T4: Envisioning Biorefineries: Chemicals and Materials from Renewable Feedstocks

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Session 27 - Chemicals and Materials from Renewable Feedstocks Plenary (Invited Papers)
Chair: James D McMillan
Vice Chair: Paul G Roessler

27a The Role of U.S. DOE Laboratories in the Evolution of the U.S. Bioenergy Industry
Michael A. Pacheco

27b Biomass Refining in Response to Sustainability and Security Challenges
Lee R. Lynd

27c Envisioning Wood Biomass Based Biorefineries and Integration Into Existing Industries
Thomas E. Amidon

27d Progress Towards the Commercialization of PHA Bioplastics
Oliver P. Peoples and James Barber

27e Enabling the Renewable Chemical Industry: Cargill's Perspective
Jim Millis

Session 28 - Chemical and Catalytic Conversions for Renewable Feedstocks
Chair: Brent H Shanks
Vice Chair: Susan M Stagg-Williams

28e Transesterification of Glycerol Triacetate with Methanol on Acid and Base Catalysts
Dora E. Lopez, James Goodwin Jr., Edgar Lotero and David Bruce

28f Biodegradable Polymers from Renewable Resources: Lactide Polymerization with a Potentially Recyclable Immobilized Zn beta-Diiminate Complex
Christopher W. Jones, Benn C. Wilson and Kunquan Yu

Session 29 - Biological Conversions and Processes for Renewable Feedstocks
Chair: David N Thompson
Vice Chair: Bruce S Dien

29a Kinetic And ATP Maintenance Studies of a Metabolically Engineered Zymomonas mobilis Fermenting Glucose and Xylose
Juan Carlos Sáez-Miranda, Lorenzo Saliceti-Piazza and James D. McMillan

29d A Novel Biological Process to Convert Renewable Biomass to Acetone and Butanol (AB)
Qureshi N, Ezeji TC, Blaschek HP, Cotta MA

Session 30 - Separation of Processing Streams Derived from Renewable Feedstocks
Chair: Michael Ladisch
Vice Chair: Ranil Wickramasinghe

30b Adsorptive Membranes vs. Resins for Acetic Acid Removal from Biomass Hydrolysates
Binbing Han, Walter Carvalho, Larissa Canilha, Silvio Silverio da Silva, Joao Batista Almeida e Silva, James D. McMillan and Ranil Wickramasinghe

30c Isolation of Polyhydroxyalkanoates from Fermentation Broth
H. Frühwirth-Smounig, R. Marr and M. Siebenhoffer

30f Evaluation of process configurations to produce hydrogen from black liquor
Tobias Richards and Jim Frederick
Session 31 - Pretreatment of Lignocellulosic Biomass: Update on Biomass Refining CAFI Studies I
Chair: Charles E Wyman
Vice Chair: Tim Eggeman

31a  Dilute Acid Pretreatment and Elevated-Temperature Washing of Corn Stover and Poplar
Richard Elander, Melvin Tucker, Edward Jennings and Nick Nagle

31b  Using Xylooligomers to Study the Effects of Dilute Acid in Biomass Pretreatment
Todd A. Lloyd, Charles E. Wyman

31d  Optimization of pH Controlled Liquid Hot Water Pretreatment of Corn Stover
Nathan Mosier, Richard Hendrickson, Nancy Ho, Miroslav Sedlak and Michael R. Ladisch

Session 32 - Pretreatment of Lignocellulosic Biomass: Update on Biomass Refining CAFI Studies II
Chair: Charles E Wyman
Vice Chair: Tim Eggeman

32b  Initial Data and Models for Enzymatic Hydrolysis of Cellulose Prepared by Leading Pretreatment Technologies
Rajeev Kumar and Charles E. Wyman

32c  Developing a Fundamental Understanding of Biomass Structural Features Responsible for Enzymatic Digestibility
Jonathan O'Dwyer, Li Zhu and Mark T. Holtzapple

32d  Application of Lignin Blockers and Inactive Cellulase to Understand Enzymatic Hydrolysis Kinetics of Pretreated Cellulose
Bin Yang and Charles E. Wyman

Session 33 - Reactor Engineering for Biomass Feedstocks
Chair: Michael J Antal
Vice Chair: Bruce Dale

33f  Acidic Sugar Degradation Pathways -- An ab initio Molecular Dynamics Study
Xianghong Qian, Mark R. Nimlos, David K. Johnson and Michael E. Himmel

Session 34 - Life Cycle Analysis of Renewable Feedstock-Based Processes
Chair: Robert P Anex
Vice Chair: John Sheehan

34a  Sunlight Ancient and Modern: The Relative Energy Efficiency of Hydrogen and Fertilizer from Coal and Current Biomass
Dr Matthew J. Realff, Ling Zhang

34b  Pulp-mill integrated biorefineries: a framework for assessing net CO2 emission consequences
E. Andersson, S. Harvey

34d  Life Cycle Analysis of Products made with Bio-Based 1,3-Propanediol
Carl F Muska, Carina Maria Alles, Susanne Veith, Robin E Jenkins and Robert W Sylvester

34f  Cradle to farm gate lifecycle inventory and water quality impacts associated with nutrients used for corn, soy, and stover biomass feedstocks
Susan E. Powers

Session 35 - Developments in Bio-based Alternative Fuels
Chair: Brian Duff
Vice Chair: Gregory W Luli

35a  Lignocellulosic Feedstocks for Ethanol Production: The Ultimate Renewable Energy Source
Philip W. Madson and Charles D. Tereck
35b Biomass Cogeneration Demonstration Plant at Central MN Ethanol Coop
Cecil T. Massie PE and Amit Shukla

35c Options for Combining Pervaporation Membrane Systems with Fermentors for Efficient Production of Alcohols from Biomass
Leland M. Vane

35d Continuous Conversion of MSW-derived Waste Paper to Bio-Ethanol Using a 1L 6-stage Continuous Stirred Reactor Separator
M. Clark Dale, Daniel Musgrove

35f Experience of truck fleets with BioDiesel made from animal fats as compared to rapeseed oil methyl ester
Edgar Ahn, Thomas Hilber, Martin Mittelbach and Eberhard Schmidt

Session 357 - Polymers from Renewable Resources *
Chair: John R Dorgan
Vice Chair: Yossef A Elabd

Session 475 - Advances in Green Bioprocessing
Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through CO2 Activation

Session 476 - Biological Conversions and Transformations
Chair: Robert Wooley
Vice Chair: Arthur J Ragauskas

476b Understanding the Metabolic Capabilities of Desulfovibrio vulgaris Hildenborough
Kenneth J. Kauffman and Jay D. Keasling

476f A Mathematical Model for the Kinetics of Hydrolysis of Bacterial Microcrystalline Cellulose by Cellulase Enzymes
A. Brad Anton, Tina Jeoh and Larry P. Walker

Session 479 - Advances in Agricultural Biotechnology and Plant Cell Culture
Chair: Susan C Roberts
Vice Chair: Mike (Chenming) Zhang

479b Metabolic Control of Taxane Accumulation at the mRNA Level
Michael C. Naill, Nathan Ezekiel Nims, Elsbeth L. Walker and Susan C. Roberts

479e Chemically-Regulated Cucumber Mosaic Virus Amplicon for the Expression of Foreign Genes/Proteins in Plants and Plant Cell Cultures
Mysore Sudarshana, Sandra L. Uratsu, Bryce Falk, Abhaya M. Dandekar, Alan P. Jackman and Karen A. McDonald

479f Enhanced production of recombinant proteins from plant cells by the application of osmotic stress and protein stabilization
Ryan G. Soderquist and James M. Lee

479g Effects of a nutrient mist bioreactor system on growth kinetics and secondary metabolism of transformed roots of Artemisia annua
Melissa J. Towler and Pamela J. Weathers
**Session 483 - Advances in Bioreactors**
Chair: Jeffrey Chalmers
Vice Chair: Sa Ho

483b Astaxanthin Production by *H. pluvialis* in Sequential Batch Followed by Fed-Batch Culture Illuminated by LED Lamps
Abdolmajid Lababpour, Tomohisa Katsuda, Shigeo Katoh

**Session 519 - Green Materials: Forest and Biobased Products – I**
Chair: Amar K Mohanty
Vice Chair: Joseph V Kurian

**Session 520 - Green Materials: Forest and Biobased Products – II**
Chair: Amar K Mohanty
Vice Chair: Joseph V Kurian

**Session 521 - Recycling of Forest and Biobased Products**
Chair: Yulin Deng
Vice Chair: Junyong Zhu

521a Limiting the Impact of Pressure Sensitive Adhesives on Paper Recycling by Controlling their Fragmentation during Repulping
Jihui Guo, Steven J. Severtson, Carl J. Houtman, Karen L. Scallon, Mark S. Kroll, Michael J. Nowak

* These papers were unavailable at the time of publication.