

Bioenergy-I: From Concept to Commercial Processes

Tomar, Portugal
5 - 10 March 2006

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Monday, March 6, 2006

07:30 – 08:15 Breakfast Buffet

08:15 – 08:30 Conference Overview and ECI welcome

Session I: Fuel Alcohols from Grains and Sugar

Session Chairs: **Kevin Hicks and Zhongping Shi**

08:30 – 09:10 **Plenary Lecture: Jay Shetty**, Genencor International, USA
State-of-the-art production of fuel ethanol using granular starch hydrolyzing enzymes

09:10 – 09:40 **David Johnston**, ARS, USDA, USA
New enzymatic advances in the dry grind (Grain) ethanol process

09:40 – 10:10 **Jeffrey Robert**, Delta-T Corporation, USA
Enhanced profitability through technology, integration and diversification

10:10 – 10:40 Coffee Break

10:40 – 11:10 **José Cardoso Duarte**, INETI, Portugal
Continuous culture of flocculent yeast for ethanol production: physiology, productivity and modeling *

11:10 – 11:40 **Kurt A Rosentrater**, USDA, ARS, Brookings, SD, USA
Ethanol processing co-products - current constraints and future directions -

11:40 – 12:10 **Zhongping Shi**, Southern Yangtze University, China
The acetone-butanol fermentation industries in China - \$

12:10 – 12:40 **Robbert Kleerebezem**, Delft Technological University, Netherlands
Mixed culture fermentation for bioenergy production %\$*

12:40 – 13:40 Lunch

13:40 – 16:00 *ad hoc* sessions/Free time
Poster Session I available for viewing

16:00 – 16:30 Afternoon Coffee

Monday, March 6, 2006 (continued)

Session II: Fuel Ethanol from Biomass and Cellulosics

Session Chairs: **Kevin Hicks and José Cardoso Duarte**

- | | |
|---------------|--|
| 16:30 – 17:10 | Plenary Lecture: Bruce S. Dien , ARS, USDA, Peoria, IL, USA
An overview of recent advancements in lignocellulose to ethanol conversion technology |
| 17:10 – 17:40 | Lisa Rosgaard , Novozymes Inc., Denmark
Boosting the cellulytic degradation of pretreated barley straw |
| 17:40 – 18:10 | Danny E. Akin , ARS, USDA, Athens GA, USA
Structure and chemistry of lignocelluloses and biological modification for bioenergy |
| 18:00 – 18:15 | Stretch break |
| 18:15 – 18:45 | William D. Provine , Dupont Company, USA
Development of a world-class cellulosic ethanol process |
| 18:45 – 19:15 | Constance Schall , University of Toledo, USA
Enhancement of cellulose saccharification kinetics using an ionic liquid pretreatment step |
| 19:15 - 19:45 | Aiduan Li , University College London, UK
Bioethanol production from Municipal Solid Waste |
| 20:00 – 21:30 | Dinner |
| 21:30 – 22:30 | Social hour |

Tuesday, March 7, 2006

07:30 – 08:30 Breakfast Buffet

Session III: Biogas and BioHydrogen

Session Chairs: **Methanna Al-Dahhan and Mohammed Jawed**

- 08:30 – 09:10 **Plenary Lecture: Grietje Zeeman**, Wageningen University, Netherlands
Bio-methane production by anaerobic digestion*****B#5
- 09:10 – 09:50 **Plenary Lecture: Said Elnashaie**, University of British Columbia, Canada
Technological, economical and sustainable engineering aspects for the different routes of biomass to biofuels*****B#5
- 09:50 – 10:10 **Irimi Angelidaki**, Technical University of Denmark, Denmark
Modeling and control of biogas processes treating manure*****B#5
- 10:10 – 10:40 Coffee Break
- 10:40 – 11:00 **Mehul Vesvikar**, Washington University, USA
Effect of scale on the performance and hydrodynamics of gas recirculation anaerobic digester*****%&
- 11:00 – 11:20 **Masamitsu Tomiyama**, National Institute of Agrobiological Sciences, Japan
Hydrogen production by dark fermentation from food wastes*****% (
- 11:20 – 11:35 **Elba Vivanco**, Pontificia Universidad Catolica de Valparaiso, Chile
Biogas potential in Chile*****% *
- 11:35 – 11:50 **Mohammad Jawed**, Indian Institute of Technology, India
Judging the adaptability of anaerobic biomass to changed feed substrates through methanogenic activity tests and its verifications*****&&
- 11:50 – 12:05 **Zhen He and Lars Angenent**, Washington University, USA
The upflow microbial fuel cell: simultaneous electricity generation and wastewater treatment*****B#5
- 12:05 – 12:20 **May-Britt Hägg**, Norwegian University of Science and Technology, Norway
Upgrading of biogas by membranes – for vehicle fuel or European Gas Network*****B#5
- 12:20 – 12:35 **Song Jin**, Western Research Institute, USA
Generation of biogenic methane from oil shale*****& '

Tuesday, March 7, 2006 (continued)

12:35 – 13:50	Lunch
13:50 – 17:00	Conference Excursion (Trip to castle with guide, walking distance)
17:00 – 18:00	<u>Poster Session I - Fuel Alcohols</u> Session Chairs: Kevin Hicks and David Himmelsbach Introductions (one minute and one slide for each poster)
18:00 – 19:30	Poster Session with coffee (Fuel Alcohols)
19:30 – 21:00	Dinner
21:30 – 22:30	Social hour/poster session (Fuel Alcohols)

Wednesday, March 8, 2006

07:30 – 08:30	Breakfast
	Session IV: Biodiesel Session Chairs: Muthanna Al-Dahhan and Peter Reimers
08:30 – 09:10	Plenary Lecture: Jorge Marchetti, PLAPIQUI Techno-Economical Assessment of Biodiesel Alternatives
09:10 – 09:40	Donato Aranda , GreenTec - Escola de Química – UFRJ, Brazil E. Park, Shizuoka University, Japan Palm Fatty Acids Esterification On Heterogeneous Catalysts
09:40 – 10:10	P. Vasudevan , University of New Hampshire, USA Biodiesel production by enzymatic transesterification of olive oil
10:10 – 10:40	Coffee Break
10:40 – 11:10	Marc A. Dubé , University of Ottawa, Canada A Novel Membrane Reactor for the Continuous Production of Biodiesel
11:10 – 11:40	J. Pacheco Filho , Universidade Federal de Pernambuco, Brazil Determination of the blend level of mixtures of biodiesel with mineral diesel fuel using near infrared spectroscopy
11:40 – 12:10	Lara Trigueiro Moura , Instituto Superior Tecnico, Portugal Quantification Of Energy Consumption And Emissions Using Biodiesel In An Urban Heavy Duty Fleet
12:10 – 12:40	Peter Reimers , ADM, Germany C₁₈ Fatty Acid Methyl Esters: A Review
12:45 – 13:45	Lunch
13:45 - 17:30	Optional Excursion (perhaps trip to Fatima or another area of interest)
17:30 – 18:00	Afternoon Coffee
18:00 – 18:40	Plenary Lecture: Milorad Dudukovic , Washington University, USA Multiphase Reactions in BioConversion

Wednesday, March 8, 2006 (continued)

- | | |
|---------------|--|
| 18:40 – 19:20 | <p>Poster Session II: Biogas, Biohydrogen, Fuel Cell, Biodiesel, Thermal Conversion, Environmental, Economic, Policy, and Energy Balance Issues.</p> <p>Session Chairs: Muthanna Al-Dahhan and Ana B. Henriques</p> <p>Introductions</p> <p>(one minute and one slide for each poster)</p> |
| 19:30 – 21:00 | <p>Dinner</p> |
| 21:00 – 22:00 | <p>Poster session II /social hour (Biogas, Biohydrogen, Fuel Cell, biodiesel, Thermal Conversion, Environmental, Economic, Policy, and Energy Balance Issues)</p> |

Thursday, March 9, 2006

07:30 – 08:30 Breakfast Buffet

Session V: Biomass thermal conversion

Session Chairs: **Thomas Adams and Kevin Hicks**

08:30 – 09:10 **Plenary Lecture: Dr. Thomas Adams**, University of Georgia, USA
University of Georgia Integrated Biorefinery and Carbon Cycling Initiative ,

09:10 – 09:40 **Jan Baeyens**, University of Antwerp, Belgium
Operating parameters for the circulating fluidized bed (CFB) pyrolysis of biomass ,

09:40 – 10:10 **Maria Costa-Ferreira**, INETI, National Institute for Engineering, Technology and Innovation, Portugal
Conversion of lignocellulosics to biofuels – a Portuguese case study) ,

10:10 – 10:30 Coffee Break

10:30 – 11:00 **José Corella**, University “Complutense,” Spain
Hydrogen production by biomass gasification with steam-O₂ mixtures followed by a steam reformer and co-shift catalytic beds ,

11:00 – 11:30 **Cesar Augusto García U.** Universidad de los Andes, Colombia
Brickfurnaces – Hoffman Type: Technical feasibility of incinerating municipal solid wastes (MSW) * ,

11:30 – 12:00 **Henry Liu**, Freight Pipeline Company, USA
Biomass Logs: A densified fuel or feedstock for combustion, liquefaction or gasification , (

12:00 – 13:30 Lunch

13:30 – 15:30 *ad hoc* discussions/free time

Session VI: Environmental, Economic, Policy, and Energy Balance Issues

Session Chairs: **Kevin Hicks and Hosein Shapouri**

15:30 – 16:10 **Plenary Lecture: Hosein Shapouri**, USDA/Office of the Chief Economist, USA
Bioenergy production: economics, policies, and environmental considerations - +

Thursday, March 9, 2006 (continued)

16:10 – 16:40	Ana Cristina Oliveira , INETI-Departamento de Energias Renováveis, Portugal Biofuels production in Portugal: An overview
16:40 – 17:10	Fausto Freire , ISEC, Coimbra Polytechnic Institute, Portugal A comparative assessment of rapeseed oil and biodiesel (RME) to replace petroleum diesel use in transportation
17:10 – 17:30	Coffee Break
17:30 – 18:00	Gregory Bohlmann , SRI Consulting, USA Biorefinery process economics
18:00 – 18:30	Farooq Latif , National Institute for Biotechnology and Genetic Engineering, Pakistan Ethanol production studies from lignocellulosic biomass
18:30 – 19:00	Free Time
19:00 – 21:00	Conference Banquet
21:00 – 22:00	Social Hour

Friday, March 10, 2006

07:30 – 08:30

Breakfast

Session VII: New Paradigms

Session Chairs: **David Johnston and Vijay Singh**

08:30 – 09:10

Vijay Singh, University of Illinois at Urbana-Champaign
Development of new corn for dry grind corn processing (* &

09:10 -- 09:40

Michael A. Cotta, USDA, ARS, NCAUR, Peoria, IL
Development of forage crops as feedstocks for production of fuel ethanol (, +

09:40 – 10:10

Kevin B. Hicks, USDA, ARS, ERRC, Wyndmoor, PA
Increasing yield of fuel ethanol from barley with β -glucanases and β -glucosidases () \$)

10:10 – 10:30

Coffee Break

10:30 – 11:00

Henry R. Bungay, Rensselaer Polytechnic Institute, USA
A biomass paradigm for the chemical industry (B#5

11:00 – 11:30

Andriy A. Sibirny, Institute of Cell Biology, NAS of Ukraine
***Hansenula polymorpha* as a new promising organism for high temperature alcoholic fermentation of lignocellulose sugars** () &

11:30 – 12:00

Final Announcements, Conference Concluding Remarks

12:00 – 13:30

Lunch and Adjournment















Additional Papers:

Biodiesel from Fatty Acids Homogeneous Catalysis (')
Donato Aranda et al.















Enzymatic Dewatering of Distiller Dried Grains (()
Ana B. Thomas and David Johnson

Valorization of Manure using Combined Anaerobic Digestion / Algal TAG Production ()
Alexandra Holland, Rhonda Schmidt and Nam Nguyen

POSTER SESSION I

Poster I.1	Production of ethanol from pre-treated maize silage in anaerobically digested and wet-oxidized manure  I Ĩ	Piotr Oleskowicz-Popiel
Poster I.2	Gene shuffling to generate new high performance enzymes  DE	Jean-Marie Sonet
Poster I.3	Kinetics study and simulations of lactose to ethanol fermentation using a recombinant <i>Saccharomyces cerevisiae</i>  DE	José António Teixeira
Poster I.4	Successful expression of bacterial xylA genes encoding xylose isomerases from <i>Escherichia coli</i> and <i>Streptomyces coelicolor</i> , in the methylotrophic yeast <i>Hansenula polymorpha</i>  DE	Andriy A. Sibirny
Poster I.5	Development of Forage Crops as Feedstocks for Production of Fuel Ethanol  DE	Michael A. Cotta
Poster I.6	Study of Shear Effect on the Morphology and Enzyme Production of <i>Trichoderma reesei</i>  I Ĩ	Nilesh Patel
Poster I.7	Determination of the Branching Ratio in the Starch of Ground Grain by Proton MAS NMR Spectroscopy  I J	David S. Himmelsbach
Poster I.8	The current situation of fuel ethanol in China  DE	Dehua Liu
Poster I.9	Research on Mix-Fermentation Biomass with Microorganisms to Produce manifold Sugars  DE	Shu-lin Yang
Poster I.10	Production of ethanol from hydrolysis  DE	Muhammad Arshad
Poster I.11	Optimization of culture conditions for minimizing byproduct formation in a Pakistani distillery  DE	Muhammad Rashad
Poster I.12	Production of cellulases and ethanol from perennial grasses using cultures of <i>Trichoderma harzianum</i> E58 and <i>Saccharomyces cerevisiae</i>  DE	Farooq Latif
Poster I.13	Enhanced production of ethanol by a depressed mutant of <i>Saccharomyces cerevisiae</i> in a semi-pilot scale process  DE	Muhammad Ferhan
Poster I.14	Kinetics of ethanol production by a thermotolerant of <i>Saccharomyces cerevisiae</i>  DE	Farman Ali Shah
Poster I.15	Direct bioconversion of brewers spent grain to ethanol  Ĩ €	Charilaos Xiros
Poster I.16	Construction of a Recombinant D-Xylose utilizing <i>Saccharomyces cerevisiae</i>  DE	Yefu Chen
Poster I.17	Expression of a Hyperthermophilic α -amylase Gene from the Archaeon <i>Pyrococcus furiosus</i> in Different Host Strains  DE	Wei Shen

Poster Session II

Poster II.1	Biomass Energy Priority for Developing Nations  G	Henry R. Bungay
Poster II.2	Prediction of the environmental effect of increasing nitrogen by bioenergy production in East Asia  DE	Junko Shindo
Poster II.3	Impacts of climate change to potential areas for energy crops: a case study of rice family crop  H	Katsuo Okamoto
Poster II.4	Environmental and socio-economic evaluation of the production o Bioethanol and Power Generation from forest waste  DE	Joana Portugal
Poster II.5	Possibilities to increase the production and consumption of biofuels for reducing emissions causing climate change in Finland  I	Jyrki Tenhunen
Poster II.6	Sequestration of Carbon Dioxide with Simultaneous Production of Succinic Acid by Metabolically Engineered Escherichia coli  I	Mark A Eiteman
Poster II.7	Implications of Intensified Animal Based Agriculture in Washington State, USA  DE	Alexandra Holland
Poster II.8	The model of biogas production in a small town of China  DE	Wenquan Ruan
Poster II.9	Effect Of Sparger Design On The Hydrodynamics Of Anaerobic Digester Mixed By Gas Recirculation.  I	Rajneesh Varma
Poster II.10	Production of bioenergy and biochemicals from industrial and agricultural waste water  DE	Lars Angenent
Poster II.11	Biological and bioelectrochemical hydrogen production from glycerol  DE	Tatuso Yagishita
Poster II.12	Effect of temperature and microbial activity on passive separation of digested cow manure  DE	Kaparaju, A. & Angelidaki, I.
Poster II.13	Esterification of used frying oils with a high content of free fatty acids using solid resins  I	Jorge M. Marchetti
Poster II.14	Homogeneous acid catalysts for biodiesel production by esterification  DE	Rafael Thomaz P. Santos