Journal of Energy Resources Technology

Guest Editorial

Special Issue: Selected Papers From the 42th International Technical Conference on Clean Coal and Fuel Systems

Special Issue for peer-reviewed papers published from the 42nd International Technical Conference on Clean Energy, Clearwater Clean Energy Conference, June 11–15, 2017.

The special issue contains selected papers presented at the 42nd International Clearwater Clean Energy Conference. The conference was held at the Sheraton Sand Keys Hotel, Clearwater, FL during June 11–15, 2017. The endorsing organizations for this conference included: American Institute of Chemical Engineers, American Public Power Association, CANMET Natural Resources, Canada, China Coal Research Institute, Ministry of Coal, China, Edison Electric Institute, Export Assistance Center, U.S. Commercial Service, International Energy Agency: Coal Research, Japan Coal Energy Center (JCOAL), National Mining Association, National Rural Electric Cooperative Association, Ohio Coal Development Office, U. S. Geological Survey.

The selected papers from the conference cover a broad range of topics that are of fundamental and practical importance for clean energy conversion using coal and solid fuels as well as other hydrocarbon fuels. The papers contributed at the conference were from some 13 different countries, and all the authors were encouraged to consider submitting their contribution for possible publication in the ASME *Journal of Energy Resources and Technology* (JERT) after peer reviews of all the papers and editors recommendation for publication in this journal. All the papers submitted were peer reviewed from lead experts in the field worldwide according to the ASME Journal standard, and the guest editors handled the reviews. The submitted papers reveal that the development and application of new and innovative and advanced technologies using state-of-the-art experimental and computational methods are urgently needed for clean and efficient conversion of hydrocarbon fuels. Significant advances in diagnostics and modeling now allow one to examine the spatial and temporal behavior of flames and reaction progress at a much shorter time scales and much higher resolution than ever before. Validation of the results between modeling and experiments has allowed engineers and researchers to develop correlations that can be extended to develop prototype systems for commercial successes. The papers in this special issue focus on: (1) operating challenges of existing air quality control systems; (2) rare earth elements in North Dakota Lignite Coal and Lignite-Related Feedstocks; (3) development of a spouted bed reactor for chemical looping combustion; (4) development of an advanced oxygen carrier attrition characterization methodology for chemical looping combustion; (5) creating value in the coal delivery chain to a captive power plant; (6) design, development and operation of an integrated fluidized carbon capture unit using polyethylenimine sorbents; (7) effect of biochar addition and temperature on hydrogen production from the first phase of two-phase anaerobic digestion of carbohydrates food waste; (8) rheological properties and ignition and combustion characteristics of biochar-algae-water slurry fuels, (9) contrasting the pyrolysis behavior of selected biomass and the effect of lignin; (10) heat transfer to supercritical water in advanced power engineering applications: an industrialscale test rig; (11) real-time aerosol measurements in postcombustion CO_2 capture using smooth and sintered collection plates; (12) slow pyrolysis of the sewage sludge with additives: calcium oxide and lignite; (13) estimation of minimum spouting velocity in a rectangular spouted bed; (14) corrosion of materials in intermediate temperature supercritical CO_2; (15) the impact of predried lignite co-firing with hard coal in an industrial-scale pulverized coal boiler; (16) analysis of a vortexing circulating fluidized bed for process intensification via high G flows. The papers in this special issue are showcase examples of representative work presented using gas, solid fuels, and other low grade fuels used for cleaner energy conversion.

The guest editors would like to express their great appreciation to all the authors who contributed to the success of the 42nd International Technical Conference on Clean Energy Systems and to this special issue. The organizing committee who made the recommendation and the reviewers who assisted in reviewing the papers in a timely fashion are highly appreciated. We would like to express our special gratitude to Professor Hameed Metghalchi, Editor-in-Chief, of the JERT journal for accepting our proposal on publishing a special issue in JERT and his continued support during the entire process. We would also like to take this opportunity to give our sincere thanks to Mrs. Christina McNeil, Journal Secretary, and Mrs. Tara Collins Smith at ASME for their help and support in publication of this special issue. Last but not least, the assistance and diligent hard work of Ms. Barbara A. Sakkestad and her team during the entire conference event are much appreciated. Special issue from the 43rd International Technical Conference on Clean Energy held during June 4–7, 2018 is planned to be published sometime during 2019 after peer review of all the papers submitted for consideration to publication in the special issue of JERT. Note that the 44th International Technical Conference on Clean Energy will be held in Clearwater, FL during June 2019.

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