Program

Bioenergy - I:
From Concept to Commercial Processes

March 5-10, 2006
Tomar, Portugal

Conference Chairs

Dr. Muthanna Al-Dahhan
Washington University

Dr. Kevin Hicks
ERRC/ARS/USDA

Dr. Charles A. Abbas
Archer Daniels Midland Company

ECI

Engineering Conferences International
6 MetroTech Center
Brooklyn, NY 11201
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Maria Isabel Pais, Pontificia Universidade Catolica
M.I. Rajoka, NIBGE, Pakistan
Sunday, March 5, 2006

17:00 – 19:30   Registration
19:30 – 21:00   Opening Dinner
21:00 — 22:00   Opening Reception

NOTES

• Please observe “No Smoking” at ECI technical sessions, meals and social hours.
• Speakers should allow time at the end of their presentation for questions and discussion.
• Please silence your cell phone during technical sessions.
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
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*

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*

09:50 – 10:10  Irini Angelidaki, Technical University of Denmark, Denmark
*Modeling and control of biogas processes treating manure*

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*

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*

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  **Poster Session I - Fuel Alcohols**  
               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  
**Title to be Announced**

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  **Poster Session II: Biogas, Biohydrogen, Fuel Cell, Biodiesel, Thermal Conversion, Environmental, Economic, Policy, and Energy Balance Issues.**
   Session Chairs: Muthanna Al-Dahhan and Ana B. Henriques
   Introductions
   (one minute and one slide for each poster)

19:30 – 21:00  Dinner

21:00 – 22:00  **Poster session II /social hour (Biogas, Biohydrogen, Fuel Cell, biodiesel, Thermal Conversion, Environmental, Economic, Policy, and Energy Balance Issues)**
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

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
Poster Presentations

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| Poster I.1 | Production of ethanol from pre-treated maize silage in anaerobically digested and wet-oxidized manure | Piotr Oleskowicz-Popiel |
| Poster I.2 | Gene shuffling to generate new high performance enzymes | Jean-Marie Sonet |
| Poster I.3 | Kinetics study and simulations of lactose to ethanol fermentation using a recombinant Saccharomyces cerevisiae | José António Teixeira |
| Poster I.4 | Successful expression of bacterial xylA genes encoding xylose isomerases from Escherichia coli and Streptomyces coelicolor, in the methylotrophic yeast Hansenula polymorpha | Andriy A. Sibirny |
| Poster I.5 | Development of Forage Crops as Feedstocks for Production of Fuel Ethanol | Michael A. Cotta |
| Poster I.6 | Study of Shear Effect on the Morphology and Enzyme Production of Trichoderma reesei | Nilesh Patel |
| Poster I.7 | Determination of the Branching Ratio in the Starch of Ground Grain by Proton MAS NMR Spectroscopy | David S. Himmelsbach |
| Poster I.8 | The current situation of fuel ethanol in China | Dehua Liu |
| Poster I.9 | Research on Mix-Fermentation Biomass with Microorganisms to Produce manifold Sugars | Shu-lin Yang |
| Poster I.10 | Production of ethanol from hydrol | Muhammad Arshad |
| Poster I.11 | Optimization of culture conditions for minimizing byproduct formation in a Pakistani distillery | Muhammad Rashad |
| Poster I.12 | Production of cellulases and ethanol from perennial grasses using cultures of Trichoderma harzianum E58 and Saccharomyces cerevisiae | Farooq Latif |
| Poster I.13 | Enhanced production of ethanol by a depressed mutant of Saccharomyces cerevisiae in a semi-pilot scale process | Muhammad Ferhan |
| Poster I.14 | Kinetics of ethanol production by a thermotolerant of Saccharomyces cerevisiae | Farman Ali Shah |
| Poster I.15 | Direct bioconversion of brewers spent grain to ethanol | Charilaos Xiros |
| Poster I.16 | Construction of a Recombinant D-Xylose utilizing Saccharomyces cerevisiae | Yefu Chen |
| Poster I.17 | Expression of a Hyperthermophilic a-amylase Gene from the Archaeon Pyrococcus furiosus in Different Host Strains | Wei Shen |
| Poster II.1 | Biomass Energy Priority for Developing Nations | Henry R. Bungay |
| Poster II.2 | Prediction of the environmental effect of increasing nitrogen by bioenergy production in East Asia | Junko Shindo |
| Poster II.3 | Impacts of climate change to potential areas for energy crops: a case study of rice family crop | Katsuo Okamoto |
| Poster II.4 | Environmental and socio-economic evaluation of the production of Bioethanol and Power Generation from forest waste | Joana Portugal |
| Poster II.5 | Possibilities to increase the production and consumption of biofuels for reducing emissions causing climate change in Finland | Jyrki Tenhunen |
| Poster II.6 | Sequestration of Carbon Dioxide with Simultaneous Production of Succinic Acid by Metabolically Engineered Escherichia coli | Mark A Eiteman |
| Poster II.7 | Implications of Intensified Animal Based Agriculture in Washington State, USA | Alexandra Holland |
| Poster II.8 | The model of biogas production in a small town of China | Wenquan Ruan |
| Poster II.9 | Effect Of Sparger Design On The Hydrodynamics Of Anaerobic Digester Mixed By Gas Recirculation. | Rajneesh Varma |
| Poster II.10 | Production of bioenergy and biochemicals from industrial and agricultural waste water | Lars Angenent |
| Poster II.11 | Biological and bioelectrochemical hydrogen production from glycerol | Tatuso Yagishita |
| Poster II.12 | Effect of temperature and microbial activity on passive separation of digested cow manure | Kaparaju, A. & Angelidaki, I. |
| Poster II.13 | Esterification of used frying oils with a high content of free fatty acids using solid resins | Jorge M. Marchetti |
| Poster II.14 | Homogeneous acid catalysts for biodiesel production by esterification | Rafael Thomaz P. Santos |