

Program

Biochar III: Production, Characterization and Applications

September 17-22, 2023
Tomar, Portugal

Conference Co-Chairs:

Franco Berruti, ICFAR, Western University, Canada
David Chiaramonti, Politecnico di Torino and RE-CORD, Italy
Silvia Fiore, Politecnico di Torino, Italy
Manuel Garcia-Pérez, Washington State University, USA
Ondrej Masek, University of Edinburgh, UK



Engineering Conferences International

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Previous Conferences in this Series

Biochar: Production, Characterization and Applications

August 20-25, 2017

Alba, Italy

Conference Co-Chairs

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Ondrej Masek, University of Edinburgh, Edinburgh, UK

Raffaella Ocone, Heriot-Watt University, Edinburgh, UK

Biochar II: Production, Characterization and Applications

September 15-20, 2019

Cetraro (Calabria), Italy

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Ondrej Masek, University of Edinburgh, Edinburgh, UK

Manuel Garcia-Perez, Washington State University, USA

Sunday, September 17, 2023

16:00 – 18:00	Conference check-in
18:15 – 19:30	Welcome reception (with music)
19:30 – 21:30	Dinner

NOTES

- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 3 minutes for questions. Extended discussion will take place at the poster session*
- *Speakers – Please hang your poster presentation prior to the poster session and remove it after the session ends.*
- *Please do not smoke at any conference functions.*
- *Turn your cellular telephones to vibrate or off during technical sessions.*
- *All coffee breaks will be held in the hotel bar area (with outdoor patio)*

Monday, September 18, 2023

- 07:30 – 08:30 Breakfast buffet
- 08:30 – 08:45 Welcome and Conference Overview
- 08:45 – 09:20 **PLENARY 1**
151 - Biochar in a circular economy
Johannes Lehmann, Cornell University, USA

PRODUCTION PROCESSES, PRE- AND POST-PROCESSING AND REACTOR TECHNOLOGIES

- 09:20 – 09:40 **126 - Big box biochar: Scaled-up, in-woods biochar production**
Darren McAvoy, Utah State University, USA
- 09:40 – 10:00 **101 - Evaluation of pyrolysis processes and biochar quality in the operation of flame curtain pyrolysis kiln for sustainable biochar production**
Anjali Jayakumar, Newcastle University, UK. David Morrisset, University of Edinburgh, UK. Vasileios Koutsomarkos, University of Edinburgh, UK. Christian Wurzer, University of Edinburgh, UK. Rory M. Hadden, University of Edinburgh, UK. Robert Gordon University, UK. Christine Edwards, Robert Gordon University, UK. Ondřej Mašek, University of Edinburgh, UK.
- 10:00 – 10:20 **119 - Heat, power and high-temperature biochar cogeneration**
Anežka Sedmíhradská, University of Chemistry and Technology; The Czech Academy of Sciences, Institute of Chemical Process Fundamentals, Czech Republic. Michael Pohořelý, University of Chemistry and Technology; The Czech Academy of Sciences, Institute of Chemical Process Fundamentals, Czech Republic.
- 10:20 – 10:50 Coffee Break
- 10:50 – 11:10 **130 - Activated char produced from chontaduro seeds: a new potential precursor**
Luis Angel, IMT Atlantique, France. Audrey Villot, IMT Atlantique, France. Yves Andres, IMT Atlantique, France. Claire Gerente, IMT Atlantique, France. Manuel Rodriguez Susa, Universidad de los Andes, Colombia. Jaime Plazas-Tuttle, Universidad de los Andes, Colombia.
- 11:10 – 11:30 **103 - Does stirring influence hydrothermal carbonization experiments? A laboratory and computational study of a lignocellulosic biomass**
Omar M. Abdeldayem, IHE Delft for Water Education, Netherlands. Md Abdullah Al-Noman, IHE Delft for Water Education, Netherlands. Capucine Dupont, IHE Delft for Water Education, Netherlands. David Ferras, IHE Delft for Water Education, Netherlands. Lat Grand Ndiaye, University Assane Seck of Ziguinchor, Senegal. Maria Kennedy, IHE Delft for Water Education, Netherlands.
- 11:30 – 11:50 **118 - Process modelling and life cycle assessment of algal biochar-bioenergy system**
Jiacheng Sun, University of Edinburgh, UK. Ondřej Mašek, University of Edinburgh, UK
- 11:50 – 12:10 **129 - Biochar seed-coatings for precision aerial seeding in forest restoration**
Sean C. Thomas, Institute of Forestry and Conservation, Univ. of Toronto, Canada

Monday, September 18, 2023 (continued)

- 12:30 – 14:00 Lunch buffet
- 14:00 – 16:45 Networking / *ad hoc* sessions
- 16:45 – 17:20 Afternoon Refreshments (Coffee Break)
- 17:20 – 17:40 **150 - Production, characterization and uses of N-doped chars and Metal-N-doped Bio-chars**
Manuel Garcia-Perez, Department of Biological Systems Engineering, Washington State University, USA.
- 17:40 – 18:00 **142 - Transformation of zinc during waste tyre pyrolysis using various reactors**
Bo Gu, Curtin University, Australia. Yun Yu, Curtin University, Australia. Hongwei Wu, Curtin University, Australia.
- 18:00 – 18:20 **121 - Green functionalization of biochar via mechanochemical approach**
Maria Rosaria Acocella, University of Salerno, Italy. Aida Kiani, University of Salerno, Italy. Gianluca Viscusi, University of Salerno, Italy. Elena Lamberti, University of Salerno, Italy. Giuliana Gorrasi, University of Salerno, Italy. Paola Giudicianni, Institute of Sciences and Technologies for Sustainable Energy and Mobility (STEMS) of the National Research Council (CNR), Italy. Corinna Maria Grottola, Institute of Sciences and Technologies for Sustainable Energy and Mobility (STEMS) of the National Research Council (CNR), Italy. Davide Amato, Institute of Sciences and Technologies for Sustainable Energy and Mobility (STEMS) of the National Research Council (CNR), Italy. Raffaele Ragucci, Institute of Sciences and Technologies for Sustainable Energy and Mobility (STEMS) of the National Research Council (CNR), Italy.
- 18:20 – 18:40 **166 - Use of plasticized biochar intermediate for producing biocarbons with improved mechanical properties**
Robert L. Johnson, University of Hawaii at Mānoa, USA. Kyle Castillo, University of Hawaii at Mānoa, USA. Christian Castillo, University of Hawaii at Mānoa, USA. Liang Wang, SINTEF Energy Research, Norway. Øyvind Skreiberg, SINTEF Energy Research, Norway. Scott Turn, University of Hawaii at Mānoa, USA.
- 18:40 – 19:00 **P108 - Bio-char post-processing – thermochemical activation of gasification carbon**
David Gurtner, University of Natural Resources and Life Science – BOKU, Austria. Michael Kresta, University of Natural Resources and Life Science – BOKU, Austria. Angela Hofmann, Josef Ressel Centre for production of activated carbon from municipal residues, Management Center Innsbruck, Department of Environmental, Process and Energy Engineering, Austria. Christoph Pfeifer, University of Natural Resources and Life Science – BOKU, Austria.
- 19:00 – 19:30 Free time / Informal networking
- 19:30 – 21:00 Dinner (served)
- 21:00 – 22:30 Poster Session with Social Hour

Tuesday, September 19, 2023

07:30 – 08:30 Breakfast buffet

CHARACTERIZATION

08:30 – 09:05

PLENARY 2

141 - Chemical nature, molecular structure, and formation mechanism of biochar: Molecular dynamics studies and experimental approach

Valentina Sierra, Washington State University, USA. Jonathan P. Mathews, Penn State University, USA. Farid Chejne Janna, National University of Colombia, USA. Anthony Dufour, CNRS-University of Lorraine, France. Manuel Garcia-Perez, Washington State University, USA.

09:05 – 09:25

105 - Nutrients' fate in cow manure during hydrothermal treatments

Mostafa Ahmed, IHE Delft Institute for Water Education, The Netherlands. Capucine Dupont, IHE Delft Institute for Water Education, The Netherlands.

09:25 – 09:45

107 - Molecular dynamics simulation of realistic biochar models with controlled porosity

Audrey Ngambia, University of Edinburgh, United Kingdom. Ondrej Masek, UKBRC, University of Edinburgh, United Kingdom. Valentina Erastova, University of Edinburgh, United Kingdom.

09:45 – 10:05

123 - Physico-chemical qualities and potentials for biochar agro-environmental valorization

Eya Ghomri, CNRS-University of Lorraine, France. Yann Le Brech, CNRS-University of Lorraine, France. Marine Guilmont, CNRS-University of Haute-Alsace, France. Sebastien Leclerc, CNRS-University of Lorraine, France. Sabine Bouguet-Bonnet, CNRS-University of Lorraine, France. Nicolas Thevenin, RITTMO Agro-environnement, France. Roger Gadiou, CNRS-University of Haute-Alsace, France

10:05 – 10:25

127 - Impact of temperature and technology on biochar properties from different agricultural residues

Konstantin Moser, Bioenergy and Sustainable Technologies GmbH, Austria. Elisabeth Wopienka, Bioenergy and Sustainable Technologies GmbH, Austria. Christoph Pfeifer, University of Natural Resources and Life Sciences, Vienna.

10:25 – 10:55

Coffee Break

10:55 – 11:15

125 - Characterization and catalytic performances of biochars synthesized from a hyperaccumulator plant: *Alyssum murale*

Marine GUILMONT, CNRS- University of Haute-Alsace, France. Roger GADIOU, CNRS- University of Haute-Alsace, France. Yann LE BRECH, CNRS-University of Lorraine, France. Marie-Odile SIMONNOT, CNRS-University of Lorraine, France. Anthony DUFOUR, CNRS-University of Lorraine, France. Jesus RAYA, CNRS-University of Strasbourg, France. Claire COURSON, CNRS-University of Strasbourg, France.

11:15 – 11:35

174 - Production and characterization of spruce wood and bark biochar

Liang Wang, SINTEF Energy Research, Norway. Alba Dieguez-Alonso, Otto-von-Guericke University, Germany. Maria Olsen, SINTEF Energy Research, Norway. Julie Cathrine Guldahl, SINTEF Energy Research, Norway. Øyvind Skreiberg, SINTEF Energy Research, Norway. Alice Budai, Norwegian Institute of Bioeconomy Research, Norway. Daniel Rasse, Norwegian Institute of Bioeconomy Research, Norway.

Tuesday, September 19, 2023 (continued)

- 11:35 – 11:55 **120 - Pore formation and porous structure evolution on CO₂ activation processes**
Javier Pallarés, University of Zaragoza\CIRCE, Spain. Antonia Gil, University of Zaragoza\CIRCE, Spain. Inmaculada Arauzo, University of Zaragoza\CIRCE, Spain. Cristóbal Cortés, University of Zaragoza\CIRCE, Spain
- 11:55 – 12:15 **124 - Moroccan Two-phase olive mill wastes hydrothermal carbonization: effect of water phase recycling on hydrochar yields and properties**
Akram Dahdouh, CNRS-University of Lorraine, France. Yann Le Brech, CNRS-University of Lorraine, France. Ismail KHAY, International University of Rabat, College of Engineering and Architecture, Morocco. Anas El Maakoul, International University of Rabat, College of Engineering and Architecture, Morocco. Mohamed Bakhouya, International University of Rabat, College of Engineering and Architecture, Morocco
- 12:30 – 14:00 Lunch (buffet)
- 14:00 – 16:45 Networking / *ad hoc* sessions
- 16:45 – 17:20 Afternoon Refreshments (Coffee Break)
- 17:20 – 17:40 **160 - Quality of sewage sludge-derived biochar from the point of organic pollutants and pyrolysis parameters**
Jaroslav Moško, Institute of Chemical Process Fundamentals of the CAS; University of Chemistry and Technology, Czech Republic. Matěj Hušek, Institute of Chemical Process Fundamentals of the CAS; University of Chemistry and Technology, Czech Republic. Michael Pohořelý, Institute of Chemical Process Fundamentals of the CAS; University of Chemistry and Technology, Czech Republic.
- 17:40 – 18:00 **140 - Stable polycyclic aromatic carbon (SPAC) content as an improved parameter for determining biochar stability**
Clement Uguna, University of Nottingham, Faculty of Engineering, United Kingdom. Will Meredith, University of Nottingham, Faculty of Engineering, United Kingdom. Colin Snape, University of Nottingham, Faculty of Engineering, United Kingdom. Philippa Ascough, Scottish Universities Environmental Research Center, United Kingdom.
- 18:00 – 18:20 **164 - Physical and mechanical properties of pyrolyzed pellets**
Magdalena Joka Yildiz, Bialystok University of Technology, Poland. Christian Wurzer, University of Edinburgh, United Kingdom. Thomas Robinson, University of Edinburgh, United Kingdom. Ondrej Mašek, University of Edinburgh, United Kingdom
- 18:20 – 18:40 **165 - Evaluation of the effect of torrefaction and slow pyrolysis on porosity and adsorption performance of biochar and activated carbons obtained from palm kernel shell**
Marlon Cordoba, University of La Guajira, Colombia. Farid Chejne, National University of Colombia, Colombia. Jader Aleán, University of La Guajira, Colombia. Carlos Gómez, National University of Colombia, Colombia.

Tuesday, September 19, 2023 (continued)

- 18:40 – 19:00 **154 - Comparison of hydrochar fractionation and composition in batch and continuous hydrothermal liquefaction**
Maria J. Rivas-Arrieta, Department of Biological and Chemical Engineering, Aarhus University, Denmark. Patrick Biller, Affiliation, Department of Biological and Chemical Engineering, Aarhus University, Denmark.
- 19:00 – 19:30 Free time / Informal networking
- 19:30 – 21:00 Dinner (served)
- 21:00 – 22:30 Poster Session with Social Hour

Wednesday, September 20, 2023

- 07:30 – 08:30 Breakfast
- 08:30 – 08:50 **167 - Characterization of biochars by nuclear magnetic resonance**
Yann LE BRECH, CNRS-University of Lorraine, France. Roger GADIOU, CNRS-University of Haute-Alsace, France. Luc DELMOTTE, CNRS-University of Haute-Alsace, France. Jésus RAYA, CNRS-University of Strasbourg, France. Younes BOUIZI, University of Lorraine, France. Gwendal KERVERN, University of Lorraine, France. Sebastien LECLERC, CNRS-University of Lorraine, France. Sabine BOUGUET-BONNET, University of Lorraine, France. Anthony DUFOUR, CNRS-University of Lorraine, France.
- 08:50 – 09:10 **143 - Biochars from bioresidues, grouped for easier logistics in fertilizer application**
Rianne Visser, TNO Biobased and Circular Technologies, Netherlands
- 09:10 – 09:30 **149 - Characteristics of sewage sludge biochar produced at a wide range of pyrolysis temperatures**
Yassir Makkawi, Bioenergy and Solar Conversion Research Group (BSCRG), College of Engineering, American University of Sharjah, United Arab Emirates (UAE). Omar Moussa, Bioenergy and Solar Conversion Research Group (BSCRG), College of Engineering, American University of Sharjah, United Arab Emirates (UAE).
- 09:30 – 09:50 **152 - Passivation of contaminated biochars by tar conversion over their surface**
Patrycja Wasik, Silesian University of Technology, Poland. Agnieszka Korus, Silesian University of Technology, Poland. Andrzej Szlęk, Silesian University of Technology, Poland. Franz Winter, TU Wien, Austria.
- 09:50 – 10:10 **145 - Study of possibility to foresee the activated chars properties knowing the intrinsic characteristics of raw biomass**
Luis Angel, IMT Atlantique, GEPEA UMR CNRS 6144, France. Audrey Villot, IMT Atlantique, GEPEA UMR CNRS 6144, France. Jenny Peña, GEPEA UMR CNRS 6144, France. Maxime Hervy, GEPEA UMR CNRS 6144, France. Mohamad Dieme, GEPEA UMR CNRS 6144, France. Yves Andres, IMT Atlantique, GEPEA UMR CNRS 6144, France. Claire Gerente, IMT Atlantique, GEPEA UMR CNRS 6144, France. Manuel Rodriguez Susa, Universidad de los Andes, Colombia. Jaime Plazas-Tuttle, Universidad de los Andes, Colombia.
- 10:10 – 10:30 **170 - Pore engineering and surface functionalization of biochars from sugar beet pulp**
Ali Bertan Kır, Middle East Technical University, Turkey; Süleyman Şener Akın, Middle East Technical University, Turkey; Feyza Kazanç, Middle East Technical University, Turkey.
- 10:30 – 11:00 Coffee Break

APPLICATIONS

- 11:00 – 11:20 **134 - Use of commercial biochar for river water purification in the Lazio region, Italy**
Lorenzo Animalì, Roma Tre University, Italy. Sveva Corrado, Roma Tre University, Italy. Paola Tuccimei, Roma Tre University, Italy. Mauro Giorcelli, Turin's Polytechnic, Italy.

Wednesday, September 20, 2023 (continued)

- 11:20 – 11:40 **114 - Innovative applications of biomass gasification char in adsorption and catalysis**
Ali Abdelaal, IMT Atlantique, GEPEA, France; Free University of Bozen-Bolzano, Italy. Audrey Villot, IMT Atlantique, GEPEA, France. Francesco Patuzzi, Free University of Bozen-Bolzano, Faculty of Engineering, Piazza Università 5, Italy. Claire Gerente, IMT Atlantique, GEPEA, France. Marco Baratieri, Free University of Bozen-Bolzano, Faculty of Engineering, Italy.
- 11:40 – 12:00 **168 - Biochar as a catalyst for hydrogen production from methane conversion**
Anthony DUFOUR, CNRS, ENSIC, Nancy, France. Alain CELZARD, Univ. Lorraine, CNRS, France. Vanessa FIERRO, Univ. Lorraine, CNRS, France. François BROUST, CIRAD, Montpellier, France. Jean-Noël ROUZAUD, retired, previously CNRS, France. André ZOULALIAN, Univ. Lorraine, France.
- 12:00 – 12:20 **173 - The Mexico City hydrothermal carbonization plant - An alternative for the management of the organic fraction of the municipal solid waste (OFMSW) in urban areas**
Gustavo Adolfo Gutiérrez-Fernández, G 2 E, Mexico. Daniel Camarena-Elizondo, G 2 E, Mexico. Luis Álvarez-Icaza-Longoria, Institute of Engineering-UNAM, Mexico. Christina Siebe, Institute of Geology-UNAM, Mexico.
- 12:20 – 12:40 **117 - High carbon wood ash biochar for mine tailings remediation: a field assessment of planted tree performance and metals uptake**
Jasmine M. Williams, University of Toronto, Canada. Sean C. Thomas, University of Toronto, Canada.
- 12:45 – 14:00 Lunch (buffet)
- 14:15 Be in the lobby for excursion to UNESCO World Heritage Site: Convento de Cristo. Tomar's most famous landmark, the Convento is on a hill overlooking town. It is within walking distance of the hotel. The Convento combines architectural styles from the 12th through 17th centuries. An ornate octagonal canopy protects the high altar of the Templo dos Templares, modeled after the Holy Sepulcher in Jerusalem, and the grounds of the convent contain eight cloisters embracing a variety of styles. After the Convento de Cristo, the tour will continue in the historic area of Tomar. Time for leisure in town afterwards.
- 14:20 Depart with guides on excursion
- 18:00 – 18:30 Return from excursion
- 18:30 – 19:30 Reception in Lobby Bar (with music)
- 19:30 – 21:00 Dinner
- 21:00 – 22:30 Poster Session with Social Hour

Thursday, September 21, 2023

- 07:30 – 08:30 Breakfast (buffet)
- 08:30 – 09:05 **PLENARY 3**
135 - Opportunities and challenges with the production and use of biochar-based catalysts
Naomi Klinghoffer, Western University, London, Canada. Alexandra Frainetti, Western University, London, Canada
- 09:05 – 09:25 **108 - Assess the mechanisms and adsorption capacities of ten biochar types for the removal of micropollutants from wastewater effluent**
Hadeel Hosney, Water Supply, Sanitation and Environmental Engineering Department, IHE Delft Institute for Water Education, The Netherlands. Ahmed Mahmoud, Wetsus, European centre of excellence for sustainable water technology, The Netherlands. Eleonora Borén, Department of Applied Physics and Electronics, Umeå University, Sweden. Thomas Wagner, Department of Environmental Technology, Wageningen University & Research.
- 09:25 – 09:45 **132 - Adsorption mechanisms of biochar for removal of organic contaminants in water**
Griffin Loeb sack, Western University, London, Ont., Canada. Franco Berruti, Western University, London, Ont., Canada. Ken Yeung, Western University, London, Ont., Canada. Naomi Klinghoffer, Western University, London, Ont., Canada.
- 09:45 – 10:05 **158 - Adsorption of emerging pollutants with different biochar adsorbents**
Heejin Lee, Western University, Canada. Bruna De Luca, DIATI, Politecnico di Torino, Italy. Silvia Fiore, DIATI, Politecnico di Torino, Italy. Franco Berruti, Western University, Canada.
- 10:05 – 10:35 Coffee Break
- 10:35 – 10:55 **172 – Biochar as additive for enhanced dark fermentation and anaerobic digestion**
Mingyu Hu, University of Edinburgh, United Kingdom; Ondrej Masek, University of Edinburgh, United Kingdom.
- 10:55 – 11:15 **133 - Application of biochar for the treatment of retting effluent and use as growth substrate**
Neha Batta, University of Western Ontario, Canada. Spencer M. Heuchan, University of Western Ontario, Canada. Franco Berruti, University of Western Ontario, Canada. Cesar Moreira Valenzuela, Escuela Superior Politécnica del Litoral, ESPOL, Ecuador.
- 11:15 – 11:35 **102 - Balanced mixture of biochar and synthetic fertilizer increases seedling quality of acacia mangium”**
Giovanni Reyes M. Universidad Nacional de Colombia, Colombia.
- 11:35 – 11:55 **157 - Processing of hydrothermal liquefaction biochar from biogas residue for direct use as fertilizer**
Kamaldeep Sharma, Department of Energy, Aalborg University, Denmark. Thomas Helmer Pedersen, Department of Energy, Aalborg University, Denmark.

Thursday, September 21, 2023 (continued)

- 11:55 – 12:15 **162 - Co-composted biochar improves barley yield, manure use efficiency and offsets chemical fertilizer demand in organic agriculture under low rainfall conditions**
Tommaso Barsali, RE-CORD (Renewable Energy Consortium for R&D), Italy. Francesca Tozzi, RE-CORD (Renewable Energy Consortium for R&D), Italy. Damiano Stefanucci, RE-CORD (Renewable Energy Consortium for R&D), Italy. David Casini, RE-CORD (Renewable Energy Consortium for R&D), Italy. Silvia Baronti, Institute of BioEconomy - National Research Council (IBE CNR), Italy. Francesco Primo Vaccari, Institute of BioEconomy - National Research Council (IBE CNR), Italy. Massimo Valagussa, Minoprio Analisi e Certificazioni S.r.l, Italy. David Chiamonti, RE-CORD (Renewable Energy Consortium for R&D) and Polytecnic of Turin, Italy.
- 12:30 – 14:00 Lunch (buffet)
- 14:00 – 15:00 Short Networking Break
- 15:00 – 15:20 **138 - Influence of biochar filler on mechanical properties of basalt fiber reinforced polyamide-6 composite for automotive applications**
Mohammad Mezbah UI Hogue, Washington State University, USA. Muhammad Khusairy Bin Bakri, Washington State University, USA. Vikram Yadama, Washington State University, USA. Manuel Garica-Perez, Washington State University, USA.
- 15:20 – 15:40 **139 - Effect of Redmud addition on electrical and magnetic properties of hemp-derived-biochar-containing epoxy composites**
Mauro Giorcelli, Politecnico di Torino; ICHAR, Silvia Zecchi, Politecnico di Torino, Italy. Fabrizio Ruscillo, Politecnico di Torino, Italy. Giovanni Cristoforo, Politecnico di Torino, Italy. Griffin Loeb sack, ICFAR, Italy. Kang Kang, ICFAR, Italy. Erik Piatti, Politecnico di Torino, Italy. Daniele Torsello, Politecnico di Torino, Italy. Gianluca Ghigo, Politecnico di Torino, Italy. Roberto Gerbaldo, Politecnico di Torino, Italy. Franco Berruti, ICFAR, Italy. Alberto Tagliaferro, Politecnico di Torino, Italy.
- 15:40 – 16:00 **163 - Biochar performances as drug-carrier of bioactive molecules used for intestinal disease treatment**
David Chiamonti, RE-CORD (Renewable Energy Consortium for R&D) and “Galileo Ferraris” Energy Department, Polytecnic of Turin, Italy. Michaela Luconi, Dept. Clinical and Experimental Biomedical Sciences, University of Florence, Italy. David Casini, RE-CORD (Renewable Energy Consortium for R&D), Italy. Damiano Stefanucci, RE-CORD (Renewable Energy Consortium for R&D), Italy. Giulia Lotti, RE-CORD (Renewable Energy Consortium for R&D), Italy. Andrea Maria Rizzo, RE-CORD (Renewable Energy Consortium for R&D), Italy.
- 16:00 – 16:20 **P111 - Gasification of waste wood fractions in a staged process – characterization of resulting bio-char**
Michael Kresta, University of Natural Resources and Life Sciences; MCI–The Entrepreneurial School, Austria. David Gurtner, University of Natural Resources and Life Sciences; MCI–The Entrepreneurial School, Austria. Angela Hofmann, MCI–The Entrepreneurial School; Josef Ressel Centre for the production of powdered activated carbon from municipal residues, Austria.
- 16:20 – 17:00 Afternoon Refreshments (Coffee Break)

Thursday, September 21, 2023 (continued)

MARKETS. COMMERCIALIZATION, POLICIES, REGULATIONS AND CARBON OFFSET CREDITS

- 17:00 – 17:35 **PLENARY 4**
136 - Status of Biochar and Carbon sequestration policy: how can market development be driven?
David Chiaramonti, Politecnico di Torino, Italy
- 17:35 – 17:55 **155 - Economic analysis of business models with multiple potential value streams: Application to the biochar system**
Yuzhou Tang, School of Mechanical Engineering, University of Leeds, United Kingdom. Tim T Cockeril, School of Mechanical Engineering, University of Leeds, United Kingdom.
- 17:55 – 18:15 **169 - Techno-economic evaluation of pulp and paper mill derived biochar, liquid and gaseous biofuel precursors**
Murlidhar Gupta, CanmetENERGY, Natural Resources Canada, Canada; Elisa Dorn, CanmetENERGY, Natural Resources Canada, Canada; Carter Macklin, CanmetENERGY, Natural Resources Canada, Canada; Andrew McFarlan, CanmetENERGY, Natural Resources Canada, Canada.
- 18:15 – 18:35 **115 - Scaling up biochar production. What to aim for? What to choose?**
Rianne Visser, TNO Biobased and Circular Technologies, Netherlands. Christiaan van de Meijden, TNO Biobased and Circular Technologies, Netherlands.
- 18:35 – 18:55 **116 - Expansion of the pacific northwest biochar atlas to a nation-wide decision support tool: Online resources for biochar users and producers**
Kristin Trippe, USDA Agricultural Research Service, USA. Rachel Baschieri, USDA Agricultural Research Service, USA.
- 18:55 – 19:15 **148 - Agricultural residues: Going full circle on biochar resourcefulness**
Isabel M. Lima, USDA-ARS Southern Regional Research Center, USA.
- 19:15 – 19:35 **156 - How biochar can increase profitability in palm oil industry**
Luis Tejado, Prolade, Mexico.
- 19:45 – 21:45 Conference Banquet
- 21:45 – 23:00 Poster Session and Social Hour

Friday, September 22, 2023

- 07:30 – 08:30 Breakfast (buffet) and Departure

Posters

Poster 103 - Biochar benefits green infrastructure: a global meta-analysis and synthesis

Wenxi Liao, Institute of Forestry and Conservation, University of Toronto, Canada. Md Abdul Halim, Institute of Forestry and Conservation, University of Toronto, Canada. Imrul Kayes, Institute of Forestry and Conservation, University of Toronto, Canada. Jennifer A. P. Drake, Department of Civil and Mineral Engineering, University of Toronto, Canada. Sean C. Thomas, Institute of Forestry and Conservation, University of Toronto, Canada

Poster 104 - Effects of aging on biochar stability and soil amendment properties

Táisa Andrade Barbosa, Federal University of Sergipe, University of Edinburgh, United Kingdom. Raimundo Rodrigues Gomes Filho, Federal University of Sergipe. Alberto Wisniewisk Jr, Federal University of Sergipe. Ondrej Masek, University of Edinburgh

Poster 105 - Analysis of manure digestate and its major components as adsorbents solids for biogas cleaning

África Navarro-Gil, University of Zaragoza, Spain. Noemí Gil-Lalaguna, University of Zaragoza, Spain. Isabel Fonts, University of Zaragoza, Spain. Joaquín Ruiz, University of Zaragoza, Spain. Jesús Ceamanos, University of Zaragoza, Spain. Javier Ábrego, University of Zaragoza, Spain. Gloria Gea, University of Zaragoza, Spain.

Poster 106 - Facile functionalization of charcoal in water solution

Aida Kiani, University of Salerno, Italy. Giuseppe Valvano, University of Salerno, Italy. Maria Rosaria Acocella University of Salerno, Italy.

Poster 107 - Production and characterization of biochar from industrial sludge for potential agronomic use

Florencia Ponte, UPM / UTEC (UPM Biofore Company / University of Uruguay), Austria. Alejandro Amaya, UDELAR (Chemistry University of Uruguay). Hector Garcia, IHE/UTEC (Institute for water education/ University of Uruguay). Capucine Dupont, IHE Delft (Institute for water education).

Poster 109 - One-step activation of residual wood – a contribution to the circular economy

Dominik Bosch, MCI–The Entrepreneurial School, Austria. Jan O. Back, MCI–The Entrepreneurial School, Austria. Luca Nohel, MCI–The Entrepreneurial School, Austria. Angela Hofmann, MCI–The Entrepreneurial School, Austria. Anke Bockreis, University of Innsbruck, Austria. Michael Kresta, MCI Management Center Innsbruck Internationale Hochschule GmbH, Austria. David Gurtner, University of Natural Resources and Life Science, Austria

Poster 110 - Study of pyrolysis for biochar production from biomass feedstocks using a simplified Aspen Plus model

Disni Gamaralalage, The University of Nottingham, United Kingdom. Clement Uguna, The University of Nottingham, United Kingdom. Will Meredith, The University of Nottingham, United Kingdom. Colin Snape, The University of Nottingham, United Kingdom. Jon McKechnie, The University of Nottingham, United Kingdom.

Poster 115 - Understanding biochar functionalities based on feedstock characteristics and processing conditions

Isabel M. Lima, USDA-ARS Southern Regional Research Center, USA. Amir Hass, West Virginia State University, USA.

Poster 118 - Development of pilot scale pyrolysis reactors for biocarbon sequestration

Murlidhar Gupta, CanmetENERGY, Natural Resources Canada, Canada; Guillaume Gagnon-Caya, CanmetENERGY, Natural Resources Canada, Canada; Ben Bronson, CanmetENERGY, Natural Resources Canada, Canada; Leslie Nguyen, CanmetENERGY, Natural Resources Canada, Canada.

Poster 119 - Effect of pressure and gas velocity on biochar formation: hindered tar evaporation or tar cracking?

Eya Ghomri, CNRS-University of Lorraine, LRGP, France; Jana Alkoussa, CNRS-University of Lorraine, LRGP, France; Andrew Kabugo, CNRS-University of Lorraine, LRGP, France; Yann Le Brech, CNRS-University of Lorraine, LRGP, France; Guillaïn Mauviel, CNRS-University of Lorraine, LRGP, France.

Poster 120 - Effects of biochar addition on long-term behaviour of concrete and mortar

Alessio Malcevschi, University of Parma, Italy; B. Belletti, University of Parma, Italy; P. Bernardi, University of Parma, Italy; D. Milanese, University of Parma, Italy; C. Sciancalepore, University of Parma, Italy; A. Sirico, University of Parma, Italy.

Poster 121 - Qualterra – Scalable biomass processing technologies for sustainable agriculture

Seanna Hewitt, Qualterra, Inc., USA; David Drinkard, Qualterra, Inc., USA; Amit Dhingra, Qualterra, Inc., USA

Poster 122 - An Exploration into Large-Scale Hydrochar Production and Application: Effects, Evolution and C Permanence

Gustavo Adolfo Gutiérrez-Fernández, G 2 E, Mexico; Daniel Camarena-Elizondo, G 2 E, Mexico; Luis Álvarez-Icaza-Longoria, Institute of Engineering-UNAM, Mexico; Christina Siebe, Institute of Geology-UNAM, Mexico; Lucy Mora-Palomino, Institute of Geology-UNAM, Mexico

Poster 123 - Effect of pyrolysis atmosphere on biochar production from spruce bark, needle, twig and forest residue

Liang Wang, SINTEF Energy Research, Norway; Jone Dambas, SINTEF Energy Research, Norway; Julie Catherine Guldahl, SINTEF Energy Research, Norway; Elisa Magnanelli, SINTEF Energy Research, Norway; Nikalet Everson, SINTEF Energy Research, Norway

Poster 124 - Production and characterization of biochar from biomasses

Liang Wang, SINTEF Energy Research, Norway; Roger Khalil, SINTEF Energy Research, Norway; Jørn Bakken, SINTEF Energy Research, Norway; Julie Cathrine Guldahl, SINTEF Energy Research, Norway; Øyvind Skreiberg, SINTEF Energy Research, Norway