



Guest Editorial

Special Issue on Recent Advances in Fundamentals and Applications of Biomass Energy

Biomass energy is a promising sustainable alternative for rapidly depleting fossil fuels. This form of energy is widely being considered by policy makers, scientific researchers, and engineers worldwide since the energy issue is of serious concern for global economy, environment, standards of living, and productivity. The use of biomass energy can effectively narrow the increasing energy gap between energy availability and energy use. Furthermore, it can also help mitigate environmental issues as biomass is renewable, sustainable, carbon-neutral, abundantly available, and it provides low emissions levels of NO_x , SO_x , and hydrocarbons. Efficient use of biomass energy depends on good understanding of the fundamentals of resource characteristics, conversion processes, and specific utilization system(s) of biomass energy conversion. Therefore, the main motivation of this special issue of *ASME Journal of Energy Resources Technology* (JERT) is to bring together original articles on the fundamentals and applications of biomass energy with respect to resource characteristics, conversion processes, reaction properties, and utilization systems of biomass energy.

After careful reviews of all the submissions following the standard reviewing process for regular *JERT* papers, 11 articles (two review articles, eight research articles, and one technical brief) were finally accepted for publication in this special issue. The papers in this special issue cover a broad range of fundamental research papers on biomass energy. The topics included: pelletization of refuse-derived fuel fluff to produce high quality feedstock, syngas composition from biomass gasification, hydrogen production by catalytic gasification of key intermediates of biomass in supercritical water, fermentative butanol production as an alternative biofuel source, cellulosic biofuel production as affected by biomass particle size, biochars obtained fast pyrolysis of different biomass fuels, microwave-assisted pyrolysis of biomass for bio-oil production, autothermal cyclone air gasification of biomass, torrefaction and co-combustion of healthy and beetle kill pine with coal, dual fuel diesel engine using biogas and ethanol-blended diesel, and mathematical modeling of biomass steam gasifier.

We would like to thank all the authors for their contributions in this special issue and thank all of the reviewers who had provided their critical comments. Special thanks are given to the Journal's Editorial Assistant, Christina McNeil, the Journal's Press Manager, Tara Collins Smith, who helped manage the process and the publication of the special issue, and to Technical Editor, Professor

Hameed Metghalchi, who provided tremendous encouragement and assistance in making this special issue possible. The present volume is a special issue on the fundamentals and applications of biomass energy, and it is hoped that it forms the beginning of a series that will periodically stimulate researchers to publish the highlights and original articles reporting new advances in biomass energy.

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