

Biorefinery I: Chemicals and Materials from Thermo-Chemical Biomass Conversion and Related Processes

September 27 - October 2, 2015

Crete, Greece

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Sunday, September 27, 2015

17:00 – 18:30 Conference check-in (Rosa Conference Room Foyer)

18:30 – 19:00 Welcome Drink (Rosa Conference Room Foyer)

19:00 – 20:30 Dinner

NOTES

- Technical sessions and poster sessions will be held in the Rosa Conference Room.
- Posters can be hung on the walls of the meeting room.
- All meals, except the banquet, will be in the Artemis Restaurant. The location of the conference banquet on Thursday will be announced on site.
- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Please write your name in the front of this booklet in case it is misplaced.
- Be sure to check the participant list in this booklet to confirm that your listing is correct. If there are changes or updates, please login to the ECI website and update your listing so that the list that ECI will send to all participants after the conference will be correct.

Monday, September 28, 2015

07:30 - 08:30 Breakfast

08:30 - 08:45 Welcome and Conference Overview
Conference Chairs, ECI Liaison

Session 1: Light oxygenates, phenols and aromatics

08:45 - 09:15 **Plenary:** Feedstocks Matter
Ralph P. Overend, Nextfuels LLC

09:15 - 09:30 Pure aromatics from biomass
Matti Reinikainen, VTT, Finland

09:30 - 09:45 Biomass into chemicals: Green chemical conversion of carbohydrates (fructose, sucrose and glucose) into 5-hydroxymethylfurfural in pyridinium dicationic ionic liquid
Hern Kim, Myongji University, South Korea

09:45 - 10:00 Monomeric phenols from lignin - formic acid assisted hydrous liquefaction
Mike Kleinert, University of Bergen, Norway

10:00 - 10:15 Structure characterization of bio-oil and solid fractions from near-critical water depolymerization of LignoBoost® Kraft lignin
Cecilia Mattsson, Chalmers University of Technology/Forest Products and Chemical Engineering, Sweden

10:15 - 10:45 Coffee break/Networking

10:45 - 11:00 BIORECOVER: Biomass residues conversion and valorization for an economic refinery
Paul De Wild, Energy Research Centre of the Netherlands (ECN), The Netherlands

11:00 - 11:15 Platform chemicals from biorefinery waste streams
Hero Jan Heeres, University of Groningen, The Netherlands

11:15 - 11:30 Fluidized bed pyrolysis of lignocellulosic biomass: A modeling approach
Ernst-Ulrich Hartge, Hamburg University of Technology, Germany

11:30 - 11:45 Catalytic pyrolysis of forestry and agricultural residual biomass for production of renewable chemicals
Angelos Lappas, CPERI/CERTH, Greece

11:45 - 12:00 Olive mill wastewater biorefinery: treatment in a rhizodegradation pilot
Margarita Petoussi, Technical University of Crete, Greece

12:00 - 12:15 Biodiesel from vegetable oils: Effects of feedstock composition and reaction conditions
Ajay Dalai, University of Saskatchewan, Canada

12:15 - 12:30 Two-stage thermochemical conversion of lignin into aromatic chemicals
Paul De Wild, Energy Research Centre of the Netherlands (ECN), The Netherlands

12:30 - 12:45 Stirred and unstirred lignin solvolysis with formic acid in aqueous or ethanolic solvents by using 5-L reactor
Mike Kleinert, University of Bergen, Norway

12:45 - 14:15 Lunch

14:15 - 18:00 Free time/*ad hoc* sessions

Monday, September 28, 2015 (continued)

Sessions 2 and 3: Adhesives and lubricants / Feed / Food and Additives

- 18:00 – 18:15 Fungal bio-refinery of citrus wastes for pectin, chitosan, oil, and protein production
Behzad Satari, Höghskolan i Borås, Sweden
- 18:15 - 18:30 Autothermal fast pyrolysis of wood residues for wood adhesives
Dongbing Li, ICFAR, Western University, Canada
- 18:30 - 18:45 Gasification of fructose in supercritical water for production of hydrogen enriched syngas
Ajay K. Dalai, University of Saskatchewan, Canada
- 18:45 - 19:00 Induction heating fluidized bed reactor (IHFBR) and its applications for combustion and gasification
of biomass based feedstocks
Jamal Chaouki, Ecole Polytechnique of Montreal, Canada
- 19:00 – 19:15 Characterization and upgrading of bio-oil distillation residues into coproducts
Yaseen Elkasabi, U.S. Department of Agriculture, USA
- 19:15 - 20:30 Dinner
- 20:30 - 21:30 Poster Session and Social Hour

Tuesday, September 29, 2015

07:30 - 08:30 Breakfast

Session 4: Specialties, pharmaceuticals, fine chemicals and fibrous products

- 08:30 - 09:00 **Plenary:** Advanced lipid-based chemicals: renewables in the shadow of the Canadian oil sands
David Bressler, University of Alberta, Canada
- 09:00 - 09:15 Extractive bioconversion of gamma-cyclodextrin by cyclodextrin glycosyltransferase in alcohol/salt aqueous two-phase system
Tau Chuan Ling, University of Malaya, Malaysia
- 09:15 - 09:30 Organosolv pretreatment as a major step of lignocellulosic biomass refining
Dimitrios Sidiras, University of Piraeus, Greece
- 09:30 - 09:45 Dehydration of glycerol to acrolein in fluidized bed reactor
Marjan Dalil, Ecole Polytechnique of Montreal, Canada
- 09:45 - 10:00 Production of crude bio-oil and stabilizer for photosensitive materials via hydrothermal liquefaction of spent coffee grounds
Quan (Sophia) He, Dalhousie University, Canada
- 10:00 - 10:30 Coffee Break / Networking
- 10:30 - 11:00 **Plenary:** A review of microwave pyrolysis of biomass and waste for energy and fuels
Jamal Chaouki, Polytechnique Montreal, Canada
- 11:00 - 11:15 Selective hydrogenolysis of glycerol to 1, 3-propanediol in a fluidized bed
Marjan Dalil, Ecole Polytechnique of Montreal, Canada
- 11:15 - 11:30 Upgraded production of a hydroxylactone anhydro-sugar by cellulose pyrolysis and its application in the synthesis of biologically active compounds
Daniele Fabbri, University of Bologna, Italy
- 11:30 - 11:45 Advanced fuels and coproducts from tail-gas reactive pyrolysis (TGRP) bio-oil
Yaseen Elkasabi, U.S. Department of Agriculture, Agricultural Research Service, USA
- 11:45 - 12:00 Study of the presence of added-value chemical compounds in sewage sludge pyrolysis liquids: Extraction, identification and quantification
Isabel Fonts, Thermochemical Processes Group - Universidad Zaragoza, Spain
- 12:00 - 12:15 Upgrade of flash pyrolysis condensate by esterification with higher alcohols
Tim Schulzke, Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, Germany
- 12:15 - 12:30 Sugar production via pyrolysis
Roel J. M. Westerhof, University of Twente, the Netherlands
- 12:30 - 12:45 Upgrading of solid fast pyrolysis byproducts for material use with high value
Axel Funke, Karlsruhe Institute of Technology, Germany
- 12:45 - 13:00 Kinetic characteristics of pyrolysis of high density polyethylene (HDPE) waste at different bed thickness in a fixed bed reactor
Raffaella Ocone, Heriot-Watt University, United Kingdom
- 13:00 - 14:15 Lunch
- 14:15 - 17:45 Free time/*ad hoc* sessions

Tuesday, September 29, 2015 (continued)

Session 5: Synthetic fuels, charcoal (derivatives) and other commodity chemicals

- 17:45 – 18:00 Advanced carbonized biomass materials for biosensor applications
Mauro Giorcell, Politecnico di Torino, Italy
- 18:00 - 18:15 Biomass fast pyrolysis: Influence of biomass nature on products yield
Francis Billaud, CNRS UPR 3349, France
- 18:15 - 18:30 Hydrogen production from intermediate pyrolysis biochars for use in solid oxide fuel cells
Anwar Sattar, Fraunhofer Institute UMSICHT, United Kingdom
- 18:30 - 18:45 Generation of hydrogen, methane and recovery of phosphorus from biomass
Nikolaos Boukis, Karlsruhe Institute of Technology, Germany
- 18:45 - 19:00 Bio-hydrocarbons through catalytic pyrolysis of used cooking oils: Towards sustainable jet and road fuels
Andrea Maria Rizzo, RE-CORD, Italy
- 19:00 - 19:15 Lignocellulosic butanol production from corn-cobs, switchgrass and phragmites
Kai Gao, Western University, Canada
- 19:15 - 20:30 Dinner
- 20:30 - 21:30 Poster Session and Social Hour

Wednesday, September 30, 2015

07:30 - 08:30 Breakfast

Session 5 (continued): Synthetic fuels, charcoal (derivatives) and other commodity chemicals

- 08:30 - 09:00 **Plenary:** Separation technology: Making a difference in biorefineries
Anton A. Kiss, Akzo Nobel Research, Development & Innovation, Process technology SRG, The Netherlands
- 09:00 - 09:15 Production of activated carbons from pyrolytic biochar
Franco Berruti, Western University, Canada
- 09:15 - 09:30 Manipulating the production of solvents versus 1,3-propanediol in *C. pasteurianum* fermentation using redox balance and pH strategies
Erin Johnson, Western University, Canada
- 09:30 - 09:45 On-line analysis of catalytic biomass products using a high pressure tandem micro-reactor GC/MS
Michael Soll, Frontier Laboratories Europe, Germany
- 09:45 - 10:00 Evolution of palm oil mills into bio-refineries: Technical and environmental assessment of six bio-refinery options
Jesus A. Garcia, Cenipalma, Columbia
- 10:00 - 10:30 Coffee Break and Networking
- 10:30 - 10:45 Biochar from TCR-process - an option for digestate utilization and nutrient management
Fabian Stenzel, Fraunhofer UMSICHT, Germany
- 10:45 - 11:00 Biodiesel synthesis from domestic used coking oil in Southern Europe. Evaluation of the fuel quality
Theocharis Tsoutsos, Technical University of Crete, Greece
- 11:00 - 11:15 Modeling of pollutant adsorption on novel modified biomass as a means of seawater decontamination
Dimitrios Sidiras, University of Piraeus, Greece
- 11:15 - 11:30 Production of biodiesel by the esterification of oleic acid while using Amberlyst 15 as catalyst
Aleksander Hykkerud, Norwegian University of Life Sciences, Norway
- 11:30 - 12:30 Poster Session
- 12:30 Pick up boxed lunch
- 12:45 - 19:30 Depart for Excursion to Agia Sofia and Elafonissi

Schedule

- 12.45 Board buses
- 13.25 First stop Cave of Aghia Sofia
- 14.00 Departure from the Cave of Aghia Sofia for Elafonissi
- 15.00 Arrival at Elafonissi
- 17.20 Departure from Elafonissi
- 18.20 Photo stop at the canteen after the tunnel
- 19.30 Arrive back at the hotel

19:45 - 21:15 Dinner

Thursday, October 1, 2015

07:30 - 09:00 Breakfast

Session 5 (continued): Synthetic fuels, charcoal (derivatives) and other commodity chemicals

- 09:00 - 09:30 **Plenary:** Intermediate pyrolysis as an alternative to fast pyrolysis
Andreas Hornung, Aston University (EBRI and Fraunhofer), United Kingdom
- 09:30 - 09:45 Carbon surface engineering for control of emission of various global atmospheric pollutants
Ajay Dalai, University of Saskatchewan, Canada
- 09:45 – 10:00 Biorefinery for greenhouse tomato plant residues
Mohammad M. Hossain, ICFAR-Western University, Canada
- 10:00 - 10:15 A review on plasma technologies applied to thermo-chemical biomass conversion
François Gitzhofer, Université de Sherbrooke, Canada
- 10:15 - 10:30 A new two-dimensional pyrolysis process for concentrating and separating high-value liquid products from plant biomass
Mohammad M. Hossain, ICFAR-Western University, Canada
- 10:30 - 11:00 Coffee Break/Networking

Session 6: Plastics and Synthetic Fuels

- 11:00 - 11:15 Fractionation of flash pyrolysis condensates by staged condensation
Tim Schulzke, Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, Germany
- 11:15 - 11:30 A flexible three-stage thermochemical conversion process
Vander Tumiatti, Sea Marconi Technologies, Italy
- 11:30 - 11:45 Synthetic fuels from 3- ϕ Fischer-Tropsch Synthesis using bio-derived gas feed and novel nanometric catalysts
Nicolas Abatzoglou, Université de Sherbrooke, Canada
- 11:45 - 12:00 Process concepts for conversion of sugar cane residue to value added products
Stavros Michailos, University of Manchester, United Kingdom
- 12:00 – 12:15 Electrical characterization of different carbon based polymer composites
Mauro Giorcelli, Politecnico di Torino, Italy
- 12:15 – 12:30 Castor bean cake upgrading via thermal and catalytic pyrolysis
Kostas Kalogiannis, CPERI/CERTH, Greece
- 12:30 - 13:45 Lunch
- 13:45 - 18:30 Free Time / *ad hoc* sessions
- 18:30 - 19:30 Poster Session and Social Hour
- 19:45 - 21:45 Conference Banquet

Friday, October 2, 2015

07:30 - 09:00 Breakfast

09:00 – 10:00 Roundtable Discussion

Topics:

Introduction: Discussion of existing examples of biorefineries in different countries

-Is it possible to build and operate in a sustainable way biorefineries or only industrial units dedicated to one or a limited number of bioproducts? Justify the 'YES' or propose 'Schemes' for the 'NO'

-List and rank the most promising chemicals (commodity, platform and specialty) that can be derived from biomass, the biomass sources (type, logistics and availability) and the best production routes.

10:00 – 10:30 Discussion, feedback, what is next, concluding remarks and closing of conference

10:30 – 11:00 Coffee Break

12:00 Lunch and departures

Poster Presentations

1. **Fast pyrolysis of differently-treated birch (*Betula pendula*) sawdust by Py-GC/MSD**
Maryam Ghalibaf, University of Jyväskylä, Finland
2. **Bio-char for carbon fibers production**
Mauro Giorcelli, Politecnico di Torino, Italy
3. **Optical investigation of reaction rates for Hydrothermal Carbonization (HTC) of dry organic matter**
Andreas Frohner, University of Natural Resources and Life Sciences, Vienna, Austria
4. **Development of the continuous process of solvolytical conversion of lignin to bio-oil – Lignosolv**
Camilla Løhre, University of Bergen, Norway
5. **Effect of castor bean biochar on plant germination and growth response**
Zoe Hilioti, INEB/CERTH, Greece
6. **Influence of temperature and residence time in the quality of the charcoal obtained from biomass waste pyrolysis in a continuous screw reactor**
Jon Solar, UPV/EHU, Spain
7. **SPME-GC-MS determination of mobile compounds in biochar**
Michele Ghidotti, University of Bologna, Italy
8. **Biomass upgrading and catalyst characterization using a Tandem Catalytic Reactor - GC/MS System**
Michael Soll, Frontier Laboratories Europe, Germany
9. **Castor bean cake upgrading via thermal and catalytic pyrolysis**
Kostas Kalogiannis, CPERI/CERTH, Greece
10. **Economic model of a novel process for the fractionation of dried distillers grain with solubles**
Roman Zakrzewski, University College London, United Kingdom
11. **Water content determination of olive kernels from Chalkidiki and Kalamata olives**
Aleksander Hykkerud, Norwegian University of Life Sciences, Norway
12. **CO₂ capture on bio-based activated carbons**
Ajay Dalai, University of Saskatchewan, Canada