The Clearwater Clean Energy Conference
TUESDAY – June 5, 2018

7:30 a.m. – Continental Breakfast in the Exhibit Center

8:00 a.m. – Three Concurrent Technical Sessions

	Session 5 **Sand Key Room** **Energy From Waste** *Alan Paschedag, Covanta*	**Session 6** **Gulf Room** **Innovative Low Carbon Fuels II** *Dongke Zhange, The University of Western* ***Australia***	**Session 7** **Palm Room** **Oxy-Combustion I** *Dr. Klas Andersson (Chalmers University,* ***Sweden****)* **and** *Dr. Andrew Fry, Brigham Young University*
Tuesday, 8:00	**32. Re-utilizing Carbon Dioxide in Metal Combustion Processes** *Martin Schiemann, Department of Energy Plant Technology, Ruhr-University Bochum,* ***GERMANY***	**147. Low Load Operating Challenges of Existing Air Quality Control Systems** *Suzette Puski, Babcock Power Environmental,* ***USA***	**75. Progress in Commissioning a Pilot-scale Staged, Pressurized Oxy-combustion System** *Zhiwei Yang, Department of Energy, Environmental & Chemical Engineering, Washington University in St. Louis,* ***USA***
Tuesday, 8:20	**55. Magnetic Separation for the Recirculation of Oxygen Active Bed Materials When Combusting Municipal Solid Waste in Large Scale CFB Boilers** *Fredrik Lind, Chalmers University of Technology, Energy and Environment,* ***SWEDEN***	**123. The Effect of Nickel and Magnesium Loadings on the Activity, Selectivity and Stability for Catalytic Dry Reforming of Biogas Using Pt/cerium-zirconium Oxide Catalyst** *Yetunde Oluwatosin, Department of Chemical & Biomedical Engineering, University of South Florida,* ***USA***	**68. Model-Based Characterization of Elevated Temperature and High Pressure Oxy-Coal Combustion Systems** *Andrew Chiodo, Reaction Engineering International,* ***USA***
Tuesday, 8:40	**5. Modeling of Biomass Pyrolysis Kinetics Using Sequential Multi-step Reaction Model** *A. K. Gupta, The Combustion Laboratory, Department of Mechanical Engineering, University of Maryland,* ***USA***	**19. Biomass Electrolysis for Hydrogen Production** *Gerardine G. Botte, Center for Electrochemical Engineering Research, Department of Chemical and Biomolecular Engineering, Russ College of Engineering and Technology, Ohio University,* ***USA***	**66. Investigation on Combustion Characteristics of Lab-scale Pressurized Oxy-fuel Combustion System Using Gaseous Fuel** *Youngjae Lee, Thermochemical Energy System, Korea Institute of Industrial Technology,* ***KOREA***
Tuesday, 9:00	**8. Effect of Biochar Addition, Initial pH and Temperature on Methane Production in Two-Phase Anaerobic Digestion of Carbohydrates Food Waste** *Mingming Zhu, Centre for Energy (M473), The University of Western Australia,* ***AUSTRALIA***	**79. Low-Cost, Small-Scale Hydrogen Production** *Dr. Girish Srinivas, TDA Research, Inc.,* ***USA***	**3. SO_x and NO_x Co-removal as Condensates during Compression of Oxyfuel Flue Gas** *Terry Wall, Chemical Engineering, University of Newcastle,* ***AUSTRALIA***
Tuesday,	**27. Impacts of Co-firing Refuse Derived Fuel (RDF) in Rotary Cement Kilns:**	**144. Bulk Combustion Structure of Packed Activated Carbon Particles**	**47. Technology Development for a Pressurized Dry Feed Oxy-Coal Reactor – Year 1**

	Numerical Investigation with Advanced Flight and Combustion Models for RDF *V. Scherer, Department of Energy Plant Technology (LEAT), Ruhr-University, Bochum,* ***GERMANY***	*Yuji Nakamura, Toyohashi University of Technology,* ***JAPAN***	**Update** *Bradley Adams, Brigham Young University,* ***USA***
Tuesday, 9:40	**125. The Staged Thermal Conversion of Sewage Sludge** *Dr. Halina Pawlak-Kruczek, Wrocław University of Technology,* ***POLAND***	**37. NiCe@SiO_2 Yolk-Shell Nanotube Morphology and Its Catalytic Effects on Activity and Stability in Tri-Reforming of Methane** *Sunkyu Kim, Smartstate Center for Strategic Approaches to the Generation of Electricity (SAGE), Department of Chemical Engineering, University of South Carolina,* ***USA***	**176. Definition of Predictivity from a Machine-Learning Perspective: Application to a Tangentially Fired Oxy-coal Combustion System** *John M. Parra-Álvarez, Carbon-Capture Multidisciplinary Simulation Center, Institute for Clean and Secure Energy, University of Utah,* ***USA***
10:00 a.m. – Break in the Exhibit Center			
10:30 a.m. – Three Concurrent Technical Sessions – Tuesday			
	Session 8 **Sand Key Room** **Fluidized Bed and Dense Particle Flows** *Dr. Ronald Breault National Energy Technology Laboratory, U.S. Department of Energy*	**Session 9** **Gulf Room** **Combustion Fundamentals** *Dr. Weihong Yang KTH Royal Institute of Technology,* ***Sweden***	**Session 10** **Palm Room** **Oxy-Combustion II** *Dr. Klas Andersson (Chalmers University,* ***Sweden****)* **and** *Dr. Andrew Fry Brigham Young University*
Tuesday, 10:30	**28. Numerical Approaches for Modeling Gas-Solid Fluidized Bed Reactors: Comparison of the Models and Application to Different Technical Problems** *Peter Ostermeier, Institute for Energy Systems, Technical University of Munich, Germany,* ***GERMANY****	**64. Chemical Interactions Between NO_x and Soot in Oxygen-enriched Propane Flames** *Rikard Edland, Department of Space Earth and Environment, Division of Energy Technology, Chalmers University of Technology,* ***SWEDEN****	**34. Integrated Flue Gas Purification for Staged, Pressurized Oxy-Combustion** *David Stokie, Environmental and Chemical Engineering Dept., Washington University,* ***USA***
Tuesday, 10:50	**74. Vortexing CFB High Speed Video Analysis: Axial Particle Velocity Distribution** *Dr. Ronald Breault, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***	**14. Application of Sorbent Polymer Catalyst (SPC) Modules for Mercury Emission Control** *W.A. Adamczyk, Institute of Thermal Technology, Silesian University of Technology,* ***POLAND***	**20. The Effects of Gasification, Specific Heat, Radiation and Radiant on the MILD-Oxy Combustion of Pulverized Coal at H_2O/CO_2 Atmospheres** *Zewu Zhang, State Key Laboratory of Coal Combustion, School of Energy and Power Engineering, Huazhong University of Science and Technology,* ***CHINA***
Tuesday, 11:10	**101. Integrated Beneficiation and Drying of Low Rank Coal in Air Dense Medium Fluidized Bed** *Dr. Rajender Gupta, Faculty of*	**71. Early Stage Sub-micron Particle Formation During Pulverized Coal Combustion in Two-stage Flat Flame Burner** *Dishant Khatri, Department of*	**81. Impact of Flue Gas Recycle on Efficiency of Oxy-fuel Combustion Systems** *Piyush Verma, Department of Energy, Environmental &*

	Engineering, University of Alberta, ***CANADA***	*Energy, Environmental & Chemical Engineering, Consortium for Clean Coal Utilization, Washington University in St. Louis,* ***USA***	*Chemical Engineering, Consortium for Clean Coal Utilization, Washington University in St. Louis,* ***USA***
Tuesday, 11:30	**73. Grid Jet Particle Attrition Model Development for Circulating Fluidized Bed Systems** *Dr. Ronald Breault, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***	**36. Activation of Oil Shale Ashes for Sulfur Capture** *Olev Trass, Department of Chemical Engineering and Applied Chemistry, University of Toronto,* ***CANADA***	**111. Performance Analysis of Advanced Thermal Power Generation System Based on Pressurized Oxy-combustion** *Won Yang, Korea Institute of Industrial Technology,* ***SOUTH KOREA***
Tuesday, 11:50	**48. Modeling Transport of Pressurized Dense Phase Coal** *Bradley Adams, Brigham Young University,* ***USA***	**110. Effect of Hydrocarbons and Dilution on NO_x Formation in Pressurized Premixed Syngas/Air Flames** *Nazli Asgari, Department of Chemical Engineering, University of South Carolina,* ***USA***	**146. The Interaction Between Alkali, Sulphur, Nitrogen and Soot-species in Oxygen-rich Flames** *Thomas Allgurén, Department of Space Earth & Environment, Chalmers University of Technology,* ***SWEDEN***
Tuesday, 12:10	**OPEN**	**67. Predicting Particle Deposition Temperature for Flow Over a Boiler Tube in Combustion Environments** *Dr. Zhiwei Yang, Department of Energy, Environmental & Chemical Engineering, Washington University in St. Louis,* ***USA***	**150. Oxy-Combustion Characteristics of Lignite and Wood Pellet in a 0.1 MW_{th} Circulating Fluidized Bed Combustion System** *Dr. Tae-Young Mun, Korea Institute of Energy Research,* ***KOREA***

12:30 p.m. – Lunch – Exhibit Center

June 5, 2018 – Tuesday Afternoon

2:00 p.m. Plenary Session – Palm Bay Rooms

- **Panel: Energy From Waste**
  Moderator: Prof. Ashwani Gupta, University of Maryland

  - *Dr. Marco Castaldi, City University of New York,* ***USA***
  - *Dr. Kunio Yoshikawa, Tokyo Institute of Technology,* ***JAPAN***
  - *Dr. Somrat Kerdsuwan, King Mungkut University of Technology North Bangkok,* ***THAILAND***
  - *Prof. Grzegorz Wielgosinski, Lodz University,* ***POLAND***
  - *Dr. Halina Pawlak-Kruczek, Wrocław University of Technology,* ***POLAND***
  - *Saleem Zwayyed, P.E., Senior Project Engineer, Focus Environmental, Inc.,* ***USA***

3:30 p.m. – Break in the Exhibit Center

4:00 p.m. – Four Technical Sessions – Tuesday

	Session 11 **Sand Key Room**	**Session 12** **Gulf Room**	**Session 13** **Palm Room**	**Session 14** **Beach Room**

	Radiative Heat Transfer *Brad Adams, Brigham Young University*	**Gasification** *Massood Ramezan, KeyLogic*	**Chemical Looping I – Oxygen Carrier Development** *Dr. Andrew Tong, Ohio State University* **and** *Dr. Mandar Kathe, Ohio State University*	**Carbon Capture Utilization & Sequestration II** *Dr. David Hopkinson, National Energy Technology Laboratory, U.S. Department of Energy*, **and** *Prof. Jochen Lauterbach, University of South Carolina*
Tuesday, 4:00	**49. Particle Property Impacts on Radiation in a Pressurized Oxy-Coal Combustor** *Prof. Bradley Adams, Brigham Young University,* ***USA***	**10. Design and Performance of First Commercial Scale Transport Gasifier at the Kemper IGCC Power Plant** *Guohai Liu, Gasification Technology, Southern Company,* ***USA***	**132. Development of Bimetallic Cu-Fe Oxygen Carriers for Coal Chemical-Looping Combustion** *Ping Wang, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***	**121. Thermodynamic Efficiency of Absorption/-Stripping Based CO_2 Capture Processes** *Shiaoguo Chen, Carbon Capture Scientific, LLC,* ***USA***
Tuesday, 4:20	**78. Radiometer Measurements in High Pressure Flames: System Design, Sensors and Calibration** *Andrew Fry, Brigham Young University,* ***USA***	**9. Transport Gasifier Integrated Coal Feed and Ash Handling Systems at the Kemper IGCC Power Plant** *WanWang Peng, Southern Company,* ***USA***	**82. Fate of Sulfur and Nitrogen in Coal-Fueled Chemical Looping Combustion with Red Mud as Oxygen Carriers** *Lian Kong, Center for Applied Energy Research, University of Kentucky,* ***USA***	**124. UKy-CAER Approach to CO_2 Capture** *Andrew Placido, Center for Applied Energy Research, University of Kentucky, Lexington,* ***USA***
Tuesday, 4:40	**115. Simulation of the Thermal Behavior of Heat Exchangers in a Pressurized Com-bustion System** *Pan Du, Department of Energy, Environmental & Chemical Engineering, Washington University in St. Louis,* ***USA***	**170. Modular Gasification Energy Technology Development - Advancing the State-of-the-Art in Coal-based Power Generation** *K. David Lyons, National Energy Technology Laboratory, U.S. Department of Energy; and Massood Ramezan, KeyLogic Systems,* ***USA***	**23. A Novel CeO_2 Supported $Ba_{0.3}Sr_{0.7}Co_xFe_{1-x}O_{3-\delta}$ Perovskites for Chemical-looping Steam Methane Reforming to Syngas and Hydrogen** *Dingshan Cao, State Key Laboratory of Coal Combustion, School of Energy and Power Engineering, Huazhong University of Science, Wuhan,* ***CHINA*****	**148. CO_2 as a Geological Working Fluid: Enhancing Oil Recovery from Unconventional Resources** *Jared Ciferno, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***
Tu esd	**50. Full Scale 3D-Modelling of the**	**142. Pilot-Scale Capture of Mercury,**	**41. Tailored Mn-Containing**	**127. Update on PCC with ION's Advanced**

	Radiative Heat Transfer in Rotary Kilns with a Present Bed Material *Adrian Gunnarsson, Space, Earth and Environment, Chalmers University of Technology,* ***SWEDEN*****	**Arsenic, and Selenium from Warm Syngas at Elevated Pressures by Palladium Sorbents** *Evan J. Granite, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***	**Perovskites for Chemical Looping with Oxygen Uncoupling** *Luke Neal, Department of Chemical and Biomolecular Engineering, North Carolina State University,* ***USA***	**Solvent at 12 MWe Scale** *Dr. Erik Meuleman, ION Engineering,* ***USA***
Tuesday, 5:20	**130. Total Radiation Intensity from Combustion Gas Measurement** *Bradley Adams, Brigham Young University,* ***USA***	**152. Non-Traditional Thermal Reactors for Gasification** *Dr. Ronald Breault, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***	**Speaker Was Unable to Obtain Visa to Attend the Conference:** ~~98. Chemical Looping Partial Oxidation of Solid Fuels~~ ~~*Dr. Jinhu Wu, Key Laboratory of Biofuels, Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences,* ***CHINA***~~	**122. An Innovative Gas Pressurized Stripping (GPS) Process for CO_2 Separations** *Scott Chen, Carbon Capture Scientific, LLC,* ***USA***
Tuesday, 5:40	**155. Spectral Emittance of Important Coal Ashes Minerals and Selected Mixtures Thereof: Pyrite, Iron Oxide, Carbonates and Sulfates** *V. Scherer, Department of Energy Plant Technology, Ruhr-University Bochum,* ***GERMANY***	**175. Improve/Optimize SCR Performance for Gas Turbines** *Suzette Puski, Babcock Power Environmental, Inc.; and Tony Licata, Licata Energy & Environmental Consultants, Inc.,* ***USA***	**OPEN**	**103. A New Bench Scale Facility for Evaluating Hydrophobic Physical Solvents for Pre-Combustion Carbon Capture** *Nick Siefert, National Energy Technology Laboratory, U.S. Department of Energy,* ***USA***
6:00 p.m. – Conclusion of Technical Program				