the interplay between the structure and composition of polysaccharides (lignocellulose and non-starch polysaccharides), an understanding of the enzymes and enzyme reactions needed to degrade and modify the structures of these polysaccharides, the microorganisms able to produce the required enzymes, and the state-of-the-art methods employed for obtaining this knowledge. The course also aims to equip the participants with the latest knowledge of important enzyme based processes in the fields of food and agroindustry.

Language, ECTS points, workload, and evaluation

The course is in English. Passing is accredited with 5 ECTS points.

The evaluation will be based on the results of a 2 hour written assignment (problem solving), to be held on Friday morning May 19, 2006.

Evaluation: Passed/not passed. A diploma will subsequently be made out and sent to participants upon passing.

However, apart from the full time workload during the course period, some time must be allocated prior to the course for reading some of the course material and for preparation of posters to be presented by each participant in the evening of day 1 on the course (se programme).

Duration and location

The course in 2006 is held from Sunday morning May 14. - Friday afternoon May 19. The course is held at the Technical University of Denmark, Lyngby DK. The main part of the course activities will take place at BioCentrum-DTU in building 223, lecture room 105.

Registration

For course registration, please fill in and return the enclosed form, and e-mail or fax it together with a short CV, a short description of your research, and your reasons for attending before May 1st 2006 at noon to:

Else Green: eg@biocentrum.dtu.dk
Fax: (+45) 45 88 49 22

The course is filled on a first come first serve basis. Notice regarding acceptance or not will be given as soon as possible by e-mail after registration. All participants will receive further information by e-mail.

Course Outline

Ph.D. Course 27818: Enzyme Technology, Lignocellulose, and Non-Starch Polysaccharides.
May 14 - 19, 2006 Technical University of Denmark, DK-2800 Lyngby

	May 14	May 15	May 16	May 17	May 18	May 19
Morning session	Introduction and motivation Composition and structure of cellulose, hemicellulose, pectin and lignin	Case story – Structural details of cell wall polysaccharides Methodology Analytical methods	Enzyme classification Cellulytic enzymes	Determination of enzyme activities- assays versus real performance Synergy between enzyme activities	Microbial regulation of enzyme production Strain development – classical and modern methods Group discussions	Written exam
Lunch						
Afternoon session	Models for plant cell wall Group exercises and discussions on the composition and structure	Group work and presentations on analytical methods (MALDI-TOF, NMR, Dionex)	Hemicellulytic enzymes Pectinolytic enzymes Exercise – data bases	Group work and discussions on enzyme activity determinations	Microbial enzyme production – microorganisms and production methods Group work on case stories	Current research and applications – invited speakers
Dinner	Get together, Buffét	Social activity, Dinner at Dyrehavsbakken	Dinner	Social activity/Visit at Novozymes	Dinner	
Evening session	Poster presentations & discussions		Enzyme kinetics on solid substrates Calculation exercises			

Registration Form

Ph.D. Course 27818: Enzyme Technology, Lignocellulose, and
Non-Starch Polysaccharides.
Technical University of Denmark

May 14 - 19, 2006
Technical University of Denmark, DK-2800 Lyngby

Title: _____	Education: _____
Name: _____	University _____ Industry _____
Company/University: _____	
Address: _____	
Tel.: _____	Fax: _____ E-mail: _____
Birthdate (CPR no.): _____ Special diet req.?: _____	
Accommodation at Hotel Fortunen: Yes <input type="checkbox"/> No <input type="checkbox"/>	

Please fill in this registration form and attach a brief CV, including a very short description of your research and reasons for attending, and e-mail or fax it to:

Else Green, BioProcess Science and Technology Group,
BioCentrum-DTU, Technical University of Denmark
e-mail: eg@biocentrum.dtu.dk Fax: (+45) 4588 4922

REGISTRATION DEADLINE: May 1. 2006

PAYMENT DEADLINE: May 5. 2006

Fee: 2000 DKK per person* must be paid via

GIRO (Dank Postgiro): Account no. 1199 1030574 or
BANK (Danske Bank): Account no. 4180 4263972007

Please mark the payment BST-AM

* Fee is waived for NordForsk Food and Bioresource Enzyme
Technology Network members

GRADUATE SCHOLARSHIPS AVAILABLE

Dr. Jack Saddler, Dr. Warren Mabee and the Forest Products Biotechnology Group at the University of British Columbia are currently accepting applications for **two** graduate positions. These positions will be preferably filled at the Doctoral level although outstanding Masters level students are encouraged to apply. The following areas are of particular interest to our group:

- Development of science-based measures to evaluate and compare bioenergy and biofuel projects, including life cycle assessment, technoeconomic modelling, and application of social criteria.
- Examination of non-technical barriers to commercialization of bioenergy, biofuels and bioproducts in Canada
- Assessment of technical, economic, and policy issues related to the creation of a forest-based biorefining industry.

Successful applicants will join an ongoing research program examining the viability of creating bioenergy solutions for Canada and the world. We consider a number of technologies in our research, including conventional processes used by the developing wood pellet industry, gasification and pyrolysis technology, and

biotechnology applications used in bioconversion. Our group has thirty years of experience in developing bioconversion pathways that can turn wood into ethanol for use as a transportation fuel. Recently we have begun addressing other technologies as we explore the biorefinery concept. This area has great potential for future research and employment.

Our group is led by Dr. Jack Saddler and is composed of biochemists and chemical engineers. Successful applicants will have access to a well-equipped laboratory with state-of-the-art analytical instrumentation, and a \$1.5-million Process Development Unit (PDU) designed to scale up biorefining technology.

Letters of interest may be submitted electronically, and should be directed to:

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4043-2424 Main Mall
Vancouver, BC, Canada
V6T 1Z4
Tel: +1(604)822-2434 Fax: +1(604)822-9104
warren.mabee@ubc.ca

VISITING SCHOLAR OPPORTUNITIES

As many of you know, one of the goals of Task 39 is to facilitate student and faculty exchanges. We hope to encourage the exchange of ideas and methods between our members and the larger biofuels community around the world, and in the process help to generate new ideas and concepts. Most recently, the Task has helped sponsor Karin Öhgren, a Ph.D. candidate at Lund University, in her six-month visit to the Forest Products Biotechnology lab at UBC. This exchange has proven highly beneficial to both parties. Karin brings tremendous expertise in fermentation technology to the UBC group, and benefits from working with a group dedicated to understanding the fundamental science associated with pretreatment and enzymatic hydrolysis of cellulosic substrates.

Typically, Task 39 can assist in facilitating exchanges by providing funds for travel or accommodation costs, with matching funds from the visitor's parent institution and from the host organization. In the past, we have found that the presence of some outside funding has made it easier for host universities to find matching funds.

If any of our members would like to participate in an exchange or host a visitor, the Task Leadership would be very happy to speak with you. Please don't hesitate to contact Jack Saddler or any of the Associate Task Leaders with your suggestions. We look forward to sponsoring more opportunities in 2006!

FUTURE WORKSHOPS/SYMPOSIA

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/>

Breakthroughs in Biomass and Biorefinery Deals

March 29-31, 2006

Washington, DC

<http://www.infocastinc.com/biomass.html>

5th Annual Southern Bio-Products Conference

April 3-4, 2006

Choctaw Reservation, MS

<http://ms-biomass.org>

BIO 2006 Annual International Convention

April 9-12, 2006

Chicago, IL

<http://www.bio.org/events/2006/>

POWER-GEN Renewable Energy

April 10-12, 2006

Las Vegas, NV

<http://pgre06.events.pennnet.com/>

New Energy 2006

April 16-18, 2006

Shanghai, China

<http://www.newenergy-exhibition.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>

ENBio 2006 Int'l Conference for Energy from Biomass

May 5-7, 2006

Kassel, Germany

<http://www.enbio.de/engl/index.htm>

Clean Cities Congress and Expo 2006

May 7-10, 2006

Phoenix, Arizona

<http://www.afvi.org/PhoenixCongress2006/index.html>

5th Annual Conf. on Carbon Capture and Sequest.

May 8-11, 2006

Alexandria, Virginia

www.carbonsq.com

World Biofuels 2006

May 9-11, 2006

Seville, Spain

<http://www.agra-net.com>

Corporate Climate Response

May 22-23, 2006

London

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

All-Energy 2006

May 24-26, 2006

Aberdeen, Scotland

<http://www.all-energy.co.uk/>

Eastern Biofuels Conference and Expo II

May 30-June 1, 2006

Budapest, Hungary – Intercontinental Budapest

wendy@biofuelsconference.com

Harts World Refining and Fuels Conference

May 30-June 1, 2006

Brussels, Belgium

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

World Bioenergy 2006

May 30-June 1, 2006

Jonkoping, Sweden

<http://www.worldbioenergy.se/>

Biofuels Markets Asia

June 5-6, 2006

Bangkok

<http://www.greenpowerconferences.com/Biofuels.htm>

Energy Management Congress

June 7-8, 2006

Seattle, WA

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

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>**Renewable Energy Finance Asia**

June 15-16, 2006

Hong Kong

<http://www.greenpowerconferences.com/events/>**Michigan First Renewable Energy Fair**

June 16-18, 2006

Onkama, MI

<http://www.renewableenergyaccess.com/rea/events>**Bio Energy Transportation, New Business Opportunities for Ports and Transport Providers**

June 20-21, 2006

Rotterdam, Netherlands

<http://www.mareforum.com>**International Fuel Ethanol Workshop & Expo**

June 20-23, 2006

Milwaukee, WI

<http://www.fuelethanolworkshop.com/>**Earth Race**

June 23-26, 2006

Detroit, MI

<http://www.earthrace.net/>**BIO 2006 World Congress on Industrial Biotechnology and Bioprocessing**

July 12-14, 2006

Toronto, ON

<http://www.bio.org/>**SolWest Renewable Energy Fair**

July 28-30, 2006

John Day, OR

<http://www.solwest.org>**Society for Industrial Microbiology Annual Meeting and Exhibition**

July 30-August 3, 2006

Baltimore

<http://www.simhq.org/html/meetings.html>**9th World Renewable Energy Congress and Exhibition**

August 19-26, 2006

Florence, Italy

<http://www.interexpo.biz/>**Hydrogen, Fuel Cells and Alternative Transport Energies Conference**

September 10-13, 2006

Perth, Western Australia

<http://www.dpi.wa.gov.au/sustain/conference06.html>**5th European Motor BioFuels Forum**

September 11-13, 2006

Hilton Newcastle Gateshead, United Kingdom

<http://www.europoint-bv.com/events/?biofuels2006>**Better Air Quality (BAQ) Workshop**

September 13-15, 2006

Yogyakarta in Central Java, Indonesia

<http://www.cleanairmet.org/baq2006/1757/channel.html>**f-cell 2006**

September 26-26, 2006

Stuttgart, Germany

<http://www.f-cell.de/de/index.php>**Biofuels Markets Africa**

October 1, 2006

Cape Town, South Africa

<http://www.greenpowerconferences.com/events/>**World Forum on Energy Regulation**

October 8-11, 2006

Washington, DC

<http://www.worldforum2006.com>**Renewable Energy 2006**

October 9-13, 2006

Makuhari Messe Japan

www.re2006.org**Asia Biofuels Conference & Expo IV**

October 10-12, 2006

Beijing, China – The Great Wall Sheraton Hotel

wendy@biofuelsconferences.com**Great Wall Renewable Energy Conference**

October 24-27, 2006

Beijing, China

<http://www.gwref.org/>**International Conference and Trade Fair**

October 25-26, 2006

Hamburg, Germany

http://www.hamburg-messe.de/H2Expo/h2_en/start_main.php**World Ethanol 2006 and Ethanol Production Workshop**

November 7-9, 2006

Amsterdam, The Netherlands

marketing@agra-net.com**European Bio Fuels Forum 2006**

November 21-22, 2006

Warsaw, Poland

<http://www.wraconferences.com/wra112overview.html>

CONTACT INFORMATION

Please find information below for both the IEA Bioenergy contacts and IEA Bioenergy Task 39 contacts. Additional information is available at www.iea.org, at www.ieabioenergy.com, and at www.task39.org.

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TASK 39 EXCO & TASK REPS

ExCo (*E*) and Task Reps (*T*) denoted below.

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Biofuels and Bioenergy: Challenges and Opportunities

A forum to discuss research and commercialization efforts within the emerging biofuel and bioenergy sectors.

Hosted by:

Task 29 Socio-Economic Drivers in Implementing Bioenergy Projects
Task 31 Biomass Production for Energy from Sustainable Forestry
Task 39 Liquid Biofuels from Biomass
University of British Columbia, Faculty of Forestry

This workshop provides an opportunity and venue for resource managers, power industry representatives, bioenergy equipment manufacturers, energy production professionals, energy users, educators, and researchers.

For information or to register contact Caryn Morizawa:
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Registration fees: (before May 31) Full \$425, Student \$325
(after May 31) Full \$525, Student \$425

We are accepting abstracts for posters and talks until May 31, 2006

Vancouver, BC, Canada, 28 August – 1 September, 2006
For information on submitting an abstract go to:

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