

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-Diiminato 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. Siebenhofer
- 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. Realf, 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](#)
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

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.