

Spring 6-14-2013

## Conference Program

Engineering Conferences International

Follow this and additional works at: [http://dc.engconfintl.org/bioenergy\\_iv](http://dc.engconfintl.org/bioenergy_iv)



Part of the [Chemical Engineering Commons](#)

---

### Recommended Citation

Engineering Conferences International, "Conference Program" in "BioEnergy IV: Innovations in Biomass Conversion for Heat, Power, Fuels and Chemicals", Manuel Garcia-Perez, Washington State University, USA Dietrich Meier, Thünen Institute of Wood Research, Germany Raffaella Ocone, Heriot-Watt University, United Kingdom Paul de Wild, Biomass & Energy Efficiency, ECN, The Netherlands Eds, ECI Symposium Series, (2013). [http://dc.engconfintl.org/bioenergy\\_iv/1](http://dc.engconfintl.org/bioenergy_iv/1)

This Conference Proceeding is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in BioEnergy IV: Innovations in Biomass Conversion for Heat, Power, Fuels and Chemicals by an authorized administrator of ECI Digital Archives. For more information, please contact [franco@bepress.com](mailto:franco@bepress.com).

## ***Program***

# ***BioEnergy IV:***

## ***Innovations in Biomass Conversion for Heat & Power, Fuels and Chemicals***

June 9-14, 2013  
Basiliani Resort, Otranto, ITALY

### **Conference Co-Chairs:**

Dr. Paul J. de Wild  
ECN, The Netherlands

Dr. Manuel Garcia-Perez  
Washington State University, USA

Dr. Dietrich Meier  
Thünen Institute (TI), Germany

Dr. Raffaella Ocone  
Heriot-Watt University, UK



**Engineering Conferences International**  
32 Broadway, Suite 314 - New York, NY 10004, USA  
Phone: 1 - 212 - 514 - 6760, Fax: 1 - 212 - 514 - 6030  
[www.engconfintl.org](http://www.engconfintl.org) – [info@engconfintl.org](mailto:info@engconfintl.org)

**Basiliani Hotel Resort & Spa**  
**Valle delle Memorie**  
**73028 Otranto - Italy**  
**Tel.: +39.0836.802.920**

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

#### ECI BOARD MEMBERS

Barry C. Buckland, President  
Peter Gray  
Michael King  
Raymond McCabe  
David Robinson  
William Sachs  
Eugene Schaefer  
P. Somasundaran  
Deborah Wiley

Chair of ECI Conferences Committee: William Sachs

ECI Technical Liaison for this conference: Franco Berruti

ECI Executive Director: Barbara K. Hickernell

ECI Associate Director: Kevin M. Korpics



## **Sunday, June 9, 2013**

16:00 – 18:00	Conference check-in
17:00 – 18:00	Organizing Committee Meeting
18:00 – 19:30	Welcome Reception
20:00 – 21:30	Opening Remarks and Dinner

### **NOTES**

- *Audiotaping, videotaping and photography of presentations are prohibited.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *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.*
- *Technical and poster sessions will be in the Conference Center.*
- *Meals will be in the restaurant. If weather permits, lunches and coffee breaks may be outside.*
- *Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.*
- *There will be organized excursions by bus to visit interesting sites along the coast of the Salento, as well as to visit olive oil and wine production facilities in the region.*

## **Monday, June 10, 2013**

07:30 – 08:30 Breakfast

08:30 – 08:45 Welcome and Conference Overview

08:45 – 09:15 **PLENARY – Intermediate Pyrolysis as an Alternative to Fast Pyrolysis**  
Andreas Hornung, Aston University (EBRI and Fraunhofer)

### **PYROLYSIS**

09:15 – 09:30 **Catalytic pyrolysis of forest thinnings in a circulating fluidized bed reactor**  
Ville Paasikallio, VTT

09:30 – 09:45  **Improved oil properties by pyrolysis of demineralized biomass for the production of sugars and fuels**  
Roel Westerhof, Western University (ICFAR)

09:45 – 10:00 **Secondary vapor phase reactions of lignin derived oligomers obtained by fast pyrolysis of pine wood**  
Manuel Garcia-Perez, Washington State University

10:00 – 10:15 **Experimental and modeling study of the gasification of char from millimetric wood chips pyrolysis**  
Santiago Septien Stringel, CNRS

10:15 – 10:45 Coffee Break

10:45 – 11:00 **Optimization of the pyrolysis operating conditions to produce value-added compounds at high yield from coffee bean residue**  
Mohammad M. Hossain, Western University (ICFAR)

11:00 – 11:15 **Fast pyrolysis of four Canadian waste biomass using a mobile unit at different temperatures and characterization of pyrolysis products**  
Ajay Dalai, University of Saskatchewan

11:15 – 11:30 **Novel ICFAR solids feeder for pyrolysis and other applications - Experimental results, characterization, sequential modelling and optimization**  
Federico Matthew Berruti, Western University (ICFAR)


11:30 – 11:45 **A CFD study of gas-solid separation in a downer pyrolysis reactor: An eulerian-eulerian approach**  
Xi Yu, Aston University

11:45 – 12:00 **A strategy for kinetic parameter estimation in the pyrolysis of lignin**  
Raffaella Ocone, Heriot-Watt University

12:00 – 12:15 **Evaluation of tucumã endocarp (astrocaryum aculeatum) as a new biomass resource for application in thermal conversion processes**  
Katia Tannous, University of Campinas

12:15 – 12:30 **Mixing and operability characteristics of mechanically fluidized reactors for the pyrolysis of biomass**  
Valentina Lago, Western University (ICFAR)

**Monday, June 10, 2013 (continued)**

- |               |   |
|---------------|---|
| 13:00 – 14:00 | Lunch   |
| 14:00 – 17:30 | Free time / <i>ad hoc</i> sessions  |
| 17:30 – 18:00 | Afternoon Refreshments  |
| 18:00 – 18:15 | <b>Low temperature co-pyrolysis of polypropylene and coffee wastes to fuels</b><br>Paolo Canu, University of Padua  |
| 18:15 – 18:30 |  <b>Biomass liquefaction for the production of transportation fuels</b><br>Guus van Rossum, University of Twente |
| 18:30 – 18:45 | <b>Production of biocoal from fast pyrolysis char</b><br>Anastasia Colomba, Western University (ICFAR)  |
| 18:45 – 19:00 | <b>Effects of secondary char formation during biomass pyrolysis on properties of biochar</b><br>Ondrej Masek, University of Edinburgh   |
| 19:00 – 19:15 | <b>Distributed Microwave Pyrolysis of Domestic Organic Waste</b><br>Jamal Chaouki, Ecole Polytechnique  |
| 19:15 – 19:30 | <b>Torrefaction of wood and its constituents: Experiments and modelling of co-products for green chemistry application</b><br>Elvira Rodriguez, CEA   |
| 20:00 – 21:15 | Dinner  |
| 21:15 – 22:30 | Poster Session with Social Hour<br>(Poster presentations of Monday's talks)   |



**Tuesday, June 11, 2013**

07:30 – 08:30 Breakfast

08:30 – 09:00 **PLENARY – A Review of Microwave Pyrolysis of Biomass and Waste for the Production of Energy and Fuels**  
Jamal Chaouki, Polytechnique Montreal

**COMBUSTION AND GASIFICATION**

09:00 – 09:15 **Gasification of a municipal solid waste in a pilot scale bubbling fluidized bed reactor**  
Umberto Arena, Second University of Naples

09:15 – 09:30 **Biomass self-gasification,**  
Guus van Rossum, University of Twente

09:30 – 09:45 **Modeling and simulation of biomass thermal conversion to hydrogen-rich gas in a short circulating fluidized bed riser**  
Yassir Makkawi, Aston University

09:45 – 10:00 **Clean hydrogen rich gas from catalytic steam gasification of biomass**  
Sergio Rapagnà, University of Teramo

10:00 – 10:30 Coffee Break

10:30 – 10:45 **Supercritical water gasification of aqueous biomass and waste for the production of CH<sub>4</sub> and H<sub>2</sub>**  
Izad Behnia, Western University (ICFAR)

10:45 – 11:00 **Development of fluidized bed TGA: Application on biomass gasification**  
Jamal Chaouki, Polytechnique Montreal

11:00 – 11:15 **External superheating in biomass power plants with pebble bed regenerators**  
Robert Daschner, Fraunhofer UMSICHT

11:15 – 11:30 **Fuel staging in biomass heating systems – A primary measure to reduce NO<sub>x</sub> emissions**  
Martin Meiller, Fraunhofer UMSICHT

11:30 – 11:45 **A new inductively heated mini reactor for biomass pyrolysis and gasification tests**  
Cedric Briens, University of Western Ontario, Canada

11:45 – 12:00 **Effect of the spatial and fluidization velocities on the performance of a fluidized bed reactor for the catalytic steam reforming of bio-oil**  
Javier Remón, University of Zaragoza

12:00 – 12:15 **Kinetic behaviour of biomass mixtures during torrefaction and steam gasification**  
Elvira Rodriguez, CEA

12:30 – 13:30 Lunch

**Tuesday, June 11, 2013 (continued)**

13:30 – 17:45 Free time /*ad hoc* sessions

17:45 – 18:00 Afternoon Refreshments

**UPGRADING**

18:00 – 18:15 **Upgrading fast pyrolysis oil to biofuels via low temperature alcohol stabilization and hydrodeoxygenation**  
Charles Xu, Western University (ICFAR)

18:15 – 18:30 **Combined pyrolysis and hydrodeoxygenation pathways to produce bio-fuels soluble in (bio) diesel: diesel engine testing**  
Roel Westerhof, Western University (ICFAR)

18:30 – 18:45 **Hydrodeoxygenation of biofuel-precursors on Ni-promoted catalysts**  
José F. Cambra, Escuela Tecnica Superior De Ingenieria

18:45 – 19:00 **Green aromatic bulk-chemicals from lignin pyrolysis vapours**  
Binod Shrestha, CNRS

19:00 – 19:15 **Distillation of bio-oil using heavy crude oil as stabilizer**  
Alfredo Martinez-Iglesias, Western University (ICFAR)

19:15 – 19:30 **Novel Ni-based catalysts for the hydrotreatment of fast pyrolysis oil**  
Agnes Ardiyanti, University of Groningen

20:00 – 21:15 Dinner

21:15 – 22:30 Poster Session with Social Hour  
(Poster presentations of Tuesday's talks)

## Wednesday, June 12, 2013

07:30 – 08:30 Breakfast

08:30 – 09:00 **PLENARY – The best approach for the conversion job; biological, thermochemical or both?**  
David Bressler, University of Alberta

### BIOREFINERY AND SUSTAINABILITY

09:00 – 09:15  **Toward the development of green integrated forest biorefinery complex**  
Tatiana Rafione, Polytechnique Montréal

09:15 – 09:30 **Integration of pyrolysis, char upgrading and anaerobic digestion in a novel bio-refinery concept**  
Mathew Smith, Washington State University

09:30 – 09:45 **Bioproducts from the Canadian forest**  
Franco Berruti, Western University (ICFAR)

09:45 – 10:00 **Process optimization for the production of bio-based PF resins using de-polymerized lignin**  
Homaira Siddiqui, Western University (ICFAR)

10:00 – 10:30 Coffee break

10:30 – 10:45 **Estimation of biomass supply and diesel fuel requirement for co-feeding a bitumen upgrader through 3-stage hauling and pre-processing of biomass**  
Murlidhar Gupta, CanmetEnergy Natural Resources Canada

10:45 – 11:00 **Sustainability issues regarding bamboo as a renewable feedstock for fuels and materials**  
Claudia Mercedes Daza Montaño, Energy Research Centre of the Netherlands ECN

11:00 – 11:15 **Lignin rich residues from biomass to chemicals and fuels**  
Alessandra Bogliano, Chemtex Spa

11:15 – 11:30  **Detoxification of hemicelluloses hydrolysates from kraft mills by membrane extraction**  
Mariya Marinova, Polytechnique de Montreal

11:30 – 11:45 **In situ synchrotron-based X-ray diffraction and micro-raman study of biomass at hydrothermal conditions**  
Ajay Dalai, University of Saskatchewan

12:00 – 19:30 Boxed Lunch and All Afternoon Excursion

20:00 – 21:15 Dinner

21:15 – 22:30 Poster Session with Social Hour  
(Poster presentations of Wednesday's talks and poster-only presentations numbers 1 - 12)

## Thursday, June 13, 2013

07:30 – 08:30 Breakfast

08:30 – 09:00 **PLENARY - New biochemical pathways for production of drop-in biofuels**  
Brigitte Ahring, Washington State University

### BIOCHEMICAL CONVERSION

09:00 – 09:15  **Bioconversion of lignocellulosic hydrolysates: Strategies to overcome the inhibitory effects at high gravity processes**  
Charilaos Xiros, Chalmers University of Technology

09:15 – 09:30 **Alcohol production from pyrolytic sugars obtained from selective fast pyrolysis of pretreated wood**  
Luis Luque, Western University (ICFAR)

09:30 – 09:45 **Fermentation performance and proteomic analysis of high local cell density fermentation by encapsulated *Saccharomyces Cerevisiae***  
Carl Johan Franzén, Chalmers University of Technology

09:45 – 10:00 **Utilization of acetic acid-rich pyrolytic bio-oil by microalga *Chlamydomonas reinhardtii*: Reducing bio-oil toxicity and enhancing algal toxicity tolerance**  
Laura Jarboe, Iowa State University

10:00 – 10:30 Coffee Break

10:30 – 10:45 **Biobutanol production from high sugar content wastewaters**  
Giuseppe Olivieri, Università degli Studi di Napoli Federico II

10:45 – 11:00 **Preliminary assessments of microalgae direct transesterification for biodiesel production**  
Giuseppe Olivieri, Università degli Studi di Napoli Federico II

11:00 – 11:15 **Metabolic engineering of *Clostridium cellulolyticum* for advanced biofuel production**  
Andrea Liedtke, Fraunhofer IME

11:15 – 11:30 **Effect of particle size on enzymatic hydrolysis of pretreated miscanthus**  
Vijay Singh, University of Illinois

11:30 – 11:45 **Anaerobic digestion of light carboxylic acids derived from the pyrolysis of lignocellulosic materials for methane production**  
Shi-Shen Liaw, Washington State University

11:45 – 12:00 **Optimizing biomethane production processes through trace elements supplementation**  
Nwagbo Christpeace Ezebuio, Hamburg University of Technology

12:00 – 12:15 **Energy efficient biogas upgrading by anaerobic hydrolysis**  
Samir Binder, Fraunhofer UMSICHT Sulzbach-Rosenberg

13:00 – 14:00 Lunch

14:00 – 18:30 Free time/*ad hoc* sessions

**Thursday, June 13, 2013 (continued)**

18:30 – 20:00	Poster Session and Social Hour (Poster presentations of Thursday's talks and poster-only presentations numbers 13 - 23)
20:00 – 22:30	Banquet

**Friday, June 14, 2013**

07:30 – 08:30 Breakfast

**BIODIESEL, VEGETABLE OILS**

08:30 – 08:45 **Production of renewable drop-in fuels and chemicals from thermal conversion of non-edible lipids**  
David Bressler, University of Alberta

08:45 – 09:00 **Biodiesel via catalytic gas phase transesterification in a fluidized bed**  
Gregory Patience, Polytechnique Montreal

09:00 – 09:15 **A commercial demonstration of biodiesel production with lipase as catalyst**  
Dehua Liu, Tsinghua University

09:15 – 09:30 **An alternative biodiesel production hydroesterification route from raw macauba (acrocomia aculeata) pulp oil using heterogeneous catalysis**  
Darlis Varón, Federal University of Rio de Janeiro

09:30 – 09:45 **Ionic liquid based extraction of lipids from micro-algae**  
Lars Rehmann, Western University (ICFAR)

09:45 – 10:00 **Thermal visbreaking of vegetable oils into non-toxic, renewable lamp oil**  
Jamie A. Gregory, Western University (ICFAR)

10:00 – 10:30 Coffee Break

10:30 – 10:45 **Ni-functionalized carbon nano-filaments as biodiesel steam reforming catalyst**  
Nicolas Abatzoglou, Université de Sherbrooke

10:45 – 11:00 **An alternative heterogeneous catalyst method for transesterification of jatropha oil**  
Eduardo Cavalcanti, National Institute of Technology (INT)

11:00 – 12:00 Poster Session  
(Posters presentations from Friday's talks)

12:00 – 12:30 **OVERALL DISCUSSION, FEEDBACK, WHAT IS NEXT?  
CONCLUDING REMARKS AND CLOSING OF CONFERENCE**

12:30 – 13:30 Lunch and Departure

## Poster List

(5/20/13)

1. **Deacidification process of oils for biodiesel production using ultrasound and microwaves**  
Daria Camilla Boffito, Università degli Studi di Milano
2. **Slow pyrolysis of canola meal: Characterization of bio-char, bio-oil, and syngas produced at different pyrolysis temperatures**  
Ajay Dalai, University of Saskatchewan
3. **Wood pellets treatment through microwave pyrolysis**  
Marco Frediani, University of Florence
4. **Surface chemical composition of oxidized biochars**  
Manuel Garcia-Perez, Washington State University
5. **Effect of sulfuric acid addition on the yield and composition of lignin derived oligomers obtained by the auger and fast pyrolysis of douglas-fir wood**  
Manuel Garcia-Perez, Washington State University
6. **PY-GC/MS studies to evaluate the effect of pyrolysis temperature on the selectivity of thermochemical reactions towards the production of chemicals**  
Manuel Garcia-Perez, Washington State University
7. **Anaerobic digestion of light carboxylic acids derived from the pyrolysis of lignocellulosic materials for methane production**  
Manuel Garcia-Perez, Washington State University
8. **Effect of cellulose crystallinity on the formation of a liquid intermediate and on product distribution during pyrolysis**  
Manuel Garcia-Perez, Washington State University
9. **Effect of particle size on the yield and composition of lignin derived oligomers obtained by fast pyrolysis of beech wood**  
Manuel Garcia-Perez, Washington State University
10. **Effect of crystallinity on cellulose secondary reactions in solid phase**  
Manuel Garcia-Perez, Washington State University
11. **Effect of pyrolysis temperature on the yield and composition of lignin derived oligomers**  
Manuel Garcia-Perez, Washington State University
12. **A novel approach for modeling biomass torrefaction for system integration**  
Murlidhar Gupta, CanmetENERGY-Natural Resources Canada
13. **Cellulose shell encapsulated phase change materials**  
Rafail Khalfin, Technion- Israel Institute of Technology
14. **Synthesis of higher alcohols from biomass syngas: Catalyst-based reaction kinetics**  
Ajay Dalai, York University
15. **A techno-economic analysis of biodiesel production by transesterification of microalgal lipids**  
Giuseppe Olivieri, Università degli Studi di Napoli Federico II

16. **Natural abundance  $^{13}\text{C}$  NMR study on the effects of thermochemical treatments on the lignocellulosic structure of wheat straw**  
Ernst RH van Eck, Radboud University Nijmegen
17. **Solid biofuel conditioning by mechanical pre-treatment of brewer's spent grain**  
Samir Binder, Fraunhofer UMSICHT Sulzbach-Rosenberg
18. **Lignin pyrolysis for value-added biorefinery products**  
Paul de Wild, Energy research Centre of the Netherland (ECN)
19. **Technical and economic evaluation of the production of monomeric and oligomeric phenols via different thermochemical processes**  
Claudia Daza Montano, Energy research Centre of the Netherland (ECN)
20. **On-line process control and operation of anaerobic digesters**  
Andreas Hornung, Fraunhofer UMSICHT Sulzbach-Rosenberg
21. **Characterization of products from hydrothermal carbonization (HTC) of water hyacinth (*eichhornia crassipes*)**  
Dietrich Meier, Thunen Institute of Wood Research
22. **Solid biofuel conditioning by mechanical pre-treatment of brewer's spent grain**  
Rolf Jung, Fraunhofer UMSICHT Sulzbach-Rosenberg
23. **On-line process control and operation of anaerobic digesters**  
Fabian Stenzel, Fraunhofer UMSICHT Sulzbach-Rosenberg