Journal of Combustion

Special Issue on

Advanced Combustion Technology of Solid Fuels for Low-Carbon Power Generation

CALL FOR PAPERS

Advanced combustion technology of solid fuels is one of the key issues for supporting the worldwide transition of power generation toward low-carbon future. It is very timely to consider the role that advanced combustion technology plays today when the international community is facing a global climate change. The development of combustion-driven power generation is mainly based on solid fuels and has its roots in combustion science. It is thus vital that the combustion research of solid fuels develops in synchronization with major advances in fuel processing and device technologies. Globally implemented low-carbon economy or decarbonized economy is therefore urging the new breakthrough of advance combustion technology of solid fuels for future power generation. Fundamental and applied scientific disciplines contribute to this research which has strong ties to technical and industrial processes. Again, fundamental considerations and scientific advances in experimental and computation sciences permit deeper understanding needed for bridging the gap between theory and application to achieve low-carbon power generation.

We invite investigators to contribute original research articles as well as review articles that will stimulate the continuing efforts to understand combustion behaviors of solid fuels and the driving variables across various spatial and temporal scales. Particularly, we are interested in articles describing combustion mechanisms of solid fuels under different applications and devices and how these are influenced by the effects of improving low-carbon or zero-carbon emission and industrialization of power generation.

Potential topics include, but are not limited to:

- Formation and control of pollutants and greenhouse gases including NO_x, SO_x, Soot, PAH, nanoparticles, and CO_2 capture processes
- Fundamental aspects of combustion of solid fuels used in power generation (coal, char solid waste, and biomass, including pyrolysis, gasification, and ash formation), as well as combustion of propellants and metals
- Diagnostics including the development and application of diagnostics techniques and sensors for the understanding and control of multiscale combustion phenomena
- Reaction kinetics including the kinetics of solid fuels, NO_x and SO_x, mechanism generation, reduction, and simulation (informatics) of reaction systems
- Novel combustion concepts, technologies, and systems including catalytic combustion, mild combustion, plasma-aided combustion, hydrothermal reaction, chemical-looping combustion, and other ultra-low-emission novel combustion processes regarding solid fuels

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