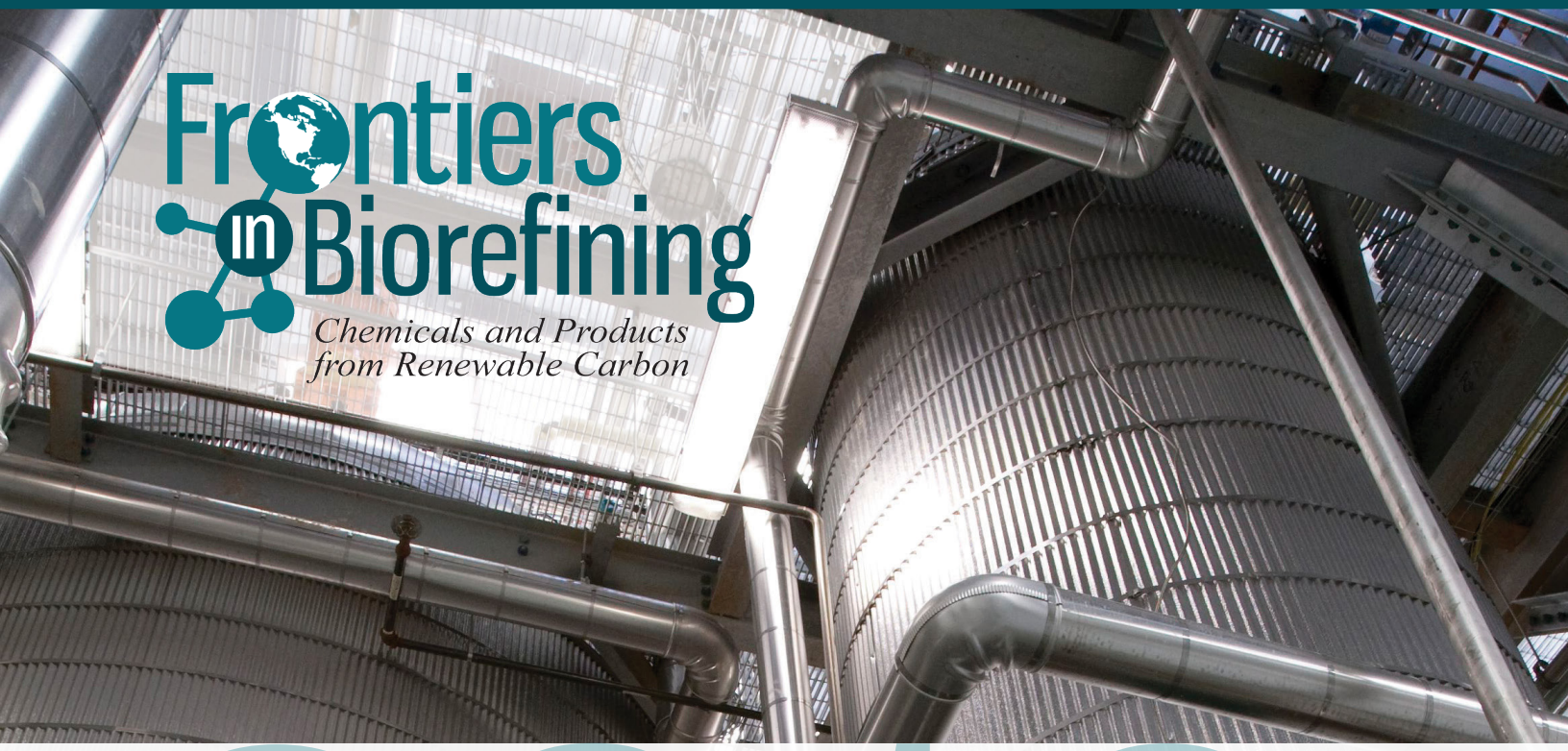

Frontiers in Biorefining

Chemicals and Products from Renewable Carbon

2016

International Conference

St. Simons Island, Georgia, USA

November 8 - November 11

Steering Committee Members

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USDA — United States Department of Agriculture, National Institute of Food and Agriculture

UTIA — Institute of Agriculture — The University of Tennessee

CONFERENCE SCHEDULE

TUESDAY NOVEMBER 8, 2016

5:00pm-8:00pm Registration/Social Hour

WEDNESDAY NOVEMBER 9, 2016

6:45am-7:45am Registration/Breakfast

Plenary Session:
Biorefinery Concepts

7:45-8:00 **Timothy Rials** (The University of Tennessee – Welcome and Opening Remarks)

8:00-8:35 **Maureen McCann** (Purdue University – Re-defining recalcitrance: a multi-scale, multi-factor and conversion-specific property of biomass)

8:35-9:10 **Mahdi Abu-Omar** (University of California, Santa Barbara – Sustainable conversion of lignin to value-added chemicals, thermoplastics, and fuels)

9:10-9:45 **Gregg Beckham** (National Renewable Energy Laboratory – Acrylonitrile production from biomass for renewable carbon fiber applications)

9:45am-10:15am Coffee Break

10:15-10:50 **Ed de Jong** (Avantium – The pros and cons of 1st versus 2nd generation carbohydrates as biorefinery feedstock)

10:50-11:25 **Timothy Bugg** (University of Warwick – Bacterial enzymes for lignin degradation: production of aromatic chemicals from lignocellulose)

11:25-12:00 **Blake Simmons** (Joint BioEnergy Institute – Development of advanced biofuels and biomass conversion technologies at the Joint BioEnergy Institute)

12:00pm-1:30pm Lunch **Alison Goss Eng** (DOE – The U.S. Department of Energy's bioenergy program: growing a billion ton bioeconomy)

Session 2A:
Catalytic Conversion of Lignin and Carbohydrates - I

1:30-1:55 **Johannes de Vries** (University of Groningen – New fine chemical building blocks from lignin via stabilisation of reactive intermediates from the C-2 acidolysis pathway)

1:55-2:20 **Pieter Bruijnincx** (Utrecht University – Catalyst development for new and 'drop-in' chemicals from the carbohydrate fraction of biomass)

2:20-2:45 **Ed de Jong** (Avantium – A biorefinery approach to produce biobased FDCA and MEG, the building blocks for the next generation polyester PEF)

2:45-3:10 **Jesse Bond** (Syracuse University – Levulinic acid oxidation as a strategy for the production of maleic anhydride)

3:10-3:20 *Flash Talks*

Li Shuai (École Polytechnique Fédérale de Lausanne – Quantitative depolymerization of uncondensed technical lignin at 120 °C with supported nickel catalysts)

Tom Renders (KU Leuven - Catalytic reductive fractionation: effects of acidic and alkaline additives)

3:20pm-3:40pm Coffee Break

3:40-4:05 **Michel Gagné** (University of North Carolina at Chapel Hill – Catalytic approaches to complex molecules from carbohydrate biomass)

4:05-4:30 **Raul Lobo** (University of Delaware – Biomass valorization: making molecules we need through heterogeneous catalysis)

4:30-4:55 **Mark Mascal** (University of California, Davis – Chemical-catalytic approaches to the production of renewable fuels and monomers via 5-(chloromethyl) furfural (CMF))

4:55-5:20 **Linda Broadbelt** (Northwestern University – Mechanistic modeling of the (bio)conversion of (bio)macromolecules)

5:20-5:45 **Thomas Elder** (USDA-Forest Service – Computational studies of catalysts for oxygen pulping of wood)

Session 2B:
Biobased Chemicals and Materials

1:30-1:55 **Mark Hillmyer** (University of Minnesota – Next-generation block polymers from renewable resources)

1:55-2:20 **Jeremy Luterbacher** (École Polytechnique Fédérale de Lausanne – Stabilization with formaldehyde facilitates the high-yield production of monomers from lignin during integrated biomass depolymerization)

2:20-2:45 **Elinor Scott** (Wageningen University – Integrated approaches in dealing with dilute heterogeneous biomass sources for the production of chemicals)

2:45-3:10 **Wenzhen Li** (Iowa State University – Electrocatalytic processing of biorenewables for generation of electricity, chemicals and fuels)

3:10-3:20 *Flash Talks*

Way Khor (Ghent University – Production of medium chain fatty acids from grass)

Jennifer Greenstein (North Carolina State University – Two-step enzymatic conversion of algal triacylglycerides to hydrocarbons)

3:20pm-3:40pm Coffee Break

3:40-4:05 **Maria Soledad Peresin** (Auburn University – An overview of the role of ligno-nanocellulosics in the biorefinery concept)

4:05-4:30 **Andrew Sutton** (Los Alamos National Laboratory – The use of bioderived molecular building blocks for the simultaneous production of fuels and chemicals)

4:30-4:55 **Hua Zhao** (Savannah State University – Pretreatment of cellulosic biomass by glycol-functionalized ionic liquids and aqueous ionic liquids)

4:55-5:20 **David Johnson** (National Renewable Energy Laboratory – Production of advanced biofuels for blending into jet and diesel fuels via furanic intermediates)

5:20-5:45 **David Harper** (The University of Tennessee – Use of lignin based carbons for energy storage applications)

WEDNESDAY NOVEMBER 9, 2016

6:30pm-8:00pm Group Picture/Social Hour

THURSDAY NOVEMBER 10, 2016

7:00am-8:00am Breakfast

Session 3A:
Catalytic Conversion of Lignin and Carbohydrates - II

8:00-8:25 **Steve Chmely** (The University of Tennessee – Catalytic transfer hydrogenolysis of organosolv lignin using NiFeB nano alloys)

8:25-8:50 **Eric Hegg** (Michigan State University – Effective metal catalyzed oxidative pretreatment of woody biomass)

8:50-9:15 **Frederick Baddour** (National Renewable Energy Laboratory – From lab to market: designing a cost model for catalyst scaling)

9:15-9:40 **Wouter Schutyser** (KU Leuven – Catalytic reductive fractionation of woody biomass)

9:40-9:50 *Flash Talks*

Arpa Ghosh (Iowa State University – Production of soluble and hydrolyzable carbohydrates from biomass using THF/water co-solvent in the presence of acid catalyst)

Robert Narron (North Carolina State University – Towards specific description of autohydrolyzed lignin's chemical structures)

9:50am-10:20am Coffee Break

10:20-10:45 **Rebecca Key** (The University of Tennessee – Development of novel nitrogenous base-tethered Cobalt-Schiff base complexes for the selective catalytic cleavage of lignin)

10:45-11:10 **Jian Shi** (University of Kentucky – Catalytic conversion of lignin in ionic liquids via catalysis and biocatalysis)

11:10-11:35 **Joris Thybaut** (Ghent University – Automating the assessment of renewable feedstock conversion kinetics)

11:35-12:00 **Richard Hess** (Idaho National Laboratory – Conversion-ready feedstocks for biorefining)

Session 3B:
Advanced Biomass Characterization

8:00-8:25 **Laurene Tetard** (University of Central Florida – Exploring phenolic and polysaccharides compounds in lignocellulosic biomaterials)

8:25-8:50 **Loukas Petridis** (Oak Ridge National Laboratory – Molecular mechanisms driving biomass deconstruction)

8:50-9:15 **Seong Kim** (Pennsylvania State University – Non-linear optical spectroscopy study of plant cell walls - New opportunities and challenges)

9:15-9:40 **Lee Makowski** (Northeastern University – The impact of alterations in lignin deposition on cellulose organization of the plant cell wall)

9:40-9:50 *Flash Talks*

Enshi Liu (University of Kentucky – Fractionation and characterization of lignin streams from engineered switchgrass)

John Jennings (University of Kentucky – Tin beta zeolite for regioselective Baeyer-Villiger oxidation of lignin model compounds)

9:50am-10:20am Coffee Break

10:20-10:45 **Madhavi Martin** (Oak Ridge National Laboratory – Correlating laser-induced breakdown spectroscopy (LIBS) and neutron activation analysis (NAA) for resolving the spatial variation in the Populus trichocarpa leaf ionome)

10:45-11:10 **Allison Ray** (Idaho National Laboratory – Impact of blending corn stover, switchgrass, and MSW grass on biochemical conversion performance and feedstock cost)

11:10-11:35 **Abhishek Singh** (North Carolina State University – Structural model of plant cellulose synthase and cellulose synthase complex)

11:35-12:00 **Marcus Foston** (Washington University in St. Louis – Unlocking the secrets to lignin conversion)

12:00pm-5:00pm Free Time

12:30pm-2:00pm Round Table

THURSDAY NOVEMBER 10, 2016

5:00-7:00pm Poster Session

Wenhui Geng (North Carolina State University – Hemicellulose extraction from switchgrass, pine and poplar and its effect on enzymatic convertibility of cellulose-rich residue)

Arpa Ghosh (Iowa State University – Production of soluble and hydrolyzable carbohydrates from biomass using thf/water co-solvent in the presence of acid catalyst)

Jennifer Greenstein (North Carolina State University – Two-step enzymatic conversion of algal triacylglycerides to hydrocarbons)

Rhodri Jenkins (Los Alamos National Laboratory – Facile hydrodeoxygenation of cellulosic biomass derived ketones using solid acid catalysts)

John Jennings (University of Kentucky – Tin beta zeolite for regioselective baeyer-villiger oxidation of lignin)

Way Khor (Ghent University – Production of medium chain fatty acids from grass)

Alex Lewis (Oak Ridge National Laboratory – Understanding the impact of flow rate and recycle on the conversion of a complex biorefinery stream using a flow-through MEC)

Jake Lindstrom (Iowa State University – Thermal deconstruction of cellulose with subsequent hydrolysis to fermentable sugars)

Enshi Liu (Virginia Polytechnic Institute and State University – Fractionation and characterization of lignin streams from engineered switchgrass)

Cameron Moore (Los Alamos National Laboratory – Two and three carbon bio-building blocks for fuel and chemical production)

Robert Narron (North Carolina State University – Towards specific description of autohydrolyzed lignin's chemical structures)

Ydna Questell-Santiago (École Polytechnique Fédéral de Lausanne – Stabilization of carbohydrates with formaldehyde during integrated biomass depolymerization)

Kalavathy Rajan (The University of Tennessee – Fractionation and characterization of switchgrass liquid autohydrolyzate)

Tom Renders (KULeuven – Catalytic reductive fractionation: effects of acidic and alkaline additives)

Violeta Sànchez i Nogué (National Renewable Energy Laboratory – Lipid production from biomass via oleaginous yeast)

Li Shuai (École Polytechnique Fédérale de Lausanne – Quantitative depolymerization of uncondensed technical lignin at 120 °C with supported nickel catalysts)

Mikhael Soliman (University of Central Florida – Physical and chemical characterization of plants response to external mechanical and chemical stresses)

Jingming Tao (The University of Tennessee – Characterization of switchgrass extractives by supercritical fluid chromatography)

Preenaa Venugopal (The University of Tennessee – Fractionation of lignocellulosic biomass using ionic liquid 1-ethyl-3-methylimidazolium acetate ([EMIM][CH_3COO]))

Xuefeng Zhang (Mississippi State University – Synthesize and characterization of graphene nanomaterials from kraft lignin)

7:00pm-9:00pm Conference Dinner

Keynote speaker: **Bruce Dale** (Michigan State University – Bioenergy and biofuels: getting to very large scale- sustainably)

FRIDAY NOVEMBER 11, 2016

7:00am-8:00am Breakfast

Session 4A:
Thermochemical Transformations of Biomass

8:00-8:25 **Susan Habas** (National Renewable Energy Laboratory – A facile route to nanostructured metal phosphide catalysts for hydrodeoxygenation of bio-oil compounds)

8:25-8:50 **Manuel Garcia-Perez** (Washington State University – Bio-oil refining: challenges and opportunities)

8:50-9:15 **Jesse Hensley** (National Renewable Energy Laboratory – Chemicals and high octane hydrocarbons produced from bio-dimethyl ether using a copper modified zeolite)

9:15-9:40 **Jason Hicks** (University of Notre Dame – Catalytic properties of molybdenum-based bimetallic phosphides for deoxygenation reactions of phenolic model compounds)

9:40am-10:10am Coffee Break

10:10-10:35 **Seonah Kim** (National Renewable Energy Laboratory – Computational and experimental studies of metal-doped zeolites in catalytic fast pyrolysis)

10:35-11:00 **Maria Auad** (Auburn University – Polymeric bio-resins based on fast pyrolysis bio-oil)

11:00-11:25 **Zaikuan Yu** (Purdue University – Fast pyrolysis of ^{13}C-, and ^{18}O-labeled cello-oligosaccharides: probing the mechanisms of fast pyrolysis of carbohydrates)

11:25-11:50 **Joshua Schaidle** (National Renewable Energy Laboratory – From catalyst design to technology validation: the role of model compound and whole biomass vapor experiments in catalytic fast pyrolysis research and development)

Session 4B:
Biochemical Transformations of Biomass

8:00-8:25 **Barry Goodell** (Virginia Polytechnic Institute and State University – Biocatalysis in the brown rot fungi)

8:25-8:50 **Benedikt Möllers** (University of Copenhagen – Light-driven enzymatic degradation of lignocellulose)

8:50-9:15 **Ananda Amarasekara** (Prairie View A&M University – Artificial cellulase type ionic liquid catalysts for cellulose hydrolysis)

9:15-9:40 **Davinia Salvachua** (National Renewable Energy Laboratory – Lignin depolymerization by fungal secretomes is enhanced with a bacterial sink)

9:40am-10:10am Coffee Break

10:10-10:35 **Janet Westpheling** (University of Georgia – Direct conversion of plant biomass to ethanol by engineered Caldicellulosiruptor bescii)

10:35-11:00 **Nancy Nichols** (National Center for Agricultural Utilization Research, USDA Agricultural Research Service – Production of xylitol from biomass using an inhibitor-tolerant fungal strain)

11:00-11:25 **Shijie Liu** (State University of New York College of Environmental Science and Forestry – Co-production of ethanol and xylose from woody biomass)

11:25-11:50 **Eric Karp** (National Renewable Energy Laboratory – Scalable methods for recovery of carboxylic acids from fermentation broth)

11:50am-12:30pm Box Lunch